Effectiveness of Environmental Impact Assessment (EIA) in addressing development-induced disasters: A comparison of the EIA processes of Sri Lanka and New Zealand

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by

Arosh Buddika Hapuarachchi

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"A nation's greatness is measured by how it treats its weakest members."

Mahatma Ghandi

Abstract of a thesis submitted in partial fulfilment of the requirements for the Degree of Doctor of Philosophy.

Effectiveness of Environmental Impact Assessment (EIA) in addressing development-induced disasters: A comparison of the EIA processes of Sri Lanka and New Zealand

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There is an on-going exponential increase in development-induced disasters globally, especially in low and middle-income countries. This upward trend in the occurrence of development-induced disasters challenges sustainable development efforts. It has been generally accepted that instruments such as an Environmental Impact Assessment (EIA) reduce disaster risks of development projects. The Hyogo Framework for Action (HFA) for disaster risk reduction promotes using EIAs to address the disaster risk of development projects. Over 65 percent of the countries that have met the HFA progress-reporting obligation in the 2009-2011 reporting cycle, state that disaster risks of development projects are addressed by implementing EIA. However, the claims that EIA processes effectively address disaster risks have yet to be demonstrated empirically. It is clear that successful implementation of EIA processes also depends on the level of governance quality existing in a particular country. It is suggested that a well-conceived EIA process should reflect many of the elements of good governance principles including transparency, sufficient information flows, accountability, and stakeholder participation. Quality governance, therefore, is considered as having a direct bearing on why impact assessments in some countries are performing better than others. The influence of governance quality on the effectiveness of EIAs can be addressed by comparing the EIA processes of two or more countries with different levels of governance quality. In this research, the effectiveness of the EIA process in addressing development-induced disasters is evaluated by comparing the EIA processes of Sri Lanka and New Zealand. These two countries have quite different governance quality ratings and, therefore, offer a test of the influence of governance characteristics on EIA processes in addressing disaster risks.

In order to evaluate the effectiveness of the EIA processes of the above countries, a set of evaluation criteria was identified, mostly from existing literature. Eight criteria were specifically developed for this research. Data for the research were collected from in-depth interviews using a semi-structured questionnaire and focus group discussions with interviewees selected on the basis of their role, knowledge and expertise of the EIA process. Documents from both state and non-state actors relevant to the EIA process were also analyzed. Several recently conducted development projects in each country were used as cases to understand how the legislation is used in practice.

It is clear that explicit reference to disaster risk is absent in environmental management policies in both Sri Lanka and New Zealand. Even though the New Zealand EIA process has a higher procedural and contextual effectiveness than Sri Lanka, both countries have lower levels of substantive effectiveness. Neither of the two EIA processes is found to be effective in addressing disaster risk because of inadequate policy integration of disaster risk into the environmental legislation that governs the EIA process. The results suggest more specificity is needed in legislative provisions and suggest a review of standard practice in using EIA to address disaster risk. The findings also imply the need to undertake evaluations of EIA systems elsewhere to assess their effectiveness in addressing development-induced disaster risks.

Keywords: hazard, vulnerability, disaster risk reduction, DRR, environmental impact assessment, EIA, effectiveness, development-induced disasters, governance, policy integration, development, social impact assessment, foreign aid, donor influence.

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Acronyms

AAA	Analytic and Advisory Activities
ABB	ABB Switzerland Ltd
ADB	Asian Development Bank
AEE	Assessment of Effects on the Environment
CADA	Computer-Aided Data Analysis
CBO	Community Based Organization
CBSL	Central Bank of Sri Lanka
CCA	Coast Conservation Act
CCD	Coast Conservation Department
CDB	Caribbean Development Bank
CDEM	Civil Defence and Emergency Management
CDEMG	Civil Defence and Emergency Management Group
CEA	Central Environmental Authority
CEB	Ceylon Electricity Board
CRED	Centre for Research on the epidemiology of Disasters
DIA	Disaster Impact Assessment
DiMCEP	Disaster Management and Capacity Enhancement Project
DMC	Disaster Management Centre
DoC	Department of Conservation
DRR	Disaster Risk Reduction
DS	Divisional Secretariat
EA	Environmental Assessment
EC	Environmental Court
EIA	Environmental Impact Assessment
EPA	Environmental Protection Authority
FAO	Food and Agriculture Organization of the United Nations
FFAA	Fauna and Flora Protection Amendment Act No. 49 of 1993
FGD	Focus Group Discussion
GN	Grama Niladhari (Village Officer)
GND	Grama Niladhari Division (Village Officer Division)
HDI	Human Development Index
HEC	Human Ethics Committee
HFA	Hyogo Framework for Action
HIA	Health Impact Assessment
IAIA	International Association for Impact Assessment
IDNDR	International Decade for Natural Disaster Reduction
IDP	Internally Displaced People
IEE	Initial Environmental Examination
IPCC	Intergovernmental Panel on Climate Change
IRGC	International Risk Governance Council
JICA	Japan International Cooperation Agency
LGA	Local Government Act
LGOIMA	Local Government Official Information and Meetings Act
LIM	Land Information Memorandum

LTP	Long-Term Plan
MCDEM	Ministry of Civil Defence and Emergency Management
MDM&HR	Ministry of Disaster Management and Human Rights
MfE	Ministry for Environment
MOH	Medical Office of Health
NEA	National Environmental Act
NEAA	National Environmental Amendment Act
NER	National Environmental Regulation
NES	National Environmental Standards
NGO	Non-Governmental Organization
NPPD	National Physical Planning Department
NPS	National Policy Statement
NSDM	National Strategy for Disaster Management
NZ	New Zealand
NZCPS	New Zealand Coastal Policy Statement
NZTA	New Zealand Transport Agency
OCDESC	Officials Committee for Domestic and External Security Coordination
PAA	Project Approving Agency
PAR	Population At Risk
PIM	Project Information Memorandum
PP	Project Proponent
RDA	Road Development Authority
RMA	Resource Management Act
RMAA	Resource Management Amendment Act
SEA	Strategic Environmental Assessment
SIA	Social Impact Assessment
SOP	Standard Operating Procedure
STDP	Southern Transport Development Project
TAG	Technical Advisory Group
TEC	Technical Evaluation Committee
TGP	Transmission Gully Project
ToR	Terms of Reference
UDA	Urban Development Authority
UKHP	Upper Kotmale Hydro-power Project
UNDP	United Nations Development Programme
UNEP	United Nations Environmental Programme
UNESCAP	United Nations Economic and Social Commission for Asia and the Pacific
UNISDR	United Nations International Strategy for Disaster Reduction
USAID	United State Agency for International Development
WB	World Bank
WGI	Worldwide Governance Indicators
WIHS	Waitohi Irrigation and Hydro Scheme

Chapter 1

Introduction

The Global Assessment Report 2011 on Disaster Risk Reduction shows an exponential increase in extensive disasters over the past 20 years, especially in low and middle-income countries (UNISDR (United Nations International Strategy for Disaster Reduction), 2011). The UNISDR (2009a, p. 15) defines extensive risk as "…the widespread risk associated with the exposure of dispersed populations to repeated or persistent hazard conditions of low or moderate intensity, often of a highly localized nature, which can lead to debilitating cumulative disaster impacts". In contrast to intensive disasters, which are characterized by "…catastrophic disaster impacts involving high mortality and asset loss" (UNISDR, 2009a, p. 19), extensive disasters may account for only a small proportion of overall disaster mortality. However, they are responsible for a very significant proportion of damage to the assets and livelihoods of low-income groups (UNISDR, 2009b). It is generally understood that extensive disasters are directly constructed by mal-development practices such as badly planned urbanization and regional development, and environmental degradation (UNISDR, 2011). Therefore, extensive disasters can also be called development-induced disasters (the term used in this research). The impacts of development-induced disasters are expected to further worsen because of the increased severity and frequency of climate related hazards as a result of on-going climate change (IPCC, 2007; Tobin & Montz, 2009).

The upward trend in the occurrence of development-induced disasters worldwide, especially in developing countries, challenges efforts toward sustainable development. Many economic development interventions have inadvertently created new forms of hazards and vulnerabilities, especially in low and middle-income countries, which also have poor governance records (UNISDR, 2011). Even though these occurrences are rarely the subject of scholarly work, they are widely discussed in the media. However, media reports fail to provide a complete account of development-induced disasters or properly represent the sufferings of many millions of people. They are adequate to argue the importance of factoring disaster risk considerations into development planning at national, regional and local levels. Mainstreaming disaster risk reduction into development processes has been a topic at international conferences and in communication materials since the inception of the International Decade for Natural Disaster Reduction in 1990 (IDNDR) (United Nations, 1989). Different agencies and countries advocating for disaster risk reduction integration into development have taken different routes to address the issue within or outside existing development. These vary vertically, from integration of sustainable development into national development policies, to integration of risk assessment into local level planning, and horizontally in different development

sectors from education and health, to infrastructure development. These integration efforts seem to be serving two distinct objectives, both leading to reduced disaster risk, namely: 1) to minimize the disaster impact on various development sectors such as agriculture, housing and health; and 2) to prevent or mitigate development-induced disasters. This research will examine the second objective, but it will also contribute to the first objective indirectly. Evaluation of probable disaster risk of development initiatives and factoring those risk considerations into planning and investment decisions are crucial to achieving this objective.

Development control instruments such as Environmental Impact Assessment (EIA), Social Impact Assessment (SIA), Human Health Risk Assessment (HHRA), Risk Assessment (RA), Strategic Environmental Assessment (SEA), the precautionary principle, and Sustainability Assessment (SA) (Zhang, Pei, & Lin, 2010) are used in many countries to assess and mitigate the negative consequences of development activities. Among these different tools, the oldest, most well established tool is Environmental Impact Assessment (EIA) (IAIA (International Association for Impact Assessment), 2009). Following the World Conference on Environment and Development, the 'Earth Summit', held in Rio de Janeiro in 1992, EIA has been actively promoted as a vehicle to achieve sustainable development, especially in low and middle income countries (Marara et al., 2011). In these countries, if Agenda 21 were fully implemented, all prescribed or significant development projects should undergo an environmental assessment to review the implications of such projects for the environment. SIA and RA are also practised in many contexts, but given a subordinate position compared with EIAs (Burdge & Taylor, 2012). For instance, RAs are generally practised as non-obligatory tools and being more selectively applied to selected activities within projects (Eduljee, 1999). Therefore, EIA can be considered the most widely available and promoted mechanism to address development-induced disaster risks.

The Hyogo Framework for Action (HFA) progress reports and UNISDR publications (UNISDR, 2011) show that both the UNISDR and national disaster management authorities have relied on EIA processes to mitigate extensive or development-induced disaster risks. Indicator six of the fourth priority for action in the HFA progress monitoring framework requires the impacts of disaster risk be taken into account in the EIA process (UNISDR, 2014). A content analysis of the national HFA progress reports reveals that 72 out of 111 countries that have met the HFA progress reporting obligations in the 2009-2011 reporting cycle, use EIA as a mechanism to address the disaster risks of development projects. Twelve countries assert that EIA is the only mechanism to incorporate disaster risk into development planning.

Multiple attempts to strengthen the EIA process by incorporating different dimensions such as social, cultural, vulnerability and risk assessment have occurred (Andrews, 1988; Brockie, 1994; Caribbean

Development Bank (CDB), 2004; Contini & Servida, 1992; Cope & Hills, 1998; Harrop & Nixon, 1999; Kværner, Swensen, & Erikstad, 2006; Morgan, 1998; Vanclay, 2003), yet hardly any effort seems to have been made to examine the EIA process from a disaster risk reduction perspective. Moreover, the effectiveness of the EIA in addressing disaster risks is yet to be researched. Effectiveness can be measured in terms of *'procedural'*, '*substantive'* and *'contextual'* effectiveness. Procedural effectiveness means whether the EIA process conforms to the "…established provisions and principles" (Sadler, 1996, p. 39), whereas substantive effectiveness means whether the EIA process achieves the objectives set (Sadler, 1996). It has also been suggested that successful implementation of any development control tool depends also on the level of risk governance that exists in a particular country. The influence of governance quality on development control instruments is an important aspect that should not be neglected. Kakonge (1998) argues that a well-conceived EIA should reflect many of the elements of good governance principles including transparency, sufficient information flows, accountability, responsibility, and stakeholder participation. Quality of governance, therefore, is considered an indicator of *'contextual'* effectiveness, which has a direct bearing on why impact assessments in some countries are performing better than others. The influence of governance quality on the effectiveness of EIAs can be addressed by comparing the EIA processes of two or more countries with different levels of governance quality.

1.1 Research Questions

A potential negative effect of some forms of development (e.g., transport infrastructure) is increased exposure to disaster risk. If development projects are to be sustainable then proposals should be properly assessed to ensure that disaster risk is not increased as a result of development projects. EIA is one of the development control mechanisms practised in many countries including many low and middle-income countries. But the extent to which country-specific EIA processes include disaster risk considerations and how effective they are in addressing development-induced disaster risk has not been researched. Contextual factors such as legal and administrative arrangements as well as the quality of governance also have a direct bearing on the EIA process. It is generally accepted that such contextual and governance factors influence the involvement of participants, transparency and nature of EIA processes and, very importantly, EIA outcomes.

Consequently, the goals of this research are first to explore the effectiveness of the EIA process in addressing disaster risks and second to assess whether the quality of governance influences the outcome of EIA processes. To achieve the above, the thesis sets out to address four main questions:

- Policy Integration: how well, if at all, is disaster risk reduction (DRR) integrated into EIA processes?

- Procedural Effectiveness: assuming DRR is integrated then how well is it practised?
- Substantive effectiveness: does the EIA process achieve the objectives set and result in DRR?
- Contextual effectiveness: what influence does risk governance have on the substantive effect?

Moreover, the research does so in the different governance contexts of Sri Lanka and New Zealand[1], two countries that have been assessed as having quite different levels of governance quality by international rating indices such as the Worldwide Governance Index (The World Bank Group, 2013).

1.2 Structure of the Thesis

This thesis comprises eight chapters including the Introduction. Chapter 2 reviews the literature in the fields of disaster risk, environmental impact assessment, risk governance, and the evaluation of the effectiveness of EIA. These concepts are often considered separately and the potential inter-relationships have not been explicitly discussed in current literature. Therefore, Chapter 2 synthesises the above concepts into a conceptual model presented at the end of the chapter. The conceptual model captures linkages between the different concepts and argues that the effectiveness of EIA is central to address the disaster risk of development projects. Chapter 3 presents the methodology adopted in this research and identifies evaluation criteria used in the comparative evaluation. A comparison of the environmental, development and disaster management planning contexts in Sri Lanka and New Zealand is presented in Chapter 4. Chapters 5 and 6 present the findings for Sri Lanka and New Zealand, respectively, based on the evaluation criteria presented in Chapter 3. Chapter 7 conducts and presents the overall analysis of the findings presented in the two previous chapters. The conclusions are derived and the conceptual model is revisited in Chapter 8 based on the findings of this research. This chapter also discusses the theoretical implications of this research and makes recommendations for future research.

[1] My interest in EIA and disaster risk reduction arises from my work history as a disaster risk management practitioner in an international non-governmental organization. After shifting to New Zealand in early 2011 together with my family, I realized that a comparative study on the effectiveness of EIA to address disaster risks between Sri Lanka and New Zealand was possible.

Chapter 2

Literature Review

2.1 Introduction

Much literature discusses the concepts of disaster risk reduction (DRR) and environmental impact assessment (EIA). However, integration of DRR into environmental planning, specifically into the EIA, has received relatively limited attention in the DRR and EIA literature. This chapter reviews the literature on DRR and environmental planning in order to identify possible conceptual and practical connections between the two. The chapter begins with a brief account of common terms and concepts in DDR then moves into broader topics of factors affecting disaster risk, mal-development, disaster-development linkages, development control tools and, finally, the performance evaluation of EIA.

2.2 Disaster and disaster risk

According to Smith (2013), the interpretation and understanding of disaster risk has changed significantly over the years. Smith (2013) identifies two leading perspectives on disaster risks: the 'behavioural paradigm' and the 'development paradigm'. According to Smith (2013), advocators of the behavioural paradigm (e.g., Gilbert White, Robert Kates, and Ian Burton) argue that natural hazards are caused by human behaviour and decisions to settle and develop hazard-prone land. Thus, disaster management under this paradigm is generally characterised by over reliance on land-use planning and other engineering solutions to reduce disaster risk (Smith, 2013). In contrast, the development paradigm is characterised by an understanding of economic dependency and social and political marginalization as causes of increased human vulnerability to natural hazards and increased disaster risks (Blaikie, Cannon, Davis, & Wisner, 1994; Prowse & Scott, 2008; Smith, 2013). Many scholars have treated the development paradigm as the mainstream view of understanding disaster risks (Birkmann, 2006; Prowse & Scott, 2008; Tobin & Montz, 2009; UNISDR, 2005). This research adopts the development paradigm interpretation in defining disaster risk.

Disasters today are viewed "…as a result of the complex interaction between a potentially damaging physical event (e.g., floods, drought, fire, earthquake and storms) and the vulnerability of a society, its infrastructure, economy and environment, which are determined by human behaviour" (UNISDR, 2005, p. 1). Therefore, effective disaster risk reduction lies in understanding natural hazards and the vulnerability of society, the economy and built and natural environments to the hazards (Birkmann, 2006; UNISDR, 2005; Wisner, Blaikie, Cannon, & Davis, 2004). Drawing from the above, three different concepts: 'disaster risk', 'hazards' and 'vulnerability', are fundamental to understanding the

notion of disaster risk. Blaikie et al. (1994, p. 23) have put these three concepts into a pseudo-equation as:

$$\mathbf{R} \cong \mathbf{H} \times \mathbf{V}$$

where: R= Risk [Disaster Risk], H=Hazards, and V = Vulnerability.

They argue that disaster risk is a compound function of the natural hazards and the degree of vulnerability to those specific hazards. As Wisner et al. (2004, p. 50) express it, "A disaster occurs when a significant number of vulnerable people experience a hazard and suffer severe damage and/or disruption of their livelihood system in such a way that recovery is unlikely without external aid". Tobin and Montz (2009) argue that a disaster occurs when an extreme geo-physical event causes negative impacts to the human use system (Figure 2.1).

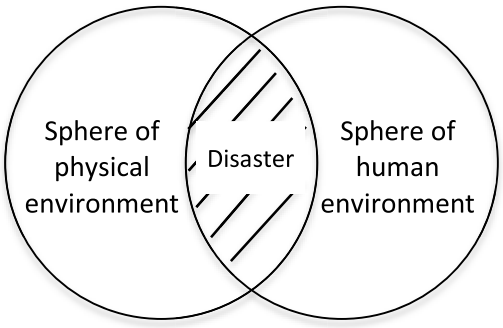

Figure 2.1 The environmental hazard framework (Adapted from Tobin & Montz, 2009, p. 521)

The implicit idea is that even though geo-physical events (hazards) exist they are not considered disasters unless they cause significant negative impacts to human society. In this context, it is widely accepted that hazards are natural but, for a hazard to become a disaster, it has to affect vulnerable people (Cannon, 1993). However, the term 'significant impact' is debatable. The EM-DAT[2] international disaster database defines a significant impact as being only when at least one of four indicators is satisfied: 1) at least 10 or more people are reported killed; 2) at least 100 or more people are reported as affected; 3) the declaration of a state of emergency; or 4) international assistance is requested by the country because the in-country capacity is exceeded by the disaster damage. Though international databases are not able to record all disasters including disasters with lower impacts, the above criteria lead to overlooking most development-induced disasters with lower impacts. Therefore, the actual hardship faced (sometimes frequently) by vulnerable groups, especially from development-induced disasters is understated in the databases. This is also a

[2] EM DAT is an international emergency event database maintained by the Centre for Research on the Epidemiology of Disasters (CRED).

contributing factor for less attention being given towards development-induced disasters (UNISDR, 2011), which will be discussed later in this chapter.

Having this clear distinction between development-induced (extensive) and intensive risks is important to understanding the root causes of disaster risks we encounter today. Development-induced disaster risk is mainly a characteristic of marginalized areas where communities are exposed to, and vulnerable to, recurring localised weather-related hazards, which is often associated with poverty, mal-development and environmental degradation. On the other hand, intensive risk is mainly a characteristic of large cities or densely populated areas that are exposed to intense hazards and have high levels of vulnerability to these hazards resulting in high mortality (UNISDR, 2011).

A study carried out by the UNISDR (2011) comparing extensive and intensive disasters in 21 countries over 40 years made an alarming discovery. Twenty-five deaths or the destruction of 600 or more houses in any one location have been used as thresholds for intensive risk (Freire, 2010; OSSO, 2011a, as cited in UNISDR, 2011). For the researched period, extensive risk accounts for 99.1 percent of all disasters that occurred in these countries with 20 percent of houses destroyed and 53.9 percent of houses damaged during the last 40 years (Table 2.1). Moreover, compared with intensive disasters, 80 percent of people being affected, 83.1 percent of people injured, 45.2 percent damage to schools, and 55.2 percent damage to health facilities resulted from extensive disasters (UNISDR, 2011). However, the extensive risk accounts for only 9.6 percent of deaths, whereas intensive risk accounts for the remainder. This significant difference in mortality has largely removed the attention of authorities from extensive risks.

Table 2.1 Summary of disaster damage from 20 countries from 1971 to 2011 (UNISDR, 2011, p. 37)

Risk Type	Hazard Type	Reports	%	Deaths	%	Houses destroyed	%	Houses damaged	%
Extensive	Weather-related	188,236	96.3	59,911	9.2	1,096,891	18.3	5,674,114	50.1
Extensive	Geological	5,565	2.8	2,861	0.4	104,451	1.7	431,613	3.8
Intensive	Weather-related	1,293	0.7	182,723	27.9	3,079,749	51.4	3,806,413	33.6
Intensive	Geological	464	0.2	408,303	62.5	1,717,405	28.6	1,410,417	12.5
Total		195,558	100.0	653,798	100.0	5,998,496	100.0	11,322,557	100.0

As discussed earlier, disaster risk is a product of hazards and vulnerability of human society to those hazards. In other words, disaster risk cannot be properly understood unless both the natural hazards and the social vulnerability are equally discussed and understood. The following sections discuss these two concepts in detail.

2.3 Hazards

Disasters occur from the impact of a variety of natural and technological hazards and their combinations. Tobin and Montz (2009, p. 1) define environmental hazards as "…the potential interaction between forces of the physical environment and the human-use system such that there is a negative impact on society – the potential for disaster". UNISDR (2009a, p. 16) defines hazard as "…a dangerous phenomenon, substance, human activity or condition that may cause loss of life, injury or other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage". Here, UNISDR's definition is considered as comprehensive and more appropriate to this research, since it takes both natural and man-made phenomena into account and looks for all possible negative impacts that cause discomfort for society.

Both natural and man-made or technological hazards can be further divided based on their origin. According to the EM-DAT database classification, the natural hazards category is divided into five sub-groups, namely geo-physical, meteorological, hydrological, climatological and biological. The technological hazards category has three sub groups: industrial, transport and miscellaneous accidents. However, there continue to be conflicting ideas in the literature on hazard definitions and classifications. Referring to Pointner's (1995) and Adam's (2006) work, Schenker-Schenker-Wicki, Inauen, & Olivares (2010) classify epidemics as a man-made hazard, whereas they are classified as a natural hazard in the EM-DAT database classification. However, in this research, epidemics like *'dengue haemorrhagic fever'* and '*leptospirosis'* are considered as caused by natural agents and, therefore, the EM-DAT classification is adopted.

The concepts of frequency and magnitude are crucial in estimating natural hazard risk (Alcántara-Ayala, 2002; Alexander, 1993) in order to assess the disaster risk of a community. The potential damage that could be caused by a hazard is always linked to its magnitude and frequency or how often it is likely to occur. Wisner et al. (2004) suggest that hazard magnitude varies with degree of intensity and severity. Systematic data gathering for many years has enabled us to model the likelihood of many hazards in terms of return period [frequency] and geographical distribution. However, accurate models are increasingly difficult to develop because of current anthropogenic climate change; scholars are sceptical about the adequacy of available models for calculating the actual level of risk (Wisner et al., 2004). Moreover, it is recognized that natural hazard events cannot be controlled, but their impacts on people and their property can be reduced by systematic approaches to reduce the vulnerability of people and properties to such hazards (Godschalk, Beatley, Berke, Brower, & Kaiser, 1999). Therefore, increased attention is given to the social production of vulnerability in order to understand the level of risk that human societies face.

2.4 Vulnerability

The term vulnerability is also used diversely in various disciplines and contexts. Birkmann (2006) identifies 25 different definitions for the term. Among these different definitions two in particular warrant discussion. Wisner et al. (2004, p. 11) define vulnerability as "…the key characteristics of a person or group and their situation that influence their capacity to anticipate, cope with, resist and recover from the impact of a natural hazard". UNISDR (2009a, p. 30) defines vulnerability as "…the characteristics and circumstances of a community, system or asset that make it susceptible to the damaging effects of a hazard". Wisner et al. look at the vulnerability of an individual or group, UNISDR emphasizes community, system and even assets as elements in society that can be vulnerable to hazards. Both definitions highlight the characteristics of community that make them more or less vulnerable to disasters.

People are not homogenous in their social make up. From a practical perspective, vulnerability varies from person to person depending on his or her social class, occupation, caste, ethnicity, gender, age, disability, health status, immigration status, and nature and extent of social networks (Wisner, 2009). Aysan (1993) identifies a strong causal relationship between vulnerability to disasters and specific characteristics of vulnerable groups. From Aysan (1993, pp. 11,12) the characteristics of people most likely to be at risk from the impact of a hazard are:

1. *Proximity/exposure: people who occupy or, for their livelihood, depend on areas of high hazard risk;*
2. *Capacities and resources: people who have limited means and capacity to mobilize them in order to increase… their defences against hazards; and*
3. *Disadvantage/marginalization: people who are peripheral or weak due to gender, age, ethnicity, class, etc.*

Based on the above, Aysan (1993, p. 12) lists nine causes/types of vulnerability. It is important to look at this list of vulnerabilities because it identifies the influence of broader socio-political and economic contexts in human vulnerability that otherwise are easily omitted in development planning. Aysan's nine types of vulnerability are:

I. *lack of access to resources (material/economic vulnerability),*
II. *disintegration of social patterns (social vulnerability),*
III. *degradation of the environment and the inability to protect it (ecological vulnerability),*
IV. *lack of strong national and local institutional structures (organizational vulnerability),*

V. *lack of access to information and knowledge (educational vulnerability),*

VI. *lack of pubic awareness (attitudinal and motivational vulnerability),*

VII. *limited access to political power and representation (political vulnerability),*

VIII. *certain beliefs and customs (cultural vulnerability), and*

IX. *weak buildings or weak individuals (physical vulnerability).*

Wisner (2004) argues that Aysan's list of vulnerability types is useful to orient the perceptions of planners and practitioners so that vulnerable people are not neglected before, during and after a disaster. Consistent with Aysan's list, Alcántara-Ayala (2002, p. 119) categorises all types of vulnerability into four main types as "…social, economic, political and cultural". According to Alcántara-Ayala (2002, p. 119), the four types belong to human vulnerability. Alcántara-Ayala differentiates human vulnerability from natural vulnerability, which is characterised by the geographical location in which people live. However, natural vulnerability is caused by human vulnerability, because the geographical location in which an individual lives vastly depends on his/her social, economic and political status as well as cultural values.

Poverty is also an important aspect of vulnerability because of its direct association with access to resources. Wisner et al. (2004) argue that poverty can be a relevant proxy to assess access to resources. Access and control over resources largely determine livelihood security, an important dimension of disaster resilience that decides how well a person faces a disaster or bounces back after a disaster. However, Wisner (2009) argues that even though there is a strong correlation between income and access to resources with vulnerability, the straightforward identification of 'the poor' as vulnerable does not help planners and activists formulate short and medium-term plans and demands. According to Hilhorst & Bankoff (2004, p. 2) "Not all poor people are vulnerable to disasters, nor are the poor all vulnerable in the same way, and some people who are not poor are also vulnerable".

It has long been recognized that disasters are not natural (not even sudden ones) because hazards affect different people or societies differently (Cannon, 1993). This inequality in risk is largely a function of the principal systems of power operating in all societies (Cannon, 1993) and the resultant governance mechanisms. Domestic and international governance is increasingly recognized as an influencing factor in social vulnerability and unequal distribution of risk in different societies. Pelling (2003, p. 34) states that "…inappropriate planning and legislature can exacerbate vulnerability". The term 'risk governance' and its influence on vulnerability and disaster risk are discussed in detail later in this chapter. These factors are important in the context of vulnerability to understand why some

countries are more vulnerable to disasters than others. To illustrate these points, it is helpful to compare two recent significant disasters.

In 2010, two major earthquakes hit Haiti and New Zealand. Even though the magnitude of the two events was similar, the consequences in the two countries were alarmingly different. While Haiti lost approximately 222,570 people (*EM-DAT: The OFDA/CRED International Disaster Database*) from this single event [though the final mortality figure is still not verified (Daniell, 2010)], New Zealand managed to cope with its disastrous event with zero casualties. Even though a lack of economic development and high population density accounted for much of the death toll differences, Ambraseys (2011), a professor of civil engineering at Imperial College, London, argues that corruption in the social system in Haiti greatly contributed to the unprecedented number of casualties there.

It is important to look more closely at how contemporary development trends alter or increase existing vulnerabilities in human society. Internally Displaced People (IDP), because of massive development projects, is a classic example in this regard. The destruction of social networks, displaced from the resource bases they were relying on for their livelihood, distorted market chains, and forced relocation to an unknown territory with no or less knowledge about hazardous situations, all hamper people who have been uprooted from their traditional communities and locations, making them more vulnerable to future disasters. Moreover, in cases such as the destruction of mangroves to establish a shrimp farm or to construct a hotel can make neighbouring communities more vulnerable to storms or tsunamis because the natural barriers that otherwise protected them are no longer there (United Nations Environment Programme (UNEP), 2005b). This makes it clear that any development project or programme should give due recognition to the existing vulnerability of people and carefully assess how the proposed development project might contribute to increased or decreased vulnerability.

2.5 Resilience

The reciprocal of vulnerability, ‘resilience’ as some authors define it (De Lange, Sala, Vighi, & Faber, 2010; Manyena, 2006), is also an important dimension in disaster risk reduction discussion. Resilience is more about coping with disasters rather than promising to control or avoid their underlying physical energies (Pelling & Uitto, 2001). In the literature, resilience is commonly viewed as a complex, dynamic bio-psychosocial/spiritual process dependent on life context (Greene, Galambos, & Lee, 2003). Though some authors define resilience as the flip side of vulnerability, others describe it as one of the three elements of vulnerability along with exposure and sensitivity (Klein, Nicholls, & Thomalla, 2003).

UNISDR (2009a, p. 24) defines resilience as "…the ability of a system, community or society exposed to hazards to resist, absorb, accommodate to and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions". In other words, it is the ability of the community or social system to bounce back from a shock. As the concept of 'disaster-proof communities' is unrealistic, most scientists have faith in a more realistic goal of creating communities that can bounce back from disasters and get ready to face the next event (Blanco, Alberti, Olshansky, Chang, & Wheeler, 2009). In addition, many scholars have begun to use the term 'resilience' as a goal for communities, in post disaster rebuilding (Blanco et al., 2009).

Adger et al. (2005) studied socio-ecological resilience to coastal disasters and describe social resilience, including social institutions for collective action, robust governance systems, and a diversity of livelihood choices as crucial assets for buffering extreme natural hazards and promoting social reorganization. Resilience includes not only a community's capacity to return to the pre-disaster state but also to advance the state through continuous learning and adaptation (Cutter et al., 2008).

Even though the term resilience has mostly been used in post disaster situations, it is increasingly also being used in pre-disaster situations. Most communities face multiple disasters over their lifetime. So, bouncing back from one disaster [recovery in a post disaster situation] is also a pre-disaster context for the next. Thus, resilience, as much as vulnerability, is an important dimension in DRR including development-induced disaster risks. Development actions, in an ideal situation, should increase the resilience of the community to various natural hazards, however, as discussed in the next section, in many instances they have contributed to reducing the resilience of communities by depleting the ecosystems and displacing already vulnerable communities from their traditional lands. Resilience is considered in this research as a constituent of vulnerability, low resilience leads to increased vulnerability.

2.6 Mal-development: understanding the disaster development linkages

The root causes of current disasters can be traced back to decades or even centuries old development decisions. Aysan (1993) states that the infamous 1991-1993 famine in Somalia can be traced back to the policies of the first independent government. The current earthquake risks in Christchurch can be traced as far back as the urbanization decision made by the Royal Charter in 1856 (Christchurch City Council, 2010).

Growth oriented development models and initiatives promised to reduce poverty and improve people's wellbeing have been subjected to severe criticism for their inherent characteristics of

environmental unsustainability and socioeconomic inequality. Amin (2011) and Shiva (1988) draw on this eco-centric ideology and even call current development trends, which increase social and economical inequality and environmental degradation, '*mal*-development'. The value of Amin's and Shiva's ideas on development are more widely felt today than ever before. Increasing numbers of social issues, environmental degradation and economic inequality are all deep rooted in growth oriented economic models that countries have pursued. According to Cannon (1993, p. 94), "There is a widespread recognition of human destruction of the environment, and that natural hazards themselves can be precipitated (or exacerbated) by the pursuit of economic and social goals, which hitherto were seen as the normal objectives of economic growth".

In 2004, the UNDP's publication, 'Reducing Disaster Risk: A Challenge for Development' elaborates the complex inter-linkages between disaster and development (Table 2.2). The authors consider economic development and social development separately in explaining disaster development linkages. As per UNDP, social development includes social assets such as inclusive governance and health and educational infrastructure. Economic development includes economic production and its supporting infrastructure and the integrity of natural resources for the sustainability of resource-dependent livelihoods. In Table 2.2, UNDP identifies three key correlations between disaster and development: disaster limits development, development causes disaster risk, and development reduces disaster risks. UNDP argues that not all development increases the risk of disaster because some forms of development reduce disaster risks. Therefore, one key argument in Table 2.2 is that development is not a risk neutral process; it either increases disaster risk or reduces disaster risk. This research specifically focuses on situations where development causes disaster risk.

The upward trend in the number of development-induced disasters worldwide, as highlighted in the Global Assessment Report 2011, especially in developing countries, supports the argument that development increases the risk of disasters. Many economic development interventions have inadvertently created new forms of vulnerabilities, especially in low and middle-income countries that also have poor governance records (Benson & Twigg, 2007; UNISDR, 2011). Hence, ill-planned mal-development initiatives can be labelled as channels for increased disaster vulnerability and hazard risk, especially leading to development-induced disasters. Urbanization, deforestation and the filling of wetlands have changed hydrologic regimes, creating the possibility of more incidents of small scale flooding in many parts of the world (Tobin & Montz, 1997). Disaster risks are created over time by environmentally unsustainable development projects (Hilhorst & Bankoff, 2004). For instance, Hughey (1997) highlights how the mining industry has created pressure on fragile mountain environments and socially marginalized mountainous communities.

Table 2.2 Disaster – Development Linkages (UNDP, 2004, p. 20)

	Economic development	**Social development**
Disaster limits development	Destruction of fixed assets. Loss of production capacity, market access or material inputs. Damage to transport, communications and energy infrastructure. Erosion of livelihoods, savings and physical capital.	Destruction of health or education infrastructure and personnel. Death, disablement or migration of key social actors leading to erosion of social capital.
Development causes disaster risk	Unsustainable development practices that degrade the environment and create wealth for some at the expense of unsafe working or living conditions for others.	Development paths generating cultural norms that promote social isolation or political exclusion.
Development reduces disaster risk	Access to adequate drinking water, food, waste management and a secure dwelling increases peoples' resiliency. Trade and technology can reduce poverty. Investing in financial mechanisms and social security can cushion against vulnerability.	Building community cohesion, recognizing excluded individuals and social groups, such as women, and providing opportunities for greater involvement in decision-making, enhanced education and health capacities increases resiliency.

Although analyses of development-induced disasters have rarely been subjected to scholarly work, the misery associated with development-induced disasters appears a "hot" topic for the media if the number of casualties is large enough to be of interest. The following paragraphs provide a brief account of how national and international media reported some development-induced disasters. Even though this does not provide a complete account of the misery that vulnerable people face today, it emphasizes the importance of re-visiting modern development interventions to incorporate DRR.

The South Korean media criticized authorities after a mudslide caused havoc in southern Seoul killing approximately 59 people in July 2011. The media scrutinized unplanned construction in hilly areas that led to heavy deforestation as the cause of the destruction (Chan-Kyong, 2011; NewsFlavor, 2011). In March 2012, TVNZ reported a deadly landslide occurred in the mountains of Papua New Guinea, killing at least 25 locals. The report raised questions about the safety of excavations done by a major US oil company, Exxon Mobil. The landslide tore through a quarry used by Exxon in January creating suspicion about quarry activities (TVNZ, 2012).

Again, a number of examples can be seen in relation to the current trend of highway construction and new forms of vulnerabilities being created (Duryog Nivaran & Practical Action, 2008a; Miller, 2011). Today, highways have become a symbol of modern development in most low and middle-income countries. Governments maintain a high level of faith in their road networks as economic boosters in contemporary development models and invest large sums in highway development. A

major portion of these investments arrives as loans from bi-lateral or multi-lateral agencies. The social cost of these investments, however has frequently been overshadowed by government propaganda.

The 2006 floods in Colombo, Sri Lanka, which cut off the country's capital and its only international airport, created flood levels of 1-1.5 m over the A3 road and raised concerns over the Colombo Katunayake highway that was under construction. The media reported a similar level of rain in the area in 1992 and 2003. However, this was the first time the residents experienced a flood of such magnitude (Dissanayaike, 2006). A study of recent landslide activity in the Dominical–Uvita corridor on the Pacific Coast in Costa Rica, suggests that recent unchecked economic development activities are the major cause of increased landslides in the study areas (Miller, 2011).

The South Asia Disaster Report 2008 (Duryog Nivaran & Practical Action, 2008a) illustrates a number of such 'alleged' mal-development initiatives in the region that created problems for neighbouring communities. The 93 km Ahmedabad Vadodara Expressway in India was blamed for flooding in June 2005. The flood caused havoc in 600 villages within a 5 to 25 km range of the expressway, which had never experienced floods before. The Indian Rs. 6 billion (approx. 120 million USD) expressway is said to have blocked the natural drainage path of the low-lying areas (Duryog Nivaran & Practical Action, 2008a). Similar cases have been reported from Nepal, where road construction often exacerbates pre-existing slope instabilities resulting in the increased occurrence of landslides along road corridors (Duryog Nivaran & Practical Action, 2008a).

Ill-planned post-disaster recovery activities also lead to new forms of vulnerabilities. Benson & Twigg (2007) point to an example where a new aid-funded hospital has been re-constructed at the foot of a volcano in the Caribbean island of Montserrat after it was destroyed by Hurricane Hugo in 1989. This hospital was subsequently destroyed by pyroclastic flows of a volcano, which erupted in mid-1995.

Studies of development-induced displacement are also common. Even though these do not directly contribute to disaster mortality statistics, increased vulnerabilities of the affected communities cannot be simply neglected. In 1994, a study of World Bank-assisted development projects from 1986-1993 concluded that annually 4 million people associated with the hydropower sector and 6 million more people linked to transportation infrastructure projects are displaced worldwide (Robinson, 2003). Unfortunately, it is the disadvantaged segments of society that are most frequently subjected to these involuntary displacements creating suspicions about the equitable distribution of modern development risk. These segments are considered highly vulnerable to threats posed by environmental factors due to their social position, livelihood type and economic stability. In India, for example, a study calculated that out of 2 percent of the total population that had been displaced by development projects in the first 40 years of the country's independence, 40 percent were tribal

people. However, the tribal community is said to be only 8 percent of the total population of India (Robinson, 2003).

There are many media reports and in-depth studies about widely felt technological disasters such as Bopal, Chernobyl and Fukushima. The Bopal crisis in 1984 in India resulted in casualties of over 3,000 people due to a chemical gas leak (Sriramachari & Chandra, 1997). A similar disaster happened with the Chernobyl nuclear plant in Ukraine resulting in 125,000 deaths directly related to the crisis and leaving many thousand exposed to radiation in 1996 (Liberatore, 2013). These enormous human tragedies question not only the lack of risk assessment inbuilt in development processes and lack of preparedness for any failures but also to the poor accountability and transparency of the authorities. History repeats; the recent Fukushima nuclear disaster in Japan in 2011 (UNISDR, 2011) is very similar to the two previous cases. Even though the Great East Japan earthquake of magnitude 9.0 (World Nuclear Association, 2012) and the subsequent tsunami had triggered the Fukushima disaster, the main causes of the nuclear disaster are claimed to be lying in the institutional failures of political influence and industry-led regulation (Green Peace International, 2012). Green Peace International (2012, p. 1) concludes from its analysis that "It was a failure of human institutions to acknowledge real reactor risks, a failure to establish and enforce appropriate nuclear safety standards and a failure to ultimately protect the public and the environment". Therefore, in many respects, the Fukushima disaster is identical to Bopal and Chernobyl. The Fukushima disaster has also shocked the world, not only because it happened in one of the most developed countries, which is recognized as having high quality governance (The World Bank, 2014), but it also shows that we often fail to learn from past mistakes.

The above provides a partial account of development-induced disasters and the suffering of many millions of people, but the true suffering of the people involved is not captured by such simplistic facts. However, the examples are adequate to argue the importance of factoring disaster risk considerations into development planning at national, regional and local levels.

2.7 Governance (Risk): a cause and a remedy for development disasters

The role of governance in DRR is increasingly recognized, with the quality of governance being considered to have a direct bearing on why some countries have higher disaster losses than others (UNISDR, 2009b). The World Bank (2011) defines governance as "…traditions and institutions by which authority in a country is exercised". As per the World Bank, this also includes the process by which governments are selected, monitored and replaced. Although the World Bank's definition is biased towards the formal coercive power of governments, some literature focuses on both formal and informal arrangements through which decisions are made and implemented in order to advance social goals (Guarnacci, 2012; Ming'ate, Rennie, & Memon, 2014). However, the role of governments

in governance and their accountability towards protection of society and the environment is a fundamentally accepted norm today. In particular, the concern attached to bad governance is most often directed at governments (Roberts, Wright, & O'Neill, 2007).

Bad or poor governance includes practices such as corruption, manipulation of the media, disrespect for human rights, arbitrary application of the rule of law, actual or potential political instability, lack of transparency, insufficient information flows, lack of accountability and responsibility, and lack of stakeholder participation in decision making. Good governance is represented by the 'presence' of these elements in a society (Roberts et al., 2007). Access to information on disaster risk, particularly for the most vulnerable, is considered as the first step in effective DRR (UNISDR, 2011). However, countries with poor quality governance fail to exercise these fundamental responsibilities that lie at the centre of disaster resilience of any society.

Much research has shown a statistically positive correlation between levels of corruption and their significant impact on government efficiency and the rule of law, two key components of risk governance (e.g. Ambraseys, 2011; Anbarci, Escaleras, & Register, 2005; Escaleras, Anbarci, & Register, 2007). Ambraseys (2011) states that differences in death tolls in different countries in natural events, especially earthquakes, is not only because of lack of education, scientific knowledge or technological capability in the country concerned, but rather are the consequences of the corrupt use of scientific knowledge. In general, "…more democratic, accountable states with more effective institutions tend to suffer lower mortality" (UNSIDR, 2011: p 141).

Technological disasters caused by poor governance have been emphasized in the previous section, which reiterates the importance of the concept of governance in DRR. In other words, the way in which the society is governed has a direct bearing on the increased or decreased disaster risk of the people. This thinking has led to the development of a relatively new subject, 'risk governance'. Renn, Klinke & van Asselt (2011, p. 231) define risk governance as "…both the institutional structure and the policy process that guide and restrain collective activities of a group, society or international community to regulate, reduce or control risk problems". The International Risk Governance Council (IRGC) provides a broader perspective to risk governance. According to the IRGC (2008, p. 4) risk governance includes:

> *…the totality of actors, rules, conventions, processes and mechanisms and is concerned with how relevant risk information is collected, analysed and communicated, and how management decisions are taken. It applies the principles of good governance that include transparency, effectiveness and efficiency, accountability, strategic focus, sustainability, equity and fairness, respect for the rule of law and the need for the chosen solution to be politically and legally feasible as well as ethically and publicly acceptable.*

According to Renn & Graham (2005), risk governance involves the 'translation' of the ingredient and core principles of governance to the context of risk and risk-related decision-making. Therefore, both development planning and developmental control instruments such as environmental assessment should be conceptualized within the context of risk governance. According to Kakonge (1998), well-conceived EIAs should reflect many of the elements of good governance principles including transparency, sufficient information flows, accountability, responsibility, and stakeholder participation.

Over the last few decades, the previously dominant state-based 'top-down' governance model has been quietly replaced by diverse forms of collaborative management, partnership arrangements, delegated authority to decentralized institutions, and community management (Lockwood, 2010). Similarly, the handling of societal risk problems has been shifted from a state-centric mode to multi-strata governance systems, where the political authority for handling risk problems is distributed among decentralized institutions (Lidskog, Uggla, & Soneryd, 2011). The concept of risk governance, especially, demands bringing together a wide range of actors from regional to local level who have a role to play in risk related activities (Assmuth, Hildén, & Benighaus, 2010), including development planning.

The Worldwide Governance Indicators (WGI) programme was developed by a World Bank research project. It enables assessment of cross-country indicators of governance under six composite indicators. These indicators are: voice and accountability, political stability and absence of violence/terrorism, government effectiveness, regulatory quality, rule of law, and control of corruption (The World Bank, 2011). In addition, the European Commission (2001) identifies openness, participation, accountability, effectiveness and coherence as key good governance principles. In recognition of the importance of governance in DRR, the Hyogo Framework for Action (HFA), adopted at the World Conference on Disaster Reduction, held in Kobe, Japan, in 2005, listed governance as its first priority for action (UNISDR, 2005). In this priority for action, countries are expected to ensure that DRR is a national and a local priority with a strong institutional basis for implementation at all levels. This recognizes having national institutional and legislative frameworks for DRR, allocating resources to all levels and community participation in DRR. However, this does not explicitly cover most good governance principles listed above, which may have greatly reduced the effectiveness of such priorities.

2.8 Role of the international context in risk governance

Policies are increasingly being coordinated beyond the national level in contemporary societies. Internationally agreed principles, treaties, conventions, frameworks, norms and rules have an influence on national and subnational governments, domestic policies, civil societies, and economies

(Klinke, 2009). In the environmental paradigm alone, Bryner (2004) catalogues nearly 200 such international agreements. Although these environmental frameworks along with other economic instruments have successfully contributed to domestic institutional building, their contribution to sustainable economic development is disappointing (Bryner, 2004). Using empirical analyses of bi-lateral investment treaties that are increasingly being used by developing countries for economic development, Ginsburg (2005, p. 107) states, "…under some circumstances, international devices may be substitutes for local institutions and lead to reductions in governance quality".

The influence of multi-lateral aid on economic, social and environmental management policies in developing countries has been a hot topic for many scholars around the world for many years (Bornschier, Chase-Dunn, & Rubinson, 1978; Maizels & Nissanke, 1984; Ortolano & Shepherd, 1995; Shandra, Nobles, London, & Williamson, 2004; Shandra, Shircliff, & London, 2011). Some scholars argue multi-lateral and bi-lateral should not be considered equally because their motives and policies would be different (Alesina & Weder, 1999; Maizels & Nissanke, 1984). Maizels & Nissanke (1984) conclude that bi-lateral aid allocations for developing countries largely depend on donors' foreign economic, political and security interests, whereas multilateral aid is allocated chiefly on a recipient's need criteria. For instance, Chinese investment banks usually require that at least 50 percent of the procurement must come from China for any project implemented in the recipient country and Chinese contractors are required to be in charge of managing the projects, whereas World Bank funding is bound with conditions related to 'good governance and environmental protection' (Campbell, Wheeler, Attree, Butler, & Mariani, 2012). The commercial nature of bi-lateral funding is also evident in the interest rates of some bi-lateral donors. For example, Campbell et al. (2012) argue that some loans from Chinese investment banks to Sri Lanka have interest rates of 6-7 percent compared with the World Bank's loans 0.25-2 percent interest rates. However, some scholars are very critical also about World Bank funding. Woods (2000, p. 823) argues that the World Bank itself does not "…altogether live up to these [good governance and environmental protection] standards"; Ortolano & Shepherd (1995) and Rich (2013) argue that the World Bank was supporting projects with disastrous impacts on the environment in the late 1970s. However, most multi-lateral agencies, including the World Bank and the ADB, now require an EIA for projects they fund. In addition, there are many case studies and much literature relevant to the role of trans-national corporations in increasing the vulnerability of communities. Some example of these issues and problems have been highlighted elsewhere in this chapter.

Of many hundreds of international treaties and conventions related to environmental management, the Hyogo Framework for Action warrants special mention because it provides the only international framework for disaster risk management. In 2005, world leaders from 168 countries gathered at the World Conference on Disaster Reduction in Hyogo, Japan, and endorsed a global framework for DRR

(UNISDR, 2005) commonly known as the Hyogo Framework for Action (HFA). It expects "…the substantial reduction of disaster losses, in lives and in the social, economic and environmental assets of communities and countries" (UNISDR, 2005, p. 3). This is expected to be achieved through three strategic goals, five priorities for action and four cross cutting themes (Appendix A).

The United Nations International Strategy for Disaster Reduction (UNISDR) secretariat was established and made responsible for monitoring the progress of the HFA in action and providing technical assistance to governments to implement the HFA. The mid-term review of the HFA, conducted in 2011, states that significant progress is being made in the implementation of the Hyogo Framework for Action and that its principles have been firmly established and endorsed. However, the review also emphasizes some critical deficiencies in the process of implementation of the framework. As per the midterm review:

> *"…concerns remain about the lack of systematic multi-hazards risk assessments and early warning systems factoring in social and economic vulnerabilities; the integration of disaster risk reduction into sustainable development policies and planning at national and international level, and the still insufficient level of implementation of the Hyogo Framework for Action at the local level" (UNISDR, 2011, p. 10).*

Such deficiencies in practice risk the achievement of the expected outcome of the framework. UNISDR has conducted an online debate in parallel to the mid-term review in order to obtain views from a wider audience. This debate has included government officials, experts in the sector, academics and practitioners. Many argue that the voluntary nature of the framework has reduced its effectiveness, especially because of its inability to hold governments accountable for achieving DRR targets (UNISDR, 2010). Under the current system, member countries are expected to undertake biennial national progress reports (PreventionWeb, 2012). However, nearly half of the member countries have not adhered to these requirements (UNISDR, 2011). Even though many have shown their dissatisfaction about the voluntary nature of the HFA, Hunter (1998) argues that many contemporary environmental agreements have been designed in highly flexible approaches either as frameworks or protocols to ensure acceptance by a larger number of countries. According to Hunter, this approach provides countries much needed time to build domestic political support and capacity for stronger future actions.

2.9 EIA as a development control mechanism

As discussed earlier, development is not a risk neutral phenomenon; it either increases or decreases socio-environmental risks including disaster risks. Controlling new development interventions is therefore considered a crucial process within the development-planning paradigm to mitigate potentially negative consequences of development policies, programmes and projects. Assessing

potential risks of development initiatives, whether they are for residential, commercial or infrastructural purposes, and taking necessary measures to mitigate those risks can significantly improve the outcomes of such development projects for present and future generations. “Controlling the creation of new development areas and features, …can [also] help mitigate the potentially significant consequences from placing such developments too close to either natural and man-made hazard sources” (Barry, 2009, p. 261) and mitigate the negative impacts of such development. Evaluation of the probable risk of such development initiatives and factoring those risk considerations into planning and investment decisions are crucial to achieving this objective.

There is a variety of environmental and risk assessment tools being used in different contexts. Among these different tools, the oldest and most well established is Environmental Impact Assessment (EIA) (IAIA (International Association for Impact Assessment), 2009). EIA is now being practised in over 100 countries worldwide (Alshuwaikhat, 2005). Undertaking an EIA for development projects has been a lending condition of the World Bank’s loans since 1989 (Alshuwaikhat, 2005). This has also influenced the rapid spread of EIA, especially among developing nations. However, the genuine intention of implementing EIAs in these political contexts to mitigate unfavourable consequences of development projects is still a debated topic.

The IAIA (1999, p. 2) defines Environmental Impact Assessment as: “…the process of identifying, predicting, evaluating and mitigating the biophysical, social, and other relevant effects of development proposals prior to major decisions being taken and commitments made”. Morgan (1998) discusses the formal and informal aims of implementing the EIA process and identifies that the use of EIA in development control as one of its formal aims. According to Morgan (1998, p. 13), “…the essential purpose of the EIA is to identify proposals that will have unacceptable impacts on the environment, so that the impacts can be avoided or ameliorated by changes to the proposal… or proposal can be rejected”. IAIA (1999, p. 2) has identified four objectives of EIA:

- *To ensure that environmental considerations are explicitly addressed and incorporated into the development decision making process;*
- *To anticipate and avoid, minimize or offset the adverse significant biophysical, social and other relevant effects of development proposals;*
- *To protect the productivity and capacity of natural systems and the ecological processes which maintain their functions; and*
- *To promote development that is sustainable and optimizes resource use and management opportunities.*

In line with the above objectives, general steps in carrying out an EIA are more or less similar throughout the world (Saengsupavanich, 2012; Toro, Requena, & Zamorano, 2010). However, the details and relative importance of different steps of EIA procedures differ among countries and organizations (Harrop & Nixon, 1999). Figure 2.2 illustrates the general steps of the EIA process.

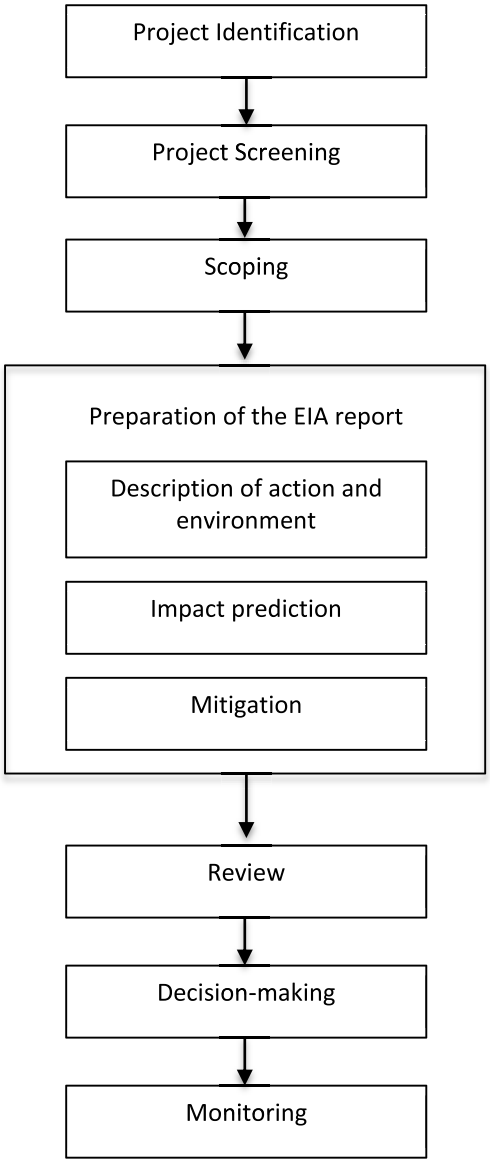

Figure 2.2 General steps of the EIA process (Based on Therivel & Morris (2009); Weston (1997); and C. Wood (1995))

2.9.1 Steps in the EIA process

The EIA process starts with the identification of a project idea or development activity by a developer. This also often includes examination of alternatives such as methods and location, as well as assessment of financial and technical feasibility (Weston, 1997). Once the development activity is identified, it is required to determine whether the activity requires an EIA report before approval is given. This process is known as project screening. According to C. Wood (1995), project screening is

often undertaken either based on a list of actions that should require EIAs for approval or based on the discretionary determination of relevant authorities.

In scoping, the range of project related issues that should be addressed in the EIA report is determined. Scoping enables the narrowing down of the scope of the EIA report to the most significant issues and eliminating unrelated issues (Weston, 1997; C. Wood, 1995). This process, therefore, results in more focused EIA reports and increases the effectiveness and efficiency of the EIA process.

Once the scope of the EIA report is determined, the report is then prepared documenting the findings related to impact prediction and mitigation measures. Impact prediction includes evaluation and assessment of the significant impacts using either qualitative or quantitative methodologies or both. According to Therivel & Morris (2009), impact prediction should include direct, indirect and cumulative impacts as well as both positive and negative impacts. Impact prediction starts with a description of the existing environment, listing it as the baseline condition. Then it is possible to assess key environmental changes that may arise in the absence of the project and if the proposed project were implemented. Once the significance of impacts is assessed, then mitigation measures can be identified to "…avoid, minimize, remedy or compensate (in that sequence)" (Therivel & Morris, 2009, p. 9) negative impacts.

During the 'review' stage, the decision-making authority together with the public and interested groups reviews the EIA report to assess the quality of the report, the methodologies adopted, key findings and recommended mitigation measures (Therivel & Morris, 2009). According to C. Wood (1995), this is the only stage where public participation is formally required in most EIA systems. Once the grievances and comments from the public and other interested parties are heard and addressed, the relevant decision-making body makes its decision on project approval. However, it is clear from the literature that the weight given to the EIA report in the final decision depends considerably "…on the jurisdiction, the particular proposal and the degree of political interest surrounding the development in question" (Harvey & Clarke, 2012, p. 6). Finally, the environmental impacts of the approved project are monitored; this is done either by the project approval agency, the developer or both.

2.9.2 Emerging challenges of the EIA process

The successful enactment of EIA guidelines and legislation in many developing countries does not necessarily mean EIA is being implemented successfully. "In many cases, EIA has not been effective due to legislation, organizational capacity, training, environmental information, participation, diffusion of experience, donor policy and political will" (Alshuwaikhat, 2005, p. 308), all of which are

integral parts of risk governance in relevant political contexts. Alshuwaikhat (2005) further elaborates that, in many Asian countries, including Sri Lanka, EIA was introduced because of the influence of lending and grant-issuing conditions of multi-lateral funding agencies such as the World Bank, but with insufficient staffing, experience and monitoring, with evaluation inadequacies and even without enough baseline data. Therefore, in such contexts, EIAs are conducted only because they are required by government legislation and donor agencies and, as a tool to justify projects rather than using it as a means to derive the best decision (Momtaz, 2002; Ortolano & Shepherd, 1995).

Moreover, EIA itself has some deficiencies. Mulvihill & Ali (2007) conclude that conventional approaches to EIA and planning are characteristically deficient in addressing the full range of impacts and risks. Further, many scholars argue that the vulnerability of the affected groups and social impacts are not adequately addressed in conventional EIA processes. Modak & Biswas (1999) assert that EIA is most often biased towards physical and biological impacts whereas social and cultural impacts are given less prominence. They claim this is an unfortunate bias since sociocultural impacts are ones that would affect the local community in their everyday life. Modak & Biswas argue for proper integration of socio-cultural impacts in the EIA process. An initial review of literature revealed a number of independent attempts and concepts presented to strengthen EIA by incorporating different dimensions such as social impact, cultural impact, gender dimensions, and risk assessment, but in a fragmented manner.

Among these, risk assessment has been widely discussed by many scholars including Andrews (1988), Brockie (1994), Contini & Servida (1992), Harrop & Nixon (1999), Morgan (1998), and Ortolano & Shepherd (1995). Those authors note that the concept of risk is an important dimension in EIA. Morgan (1998, p. 41) asserts, "…strictly speaking, all EIA is about assessing risk...". He defines risk assessment as a study of particular risks to human health and safety associated with planned development projects especially under abnormal circumstances such as design failures. Both Morgan and Andrews recognize that EIA and risk assessment sometimes have fuzzy boundaries and overlapping procedures. However, unlike EIA, risk assessment is not generally a mandatory requirement (Andrews, 1988). Another version of risk assessment, hazard assessment, "…requires consideration of the possibility of natural hazards disrupting a project with attendant catastrophic consequences" (Morgan, 1998, p. 41). Again, this is considered as an abnormal condition not because of design failure but due to natural events. However, both risk assessment and hazard assessment in this perspective look at the physical impacts on project employees and neighbouring communities and do not suggest an in-depth investigation into the specific vulnerabilities of the communities.

Vanclay (2003) notes that social impacts of development projects are much broader than the limited aspects normally considered in EIAs (such as demographic changes, job issues, financial security, and impacts on family life). He proposes employing Social Impact Assessment (SIA) complementarily with EIA to cover the evaluation of all impacts on humans and their interaction with socio-cultural, economic and biophysical surroundings. Vanclay (2003, p. 7) further adds:

> *SIA thus has strong links with a wide range of specialist sub-fields involved in the assessment of areas such as: aesthetic impacts (landscape analysis); archaeological and cultural heritage impacts (both tangible and non-tangible); community impacts; cultural impacts; demographic impacts; development impacts; economic and fiscal impacts; gender impacts; health and mental health impacts; impacts on indigenous rights; infrastructural impacts, institutional impacts; leisure and tourism impacts; political impacts (human rights, governance, democratization etc.); poverty; psycho- logical impacts; resource issues (access and owner- ship of resources); impacts on social and human capital; and other impacts on societies.*

The above definition covers most dimensions of vulnerability listed by Aysan (1993). The idea of the integration of social impacts has been further elaborated by the scholarly work of Kværnera et al. (2006) and Toro et al. (2011) who propose addressing the socio-cultural impacts of development planning through vulnerability assessment. Kværnera et al. (2006) suggest that the term vulnerability is superficially addressed in EIA. Referring to experience in Norway, they instead propose including vulnerability within the Integrated Vulnerability Model, which emphasizes environmental vulnerability and alternative development in the early stages of EIA.

The capability of the EIA process to assess the potential disaster risk generated from development projects has been a subject of discussion among development agencies since the early 2000s. UNDP's publication 'Reducing Disaster Risk: A Challenge for Development' (2004), which was a pioneering work on this aspect, highlights the importance of making DRR explicit in planning a development to ensure a broad participatory decision making process that is helpful in dealing with disaster risk. The report claims that "…environmental impact assessment should be extended to include a risk analysis component" (2004, p. 104). Despite the frequent calls and emerging interest in the usage of EIA to tackle development-induced disasters, the effectiveness of EIA in addressing development-induced disaster risk is yet to be fully realized. Nevertheless, there are some notable initiatives that address disaster risk in the EIA process. Among these, the Caribbean Development Bank's approach to incorporate Natural Hazard Impact Assessment into EIA (Caribbean Development Bank (CDB), 2004) can be viewed as a much clearer approach with readily available supporting information.

The CDB (2004), in its source book on 'the integration of natural hazards into the EIA process' identifies and explains a methodology to adjust the EIA process to address the problems stated above (Figure 2.3). The methodology proposes assessing both hazard risk and vulnerability as a part

of the screening and scoping of the environmental effects. The methodology was recommended by the CDB to all Caribbean nations.

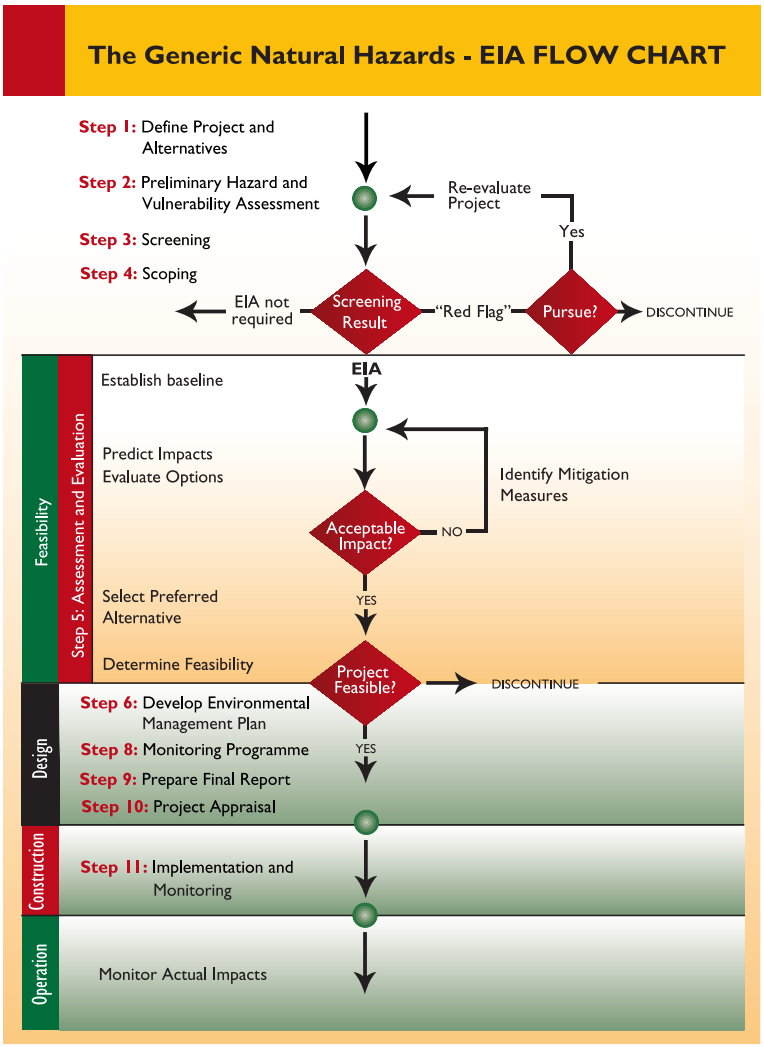

Figure 2.3 The adjusted EIA process of the CDB (Source: CDB (2004, p. 9))

The CDB (2004) also highlights that assessing the impacts of natural hazards was not a part of the EIA system in the Caribbean region by 2003. Nevertheless, Davidson (2009) asserts that identification and assessment of natural hazard risk is required in the current EIA system in Jamaica. It is, however, unclear to what extent the CDB's proposed methodology has contributed to addressing disaster risks of development projects because of the lack of any independent evaluation of the proposed methodology.

2.10 Assessing the effectiveness of the EIA

Performance evaluation of environmental assessment has been considered as one of the most crucial components of any environmental assessment system (Sadler, 1996). There is also increasing attention among scholars and practitioners on the impacts of impact assessments (Cashmore, Bond,

& Sadler, 2009). This has led to establishment of a substantial body of literature in the area of effectiveness evaluation. As Cashmore et al. (2009, p. 91) note, these cover a broad range of concerns including "…the impact of impact assessments" on decision making as well as conditions that influence the effectiveness of such instruments in different political contexts.

Performance evaluation of EIA has also been considered as "…one of the most difficult to conceptualize and least explored empirically" (Wang, Bai, Liu, & Xu, 2012, p. 413). Many argue that assessing effectiveness of impact assessment tools, especially environmental impact assessment, is problematic (Cashmore, Gwilliam, Morgan, Cobb, & Bond, 2004; Cashmore, Richardson, Hilding-Ryedvik, & Emmelin, 2010; Retief, Jones, & Jay, 2008; Wang et al., 2012). They argue that evaluating the effectiveness of environmental assessment systems is difficult since it is unlikely that a control is available against which to compare the implementation of the tool, and it is not possible to judge likely impacts in the absence of the tool. Referring to the effectiveness of strategic environment systems, Wang et al. (2012, p. 413) point out two main challenges: "…the identification and formulation of indicators", and "…finding ways and methods to quantify and measure conformance to the indicators". C. Wood (1995) asserts that there is not a reliable quantification approach for the effectiveness of EIA and such an assessment would be impractical in many aspects. Quoting Bartlett & Baber (1989), C. Wood (1995, p. 9) further argues that it may be more desirable and feasible to assess the effectiveness of the EIA based on the attitudes and opinions of those directly involved with the EIA system. Supporting this, Wang et al. (2012) suggest that qualitative and semi-quantitative methods are usually employed in performance evaluation of environmental assessments.

Evaluation studies undertaken by academic and regulatory bodies in various political contexts have included examination of individual environmental assessment cases and of elements of EIA procedures (Jay, Jones, Slinn, & Wood, 2007; Wang et al., 2012). There are also comparative reviews of EIA systems (Ahmad & Wood, 2002; El-Fadl & El-Fadel, 2004; Marara et al., 2011; C. Wood, 1995). These comparative studies and a number of other performance evaluations have mostly investigated the procedural requirements of EIA (Jay et al., 2007). However, as Jay et al. (2007) describe, there is increasing attention placed upon evaluating EIA according to more substantive criteria, which is the primary concern of investors and planners.

Sadler (1996, p.37), in his landmark research the 'International study of the effectiveness of environment assessment', defines effectiveness as "…how well something works or whether it works as intended and meets the purposes for which it is designed". Sadler (1996, p. 39) identifies three types of effectiveness:

- *Procedural: does the EA process conform to established provisions and principles?*
- *Substantive: does the EA process achieve the objectives set, e.g., support well-informed decision-making and result in environmental protection? and*
- *Transactive: does the EA process deliver the outcome at least cost in the minimum time possible, i.e., is it effective and efficient?*

Using a triangulation process to evaluate overall effectiveness, Sadler schematically illustrates the links of the three types of effectiveness in the evaluation cycle (see Figure 2.4). The focus is to relate policy to practice to performance and relate the implications of performance back to policy adjustments and process development (Baker & McLelland, 2003). Sadler's effectiveness triangle suggests general performance of the EIA process although its applicability to explain a specific aspect of EIA process (e.g., addressing disaster risk) has not been researched yet.

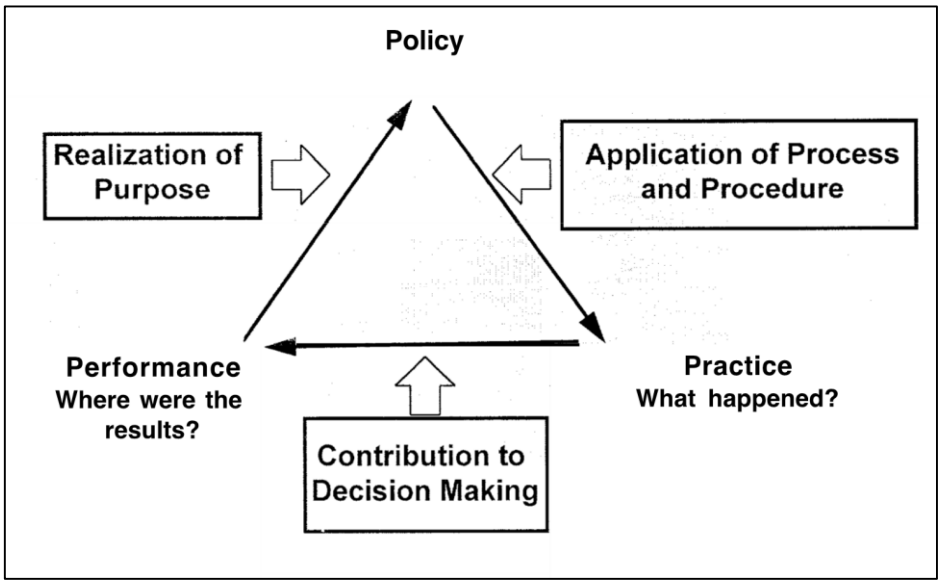

Figure 2.4 Effectiveness triangle (Sadler, 1996, p. 40)

Following Sadler's 1996 study, many scholars have included one or more indicators related to procedural effectiveness in their research (e.g., Ahmad & Wood, 2002; Baker & McLelland, 2003; Boyle, 1998; Gallardo & Bond, 2011; Marara et al., 2011; Noble, 2009; Pölönen, Hokkanen, & Jalava, 2011; Sadler, 1996; Wang et al., 2012; C. Wood, 1995), thus procedural effectiveness is the most commonly addressed dimension of effectiveness. However, despite the growing interest in substantive effectiveness, it is the least-researched type of effectiveness among the different types of effectiveness (Cashmore et al., 2004; Jay et al., 2007; Theophilou, Bond, & Cashmore, 2010).

Baker & McLelland (2003, p. 584) later add the normative dimension, which they define as "…the extent to which the policy achieves the normative goals, which are represented by the purpose(s) of

the policy". Here, 'sustainable development' or 'a fair and equitable process' is considered the normative goal of EIA policy. Sadler (1996, p. 229) points out that "…emerging policy and institutional realities and broad societal changes are quickly reshaping the world in which EA operates". He further argues that these changes in the context carry profound implications for EIA practice. This idea has further been developed by other scholars such as Bina (2008), Bina et al. (2011), Hilding-Rydevik & Bjarnadóttir (2007), Runhaar & Drissen (2007) and Wang et al. (2012) into a new type of effectiveness, described by them as contextual effectiveness.

Wang et al. (2012) argue that every environmental assessment system operates within a political, legal and administrative context, and the effectiveness of such systems depends on the context within which environmental assessment legislation and guidelines are understood and implemented. They further argue that the legal, administrative, political and cultural circumstances influence the participants involved, the EIA process, the EIA outcomes and the decision to conduct an EIA. The elements of context vary from national policy style, characteristics of the planning agency, planning style and political commitment to sustainable development, professional skill and learning motivation (Hilding-Rydevik & Bjarnadóttir, 2007). Meanwhile, other scholars identify environmental governance and accountability as elements of the context (Bina, 2008; George, 1999; Hilding-Rydevik & Bjarnadóttir, 2007; Noble, 2009; Nykvist & Nilsson, 2009; Runhaar & Driessen, 2007; Wang et al., 2012). In this context, Hilding-Rydevik & Bjarnadóttir (2007) claim that the elements of context should be defined in relation to the question concerned. They further argue that "…the elements of context are 'context' dependent" (Hilding-Rydevik & Bjarnadóttir, 2007, p. 674). Therefore, the plurality in definitions of effectiveness and the interchangeable manner of the terms used is common in the evaluation studies. As Cashmore et al. (2004) argue, this plurality requires a clear statement of the researcher's interpretations of effectiveness in evaluative research. Given the possible importance of contextual matters, such as the quality of governance, in decisions on developments, an evaluation of contextual effectiveness as well as the procedural and substantive effectiveness of EIA is critical in understanding the performance of the EIA process in addressing disaster risk. This research thus investigates procedural, substantive and contextual effectiveness.

2.10.1 Procedural effectiveness

Sadler defines procedural effectiveness as whether the environmental assessment conforms to the "…established provisions and principles" (Sadler, 1996, p. 39). For example, how an EIA process works from a procedural aspect is the extent to which it meets accepted principles such as clearly defined objectives, provision of support and guidance, application to socio-economic effects and provision for monitoring (Wang et al., 2012). Bina et al. (2011, p. 573) argue that there is a "…significant overlap between the idea of good practice and effectiveness". As discussed earlier, this

is the most widely researched dimension of evaluation studies and a number of indicators have been used in such studies. Ahmed & Wood (2002), Baker & MacLelland (2003), Boyle (1998), Gallardo & Bond (2001), Marara et al. (2010), Noble (2008), Pölönen et al. (2011), Sadler (1996), Wang et al. (2012), and C. Wood (1995) all used one or several indicators for procedural effectiveness in their studies. Consistent with the above studies, this research investigates the legal basis for EIA processes and the procedural guidance available for the implementation of EIA legislation under procedural effectiveness in selected countries.

2.10.2 Substantive effectiveness

Wang et al. (2012) assert that, traditionally, a core question of evaluation studies has been whether the impact assessment instrument meets the purpose for which it is designed. Sadler (1996) describes this aspect of performance evaluation as substantive effectiveness, which he clarifies as being whether "…the EA [environmental assessment] process achieve[s] the objectives set, e.g. support well-informed decision-making and result in environmental protection?"(Sadler, 1996, p. 39). As Baker & McLelland (2003) argue, substantive effect leads to policy adjustments to improve the meeting of objectives by future application of environmental assessment. For instance, future EIAs can be adjusted to meet a particular objective (for example, reducing disaster risk), if that objective is not satisfactorily being achieved in the EIAs under scrutiny. Furthermore, Pölönen et al. (2011) argue that substantive effectiveness cannot be achieved unless clear procedural guidance is available on how the EIA findings should be linked to decision-making processes of development planning.

Nevertheless, most effectiveness researchers have overwhelmingly focused on procedural aspects and therefore little is known about substantive effectiveness (Cashmore et al., 2004). This is also because of the difficulties in empirically exploring substantive effect (Jay et al., 2007) and the plurality in interpretation of the objectives of EIAs (Cashmore et al., 2004). As Cashmore et al. (2004, p. 307) conclude "It is, furthermore, evident that the precise purposes of this decision tool have been interpreted in different ways, in part due to the diversity of scientific disciplines EIA encompasses and the changing nature of the human–environment relationship". This research investigates level of assessment and decision-making process in EIA processes of selected countries as part of substantive effectiveness.

2.10.3 Contextual effectiveness

Performance evaluation of EIA systems based on the above dimensions, i.e., procedural, substantive, transactive and normative effectiveness, is described by Runhaar & Driessen (2007) as 'direct effectiveness'. Runhaar & Driessen (2007, p. 3) conclude that "…conformities of formal decisions with

the assessment report; changes in decision-makers' understanding or awareness of environmental and sustainability issues; changes in the extent to which such issues are considered in decision-making" all are direct impacts of environmental assessments.

However, a number of scholars argue that such direct impacts are influenced and constrained by many contextual factors, which they call 'indirect effectiveness' (Bina, 2008; Bina et al., 2011; Boyle, 1998; Hilding-Rydevik & Bjarnadóttir, 2007; Nykvist & Nilsson, 2009; Runhaar & Driessen, 2007). According to Bina (2008, p. 719) "…the persistent failure of planning and decision-making to deliver environmentally sustainable development is closely linked to the limited environmental governance capacity of the machinery of government". Nykvist & Nilsson (2009, p. 15) in their study on the impact assessment system and sustainable development in Sweden conclude by noting "…to enhance the potential for integrating sustainability concerns, it seems less fruitful to develop more advanced and complex assessment frameworks and models than strengthening institutional arenas for social learning".

Types of effectiveness have also been used in the literature in an interchangeable manner. Bina (2008), Bina et al. (2011) and Wang et al. (2012) describe indirect effectiveness as incremental effectiveness. However, Bina (2008) and Bina et al. (2011) use the term incremental to explain both contextual aspects and governance capacity, but Wang et al. (2012) treat the two separately, categorising indirect effectiveness into contextual effectiveness and incremental effectiveness. Hilding-Rydevik & Bjarnadóttir (2007) and Marara et al. (2011) describe indirect effectiveness as contextual effectiveness. Meanwhile, Fuller (1999) describes two different categories required for effective EIA. They are systemic measures and foundation measures. He defines systemic measures as "…features within the EIA system to ensure quality of the EIA process"; foundation measures are defined as "…features which promote good practice and underpin the successful application of the systemic approaches" (Fuller, 1999, p. 56). Fuller further scrutinizes this dimension and notes that foundation measures promote good practice and successful application of the EIA process. Here, Fuller states guidelines, training and capacity building and professional recognition as foundation measures, which is consistent with Bina's (2008) incremental effectiveness criteria. However, in reviewing the literature, it is clear that criteria described under both incremental and contextual effectiveness are considered together in global governance indices (e.g., the Worldwide Governance Index of the World Bank). Consistent with Bina (2008), Bina et al. (2011) and Hilding-Rydevik & Bjarnadóttir (2007), this research considers both incremental and contextual aspects under contextual effectiveness.

2.11 Setting up a conceptual framework: the disaster risk incubation model

This section summarises the different concepts discussed in this chapter and synthesises a conceptual model to show the inter-linkages among the concepts. Disasters occur when vulnerable people interact with hazards and suffer exceptional, non-routine, levels of disruption and losses that exceed their capacity to recover. Therefore, disaster risk is a result of hazards and vulnerability. Though natural processes are responsible for many hazards, mal-development leads to increased vulnerability and hazards risk. As highlighted in the review of relevant literature, contemporary development projects and programmes are responsible for shaping and reshaping of hazards and vulnerabilities in many parts of the world, especially in developing countries. For instance, a flood bund intended to reduce the flood risk of one community can significantly shift away the flood hazard risk from the targeted community but can create new risk in another geographical location. Moreover, displacing communities from their traditional grounds, destruction of livelihoods, increased poverty, weakened infrastructures, etc., are all deep rooted with mal-development that, in turn, increases the vulnerability of communities.

Disasters resulting from the above situations, in turn, can destroy hard earned economic and social development achieved by a society (i.e., vital infrastructure, market links, etc.). Development control instruments, such as EIA, are now being closely associated with development planning in many countries and are expected to reduce or prevent those negative consequences. Nevertheless, a close examination of the EIA process and contemporary development planning reveals that disaster risk is given marginal focus and has received diluted attention among other different environmental goals.

In addition, vulnerability is a product of existing or prevailing international and domestic governance contexts that marginalize some segments of the community and limit their capacity to withstand the environmental and economic stresses they encounter. While internationally driven liberal trade policies, multi-national corporations, bi and multi-lateral trade agreements are responsible for reducing the competitiveness of local businesses and natural resource dependent livelihoods (Grinspun, 2003), environmental and disaster management treaties and frameworks such as the HFA promote the DRR capacity of member countries. On the other hand, international lending agencies such as the World Bank and the ADB, which finance most of the development projects in developing countries, enforce different conditions that influence risk reduction. They demand establishing or re-establishing good domestic governance and executing EIA for development projects if the pledged funds for development projects are to be released. Although these conditions have been incapable of shaping the domestic governance context to a significant level, such conditions have at least made some contribution to the integration of the environmental dimension into development planning. In

contrast, changes in global financial power also have an influence on domestic governance systems especially in countries with poor governance records (Campbell et al., 2012).

Furthermore, the national governance system is responsible for determining access to natural resources, information (including early warning), decision-making, education and health facilities, etc., which are all closely associated with vulnerability. Vulnerability is mostly characterized by a lack of those facilities and denied access. Therefore, disaster risk is a direct outcome of mal-development and poor or bad governance.

Turner (1976, p. 381) presents the notion of disaster incubation. Building on the sequence of events associated with an accident, he reasons that there is an incubation period whereby there is "…the accumulation of an unnoticed set of events" before a disaster strikes. According to Mulvihill & Ali (2007), the concept of disaster incubation has later been applied by several authors to natural disasters:

> *…for example in the case of Hurricane Katrina in 2005 ([Bakker, 2005], [Rydin, 2006] and [Seager, 2006]) and the 1995 Chicago heat wave (Klinenberg, 1999), in which analysts have noted that particular social groupings, such as poor African-Americans and women, were particularly vulnerable to the impacts of the "natural" agents because of land use and political decisions which put the particular groups in harms way (Mulvihill & Ali, 2007, p. 345)*

It is argued here that the same concept can be applied to this research and Figure 2.5 illustrates the inter-linkages between the different concepts discussed in this chapter and shows how disaster risk is being incubated by mal-development and poor governance through a process of the accumulation of hazard risk and increased vulnerability. It is understood that development actions create or reshape hazards and vulnerability, which leads to increased disaster risk (Table 2.2).

Such disaster risk, in turn, affects development projects as well as jeopardising the development goals. In addition, while anthropogenic climate change poses greater threats of increased hazard risk, bad governance from both domestic and international mechanisms threatens to increase vulnerability of people in fragile environments. So, these processes incubate the level of disaster risk potential of vulnerable populations around the world. In order to avoid such negative consequences, development planning in most countries is also associated with environmental planning and an EIA is required before project approval. In this research, the EIA is identified as the best placed risk governance tool to assess hazard risk and vulnerability of affected people and to propose mitigation methods, which then can be absorbed by the development project. If this process is effectively done, development projects would not induce any more hazard risk or increase the vulnerability of people. However, this risk governance process cannot take place in isolation.

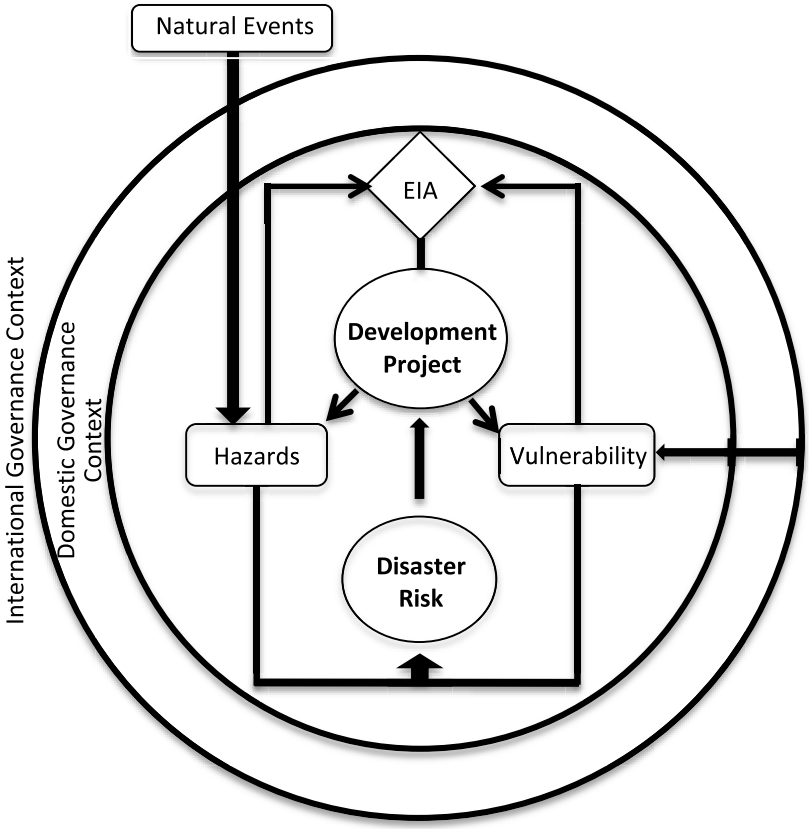

Figure 2.5 Disaster Risk Incubation Model

The shape of development projects and the way in which the EIAs are done, all depend on broader domestic and international contexts. Organizational capacity, domestic social and political culture and international conventions all affect how EIA is undertaken and how development projects are planned and implemented. The model proposed here, built on the above discussion, provides the conceptual framework for this research and will be re-visited in Chapter 8 based on the findings of the two researched countries. The next chapter presents the methodology used to examine the model in context.

Chapter 3

Research Methodology

3.1 Introduction

This chapter outlines the research methodology and research methods adopted in this study in order to address the four research questions presented in Chapter 1. The chapter starts with a discussion of the research methodology, provides a justification and maps the selected approach. The chapter also describes the identification and formulation of a set of evaluation criteria to assess the effectiveness of the EIA processes of selected countries before discussing and justifying the selection of countries for comparative review, the selection of projects and data collection methods, including sampling techniques. Finally, the limitations encountered in the research and the strategies used to overcome such limitations are presented.

3.2 Methodology

The research methodology justifies, guides and evaluates the methods used in data collection and analysis (Petty, Thomson, & Stew, 2012a). According to Sarantakos (2005, p. 30), the methodology is "…a research strategy that translates ontological and epistemological principles into guidelines that show how the research is to be conducted". Scholars hold differing views on the types of research methodologies commonly used. For instance, Sarantakos (2005) identifies qualitative, quantitative and mixed methodologies consistent with the gathering of research data as research methodologies, whereas Petty et al. (2012b) recognize case study, grounded theory, ethnography, phenomenology, and narrative as research methodologies. Scholz & Tietje (2002) also consider a case study as a research methodology. However, according to Sarantakos, a case study is neither a methodology nor a data collection method, but a field research design. It is therefore important to develop a clear position on the methodology adopted at the beginning of the research. This research adopts the classification provided by Sarankatos (2005); the methodology adopted in this research can be classified as a qualitative research methodology.

Most effectiveness research reviewed in Chapter 2 used a qualitative methodology (Baker & McLelland, 2003; Bina, 2008; Fischer & Gazzola, 2006; Theophilou et al., 2010; Wang et al., 2012; C. Wood, 1995). Thus, this research does not differ from the research reviewed in Chapter 2 in terms of the adopted research methodology. Many scholars argue that evaluating the effectiveness of an environmental assessment system is difficult since it is unlikely that a control is available against which to compare the implementation of the tool, and it is also not possible to judge likely impacts in the absence of the tool (Cashmore et al., 2004; Cashmore et al., 2010; Retief et al., 2008; Wang et al.,

2012). Therefore, much of the discourse about the effectiveness of the EIA system focuses on the factors that can be advanced to explain '*why'* an EIA system is effective, and on *'how'* EIA can be improved (C. Wood, 1995). According to social scientists, *why* and *how* forms of research questions do not require quantification but require more emphasis on the study of phenomena (Lapan, Quartaroli, & Riemer, 2012; Sarantakos, 2005). Therefore, qualitative research methodology is appropriate in such contexts as it is for this study.

This study was conducted as a cross-country comparison. There are several cross-country comparative reviews of environmental assessment systems available in the literature including Ahmad & Wood (2002), El-Fadi & El-Fadel (2004), Marara et al. (2011), Sadler (1996) and C. Wood (1995). According to C. Wood (1995), a comparative review of EIA systems enables one to explain their nature much more clearly than by studying the system in a single jurisdiction and also enables better understanding of the practice of the EIA system.

Despite its strength, qualitative methodology has a number of limitations (Petty et al., 2012b; Sarantakos, 2005). Subjectivity of the data and questions of validity and reliability are acknowledged weaknesses of qualitative methodology (Sarantakos, 2005). These weaknesses can be addressed by triangulation of data drawn from different sources, from different places or from different people and through methodological triangulation, which involves using different methods of data collection (Flick, 2004). In this study, methodological triangulation methods as well as multiple sources were used to overcome the above challenges in using qualitative methodology.

3.3 Rationale for the research methods

This section identifies and justifies the different research methods used at each stage of the study. The section first outlines and explains a research concept map for the study, which demonstrates the conceptualization of the research methodology and then discusses different types of research methods used in different stages of the study. According to Schensul (2012), a research conceptual map is a theoretical starting point that provides a conceptual direction for a study (Figure 3.1). As in Figure 3.1, the research has three distinct stages. Stage 1 involved reviewing the literature and developing the research methodology and is reported in chapters 2 and 3 of this thesis, respectively. The literature reviewed covered DRR, EIA, and governance and concluded by presenting the disaster risk incubation model that demonstrates the inter-linkages among the above concepts. The literature review also included identifying and finalizing the evaluation criteria and associated information requirements, including the selection of countries and projects.

Stage 2 involved a field study to collect data using qualitative research methods. Collected data were analysed using text analysis methods; the analysis is reported in chapters 5 and 6. The rationale for

selecting text analysis for data analysis is discussed in section 3.7. In stage 3, a comparative analysis was conducted using the findings from the two countries and the disaster risk incubation model was revisited. Finally, conclusions were derived on the effectiveness of the EIA processes in addressing disaster risk. These are presented in chapters 7 and 8.

The research questions set out in Chapter 1 required exploring the views and experience of participants and triangulation of those with documentary and field evidence. Therefore, it was necessary to discover rather than test variables and qualitative research methods were preferred for data collection in the field. Data collection in Stage 2 adopted four main qualitative methods:

1. qualitative interviews,
2. focus group discussions (FGDs),
3. document analysis, and
4. field observations.

Following Bartlett & Baber (1989), C. Wood (1995) argues for assessing the effectiveness of EIA based on the attitudes and opinions of those directly involved with the EIA system. Interviews with key selected interviewees involved in the EIA systems were used as the primary method of data collection. Interviews were considered appropriate for the field study considering the exploratory nature of the research and the ability of the method for in-depth probing into matters. According to Sarantakos (2005), the interview method allows the handling of complex questions and provides an opportunity for observing the non-verbal behaviour of the interviewees.

The interview method in this study is required to generate relevant and in-depth views of the interviewees. Therefore, a semi-structured interview based on the evaluation criteria was preferred over a structured questionnaire or unstructured interviews. Semi-structured interviews enable questions to be simplified based on the context including the background of respondents, which allows optimal communication (Alasuutari, Bickman, & Brannen, 2008; de Leeuw, 2008). The selected method also enabled further probing if the answer of the interviewee did not sufficiently address the question. In order to triangulate data, interviews were conducted with EIA experts, planners and community members in project-affected areas.

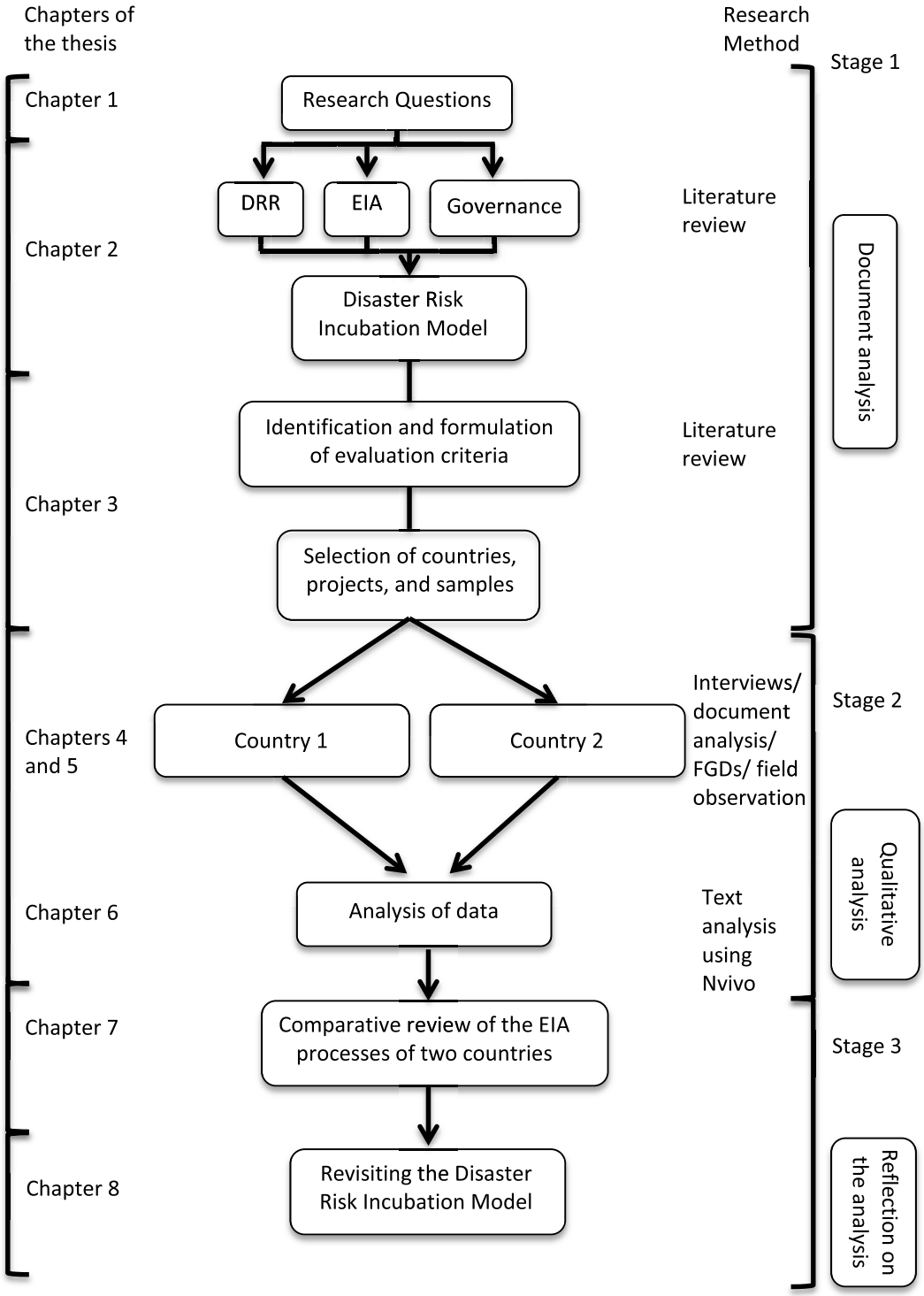

Figure 3.1 Research concept map

The last three methods (i.e., focus group discussions (FGDs), field observation and document analysis) were used for methodological triangulation of data. FGDs were held with selected community members in Sri Lanka. FGDs were selected as a field research method because group discussions provided a comfortable setting for the interviewees to express their views freely because of the peer support. FGDs were considered appropriate as most project-affected people are from

powerless groups and they mostly expressed more freely in group interviews. This enabled a broader picture on community members' views on the project and its impacts to be gained. FDGs also enabled identification of important aspects that required further probing in qualitative interviews and also the identification of key informants for qualitative interviews.

It was important to add field observation as a field research method in Sri Lanka to examine and triangulate points raised in interviews and FGDs. Observations also gave more insights to facilitate FGDs and enquire more fully during qualitative interviews. According to Yin (2011, p. 143), field observation is an "…invaluable way" of collecting primary data, because the method gives an opportunity to the researcher to see the matter of interest with his own eyes. Finally, document analysis was used as a research method to triangulate primary data collected from the above methods. Section 3.7.4 provides a list of the documents analyzed in the research. These documents contain useful information for this research, especially to triangulate against data gathered from qualitative interviews.

It was also necessary to relate the interview questions to a real life experience in order to get a meaningful picture of how the EIA is being practised in the two countries. This was especially important in evaluating criteria relevant to procedural and substantive effectiveness. For this purpose, recently conducted or approved projects from Sri Lanka and New Zealand were selected for study. The selection of projects for case study analysis is discussed in section 3.5.

3.4 Identification and formulation of evaluation criteria

As argued in section 2.10, following the landmark study carried out by Sadler in 1996, there has been increased attention on the impacts of impact assessments (Cashmore et al., 2009). This has resulted in a substantial body of literature in the area of effectiveness evaluation.

Scholarly work on evaluating the effectiveness of different impact assessment tools (e.g., EIA, risk assessment, strategic environmental assessment, and social impact assessment) and agency documents (e.g., the Caribbean Development Bank, UNISDR) on DRR and environmental management were reviewed. It is clear from the literature review that scholarly work on effectiveness research has two major challenges. One is to identify and formulate evaluation criteria (Wang et al., 2012); the second is to identify the types of effectiveness dimensions to be investigated (Pölönen et al., 2011; Sadler, 1996). Pölönen et al. (2011, p. 122) argue that determining the actual effectiveness of EIA is extremely difficult; instead, they investigate the mechanism behind "…the factors which make the instrument either more or less effective as a preventive and participatory environmental management tool".

As argued in Chapter 2, different scholars have focused on different effectiveness dimensions in their effectiveness evaluations. For instance, Sadler (1996) worked on procedural, substantive, and transactive dimensions. Cashmore et al. (2004), Jay et al. (2007) and Theophilou et al. (2010) more specifically investigate the substantive effectiveness of EIA, whereas Baker & McLelland (2003) look at the normative dimension. Later, Bina (2008), Bina et al. (2011), Hilding-Rydevik & Bjarnadóttir (2007), Runhaar & Drissen (2007) and Wang et al. (2012) add contextual effectiveness. However, Fuller (1999) uses two categories: systemic and fundamental (Chapter 2). Though C. Wood (1995) does not differentiate the criteria into different categories or dimensions, Ahmad & Wood (2002) later followed Fuller's (1999) categories. The main weakness of Fuller's categorisation is that both substantive and procedural effectiveness are combined into one category. However, a review of relevant literature (e.g. Baker & McLelland, 2003; Pölönen et al., 2011; Sadler, 1996; Wang et al., 2012) suggests that the above two are distinctly different and have different influences on overall effectiveness. Differentiating the systemic category further into procedural and substantive effectiveness provides a better understanding of the influence of each dimension on overall effectiveness and also the inter-dependence of procedural and substantive effectiveness. Nevertheless, despite the fact that the integration of disaster risk into the EIA process is increasingly recognized, especially under the HFA, the level of policy integration of disaster risk has not been evaluated as an effectiveness dimension. Therefore, it is important to have a clear idea of the range of effectiveness dimensions that are investigated in applications of particular effectiveness research. Given the possible importance of policy integration of disaster risk and contextual matters, such as the quality of governance in decisions on developments and their potential consequences on the environment, this study investigates policy integration and contextual effectiveness, as well as procedural and substantive effectiveness of EIA as key effectiveness dimensions.

Wang et al. (2012) argue that a broader list of criteria is favoured against the limited number of criteria used in evaluation research generally, which provides a better picture about the impact assessment process. Wang et al. (2012) used 13 indicators in their study and C. Wood (1995) used 14 criteria. C. Wood's 14 criteria have later been applied by a number of scholars in many different contexts (e.g. Nadeem & Hameed, 2008; Panigrahi & Amirapu, 2012; Zubair, 2001). Sadler (1996) used 31 criteria and Ahmad & Wood (2002) implemented 24 criteria including the four foundation measure criteria proposed by Fuller (1999). Moreover, based on content analysis, Fischer & Gazzola (2006) argue that most criteria in effectiveness research of the EIA process are developed based on practices and experience of a few countries especially from Europe. They, therefore, argue that such criteria need to be tailored to the specific system of application.

Practicality of operationalization of the evaluation criteria in qualitative interviews and the number of criteria required to address the research questions were driving factors in deciding the number of

criteria used in this study. In this study, therefore, a set of evaluation criteria was selected and adapted to address the research questions (Table 3.1, column 5). These form the basis for the analysis in chapters 5 and 6. Like previous scholarly work on effectiveness research, most evaluation criteria used in this study were derived from the available literature on effectiveness research; eight criteria relevant to disaster risks (i.e., criteria 1, 5, 8, 10, 11, 16, 21 and 22) were specifically developed for this study because there was little literature available on those aspects.

The level of policy integration of disaster risks was used as the first effectiveness dimension in this study. Under this dimension whether DRR is an integral part of environmental assessment was evaluated. As discussed in Chapter 2, disaster risk is defined in this study as a compound function of the natural hazards and the degree of vulnerability to those specific hazards (Blaikie et al., 1994).

In reviewing the literature, it is clear that the criteria for assessing each effectiveness dimension can be further grouped into clusters. As discussed in Chapter 2, under procedural effectiveness two criteria clusters were assessed (i.e., legal basis and guidance). Five evaluation criteria were used under legal basis, which cover 'clarity' and 'comprehensiveness' of legislative provisions, explicit 'requirements' to cover disaster risks in the EIA process and 'provisions for legally challenging' decision outputs. In the literature review, it was also clear that legal provisions should be sufficiently backed by both statutory and non-statutory guidance on implementation of legislative provisions. Therefore, the guidance cluster included 'guidance on public reviewing', 'developing terms of reference', and 'compliance monitoring'. In order to avoid any ambiguities, the entire EIA process from project screening to post approval monitoring was considered in both countries.

In some literature, including Sadler (1996), 'the level of assessment' is considered a procedural dimension. However, in this study, the level of disaster risk assessment in the EIA process was evaluated as an aspect that directly affects the substantive effectiveness of EIA to address disaster risks and therefore was considered under the substantive dimension. As discussed in Chapter 2, substantive effectiveness is the least-researched type of effectiveness dimension (Cashmore et al., 2004; Jay et al., 2007; Theophilou et al., 2010).

Table 3.1 Evaluation criteria developed and used in this study

Effectiveness Dimension	Criteria Cluster	Description	Source	Evaluation Criteria[3] (Operationalization of the research)	Research Method
Policy integration: how well, if at all, is disaster risk reduction integrated into EIA processes?	Purpose of EIA	Disaster risk reduction is an expected outcome of the EIA process	CDB (2004); UNISDR (2011, 2014); Benson & Twigg (2007)	(1) Disaster risk reduction is an integral part of environmental assessment	Document analysis, qualitative interviews with planners and EIA experts/practitioners
Procedural effectiveness: assuming it is integrated then how well is it practised?	Legal basis	EIA system based on clear and specific legal provisions	Ahmad & Wood (2002); Bina (2008); Bina et al. (2011); Gallardo & Bond (2011); Marara et al. (2011); Nadeem & Fischer (2011); Noble (2009); Pölönen et al. (2011); Sadler (1996); C. Wood (1995)	(2) The EIA system is based on clear and specific legal provisions	Document analysis, qualitative interviews with planners and EIA experts/practitioners
		An explicit requirement to cover all environmentally significant proposals and consideration of alternatives		(3) The impacts of all significant actions are assessed (4) Alternative methods and locations are considered	
		Responsibility and accountability		(5) EIA reports contain a section on disaster risk (6) There is an opportunity for appeal or legally challenge the process or decision output	
	Guidance	Extent to which the EIA meets accepted principles such as public notification of meetings, provision of access to information and use of appropriate consultation techniques	Baker & McLelland (2003); Marara et al. (2011); Noble (2009); Sadler (1996); Wang et al. (2012); C. Wood (1995)	(7) EIA reports are subjected to public review	Document analysis, qualitative interviews with planners, EIA experts/practitioners and community representatives in the selected project areas of Sri Lanka
		Guidance on application of procedures, including proposal-specific terms of reference		(8) ToR for the EIAs carries specific requirements regarding hazard assessment and vulnerability assessment	
		Procedures to support monitoring and follow-up of process outcomes and decisions for corrective action		(9) Guidance is available to support compliance monitoring taking place and it is being implemented	

[3] These criteria provide the basis of the analysis in chapters 5 and 6

Effectiveness Dimension	Criteria Cluster	Description	Source	Evaluation Criteria (Operationalization of the research)	Research Method
Substantive effectiveness: does the EIA process achieve the objectives set and result in disaster risk reduction?	Level of assessment	Technical soundness of screening, scoping and impact assessment	Boyle (1998); Gallardo & Bond (2011); Noble (2009); Sadler (1996); Wang et al. (2012); C. Wood (1995)	(10) Screening of actions for disaster risks is taking place	Document analysis, qualitative interviews with planners and EIA experts/ practitioners
		The level/scale of assessment is appropriate and sufficient		(11) Hazard and vulnerability assessments are conducted as a part of impact identification	
	Decision-making	Visible linkages to decision making (e.g., approval, permitting, etc., based on submission of report)	Bina et al. (2011); Noble (2009); Runhaar & Driessen (2007); Sadler (1996); Theophilou et al. (2010); van Doren et al. (2013); Wang et al. (2012); C. Wood (1995)	(12) Findings of the EIA influence the final decision (van Doren et al., 2013)	Document analysis, qualitative interviews with planners and EIA experts/ practitioners
		EIA fostering environmental protection (Conformity)		(13) Planners use the EIA report as a reference document in project planning (van Doren et al., 2013)	
Contextual effectiveness: what influence does risk governance have on substantive effect?	Consultation and public participation	Consultation and public participation take place within the assessment system leading to action	Arnstein (1969); Baker & McLelland (2003); Boyle (1998); Gallardo & Bond (2011); Hilding-Rydevik (2006); Noble (2009); Pölönen et al. (2011); Theophilou et al. (2010); C. Wood (1995)	(14) Consultation and participation are taking place before and following EIA report publication	Document analysis, qualitative interviews with planners, EIA experts/ practitioners and community representatives in the selected project areas of Sri Lanka
				(15) Feedback from consultations is incorporated into project planning	

Effectiveness Dimension	Criteria Cluster	Description	Source	Evaluation Criteria (Operationalization of the research)	Research method
Contextual effectiveness: what influence does risk governance have on substantive effect?	Policy context	Legal provisions given by other legislation to control development projects/programmes influence the outcome of the EIA process	Ahmad & Wood (2002); Wang et al. (2012)	(16) Legal provisions given by other legislation to control development-induced disaster risks do influence the outcome of the EIA process	Document analysis, qualitative interviews with planners and EIA experts/practitioners
	Transparency and accountability	Subject to independent checks and verification	Bina (2008); Bina et al. (2011); Boyle (1998); IAIA (2002); Marara et al. (2011); Noble (2009); Pölönen et al. (2011); van Buuren & Nooteboom (2009); Wang et al. (2012); C. Wood (1995)	(17) EIA assessment processes and EIA reports are subjected to independent checks and verification	
		Mechanisms to ensure impartiality/ independence of assessment review			
		Access to information		(18) Decision-making and approval stages, (setting out what is required of proponents and government agencies and when) are made clear to all	Document analysis, qualitative interviews with planners, EIA experts/practitioners and community representatives in the selected project areas of Sri Lanka
		Transparency in assessment process			
	Political will	Political will and genuine commitment at all levels	Ahmad & Wood (2002); Bina (2008); Bina et al. (2011); Boyle (1998); IAIA (2002); Marara et al. (2011); van Doren et al. (2013)	(19) Political support is available for the EIA process	Document analysis, qualitative interviews with planners and EIA experts/practitioners
	Coordination	Inter-agency coordination and cooperation at all stages of the EIA process		(20) Inter-agency coordination and cooperation is available across sectors and different levels (national/local) of government departments at all stages of the EIA process	
				(21) Disaster management agency is involved (receive information and get coordination) in all stages of the EIA process	
	Funding conditions	Reduction of project-induced disaster risk is a condition of international lending	UNISDR (2011); Benson & Twigg (2007)	(22) Funding agencies carry specific funding conditions to curtail the disaster risk of the project	

In reviewing the literature, it is clear that many scholars consider EIA as one element in environmental protection policy or an element in the sustainable management of natural resources policy (Heinma & Põder, 2010; Sadler, 1996; C. Wood, 1995). For instance, the purpose of New Zealand's Resource Management Act 1991 is to promote the sustainable management of natural and physical resources (s.3) and the purpose of the Act should be considered in approving development projects (s.104). However, measuring the substantive effectiveness of EIA in terms of fostering environmental protection or sustainable management of natural resources is difficult. A number of other aspects (i.e., plans and regulations) influence environmental protection. Because of the above difficulty, many scholars have limited their focus to the influence of EIA on well-informed decision-making (e.g. Heinma & Põder, 2010; Runhaar & Driessen, 2007; Sadler, 1996; van Doren, Driessen, Schijf, & Runhaar, 2013). This study followed a similar approach and investigated the influence of EIA on decision-making and its influence on project planning.

According to Hilding-Rydevik & Bjarnadóttir (2007, p. 674), "…the elements of context are 'context' dependent" and should be decided based on the context of the research. In this study the following criteria clusters are used. They include public participation, policy context, transparency and accountability, political will, coordination and funding conditions. Public participation in EIA report reviewing is also a procedural requirement in many EIA systems. However, consultation and public participation in the rest of the EIA process is largely determined by the level of governance quality existing in a particular country depending on the acceptability of public participation in decision-making. Therefore, public participation is also a contextual factor.

Ensuring public health and safety is also an objective of development and other specific legislation (i.e., disaster management Acts) in most countries. Therefore, the influence of such legislation in addressing disaster risks of development projects should be considered to understand the influence of EIA in addressing disaster risk separated from the influences of legislation. Many scholars have identified lack of transparency and accountability of agencies, lack of political support, and poor coordination among agencies as key factors that contribute to poor effectiveness of EIA processes (e.g. Bina, 2008; Bina et al., 2011; Che, English, Lu, & Chen, 2011; Marara et al., 2011). Therefore, criteria relevant to accountability and transparency, political will and coordination among agencies were also selected.

Finally, Sri Lanka, being a middle-income country, still depends on multi and bi-lateral funding for development projects, especially for transport and hydropower generation. It is the general perception that multi-lateral agencies such as the World Bank and the ADB promote environmental planning when development aid and loans are dispersed; these agencies also have significant negotiation power over recipient countries (Bornschier et al., 1978; Maizels & Nissanke, 1984;

Ortolano & Shepherd, 1995; Shandra et al., 2004; Shandra et al., 2011). Therefore, the effectiveness of EIA processes of countries whose economies largely depend on multi-lateral funding cannot be assessed without considering the influence of such agencies on environmental planning processes. In this context, the influence of funding conditions has been considered here as an evaluation criterion.

3.4.1 Measuring criteria conformity

As discussed earlier, measuring and quantifying the effectiveness of impact assessment tools is one major challenge in effectiveness research (Wang et al., 2012; C. Wood, 1995). However, many scholars, including Wang et al. (2012) and C. Wood (1995), use Likert scales to measure conformance to criteria using attitudes and opinions of those directly involved with the EIA system. Likert scales have different forms and structures but commonly use 5-point assessment scales. According to Allen & Seaman (2007), it is advisable to use as wide a scale as possible. Following Likert (1932), Clason & Dormody (1994, p. 31) argue that the number of alternatives in a scale is "…open to manipulation". Scholars have used different types of scales in effectiveness evaluation research varying from three to six alternatives. For instance, C. Wood (1995) and El-Fadl & El-Fadel (2004) use 3-point scales, Theophilou et al. (2010) use a 4-point scale, Marara et al. (2011) use a 5-point scale, and Bina et al. (2011) and Sadler (1996) use 6-point scales. In this study, a 5-point Likert scale was used to measure criteria conformance (see Table 3.2). The five-point scale provided the required detail for comparative review between the two countries while reducing potential over-complication caused by a higher number of alternatives (e.g., 7-point).

Table 3.2 Scale value against the criteria conformity

Likert scale value	Measure of criteria conformity
Fully	Data gathered from *all* research methods/sources agree that the evaluation criterion is met beyond reasonable doubt.
Mostly	Data gathered from *over half* of the sources/methods agree that the evaluation criterion is met.
Reasonably	Data gathered from *half* of the sources/methods agree that the evaluation criterion is met, but the other half disagree that it is met.
Limited	Data gathered from *fewer than a half* of the sources/methods agree that the evaluation criterion is met.
No	Data gathered from *all* research methods/sources agree that the evaluation criterion is not met beyond reasonable doubt.

3.5 Selection of countries

Many scholars have conducted cross-country comparisons in evaluation research because such comparisons are capable of providing a clearer picture of the strengths and weaknesses of impact assessment systems (Ahmad & Wood, 2002; El-Fadl & El-Fadel, 2004; Marara et al., 2011; Sadler,

1996; C. Wood, 1995). It is clear from the literature that such comparisons would be more useful if the EIA system of a particular country is compared with the same from the countries with more established environmental management practices and a higher level of quality governance. As argued in Chapter 2, successful implementation of development control tools, including EIAs, depends on the level of quality governance existing in a particular country. The influence of governance on the effectiveness of the EIA process is one of the research questions of this study. Therefore, in this research, it was intended to compare the EIA processes of two or more countries with different levels of governance quality. However, limitations encountered in the study in terms of resources and time available limited the detailed empirical comparison to two countries.

Sri Lanka and New Zealand were selected for the study based on several factors identified as important to achieve answers to the research questions in Chapter 1. These include: differences in the level of governance quality in the two countries, appropriateness of the existing environmental planning framework in the two countries for answering the research questions, and the accessibility of EIA-related information. As reported in Chapter 1, both Sri Lanka and New Zealand claim that their country's EIA processes are capable of addressing project induced disaster risk (Disaster Management Centre, 2011; Ministry of Civil Defence & Emergency Management, 2011). Moreover, the difference in levels of quality governance in these two countries were considered sufficient to assess the influence of governance on the effectiveness of the EIA process as per the arguments discussed in previous sections. Sri Lanka consistently shows poorly in the Worldwide Governance Indicators of the World Bank, whereas New Zealand shows higher levels in all indicators (The World Bank Group, 2013) (Table 3.3).

The Worldwide Governance Indicators (WGI) were developed by a World Bank project and are updated annually for 215 countries (The World Bank, 2014). These include: voice and accountability, political stability and absence of violence/terrorism, government effectiveness, regulatory quality, rule of law, and control of corruption (The World Bank, 2011). Kaufmann, Kraay, & Mastruzzi (2008, pp. 7-8) define these six indicators as:

1. *Voice and Accountability (VA) – measuring perceptions of the extent to which a country's citizens are able to participate in selecting their government, as well as freedom of expression, freedom of association, and a free media.*

2. *Political Stability and Absence of Violence (PV) – measuring perceptions of the likelihood that the government will be destabilized or overthrown by unconstitutional or violent means, including politically-motivated violence and terrorism.*

3. *Government Effectiveness (GE) – measuring perceptions of the quality of public services, the quality of the civil service and the*

degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies.

4. *Regulatory Quality (RQ) – measuring perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development.*

5. *Rule of Law (RL) – measuring perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence.*

6. *Control of Corruption (CC) – measuring perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as "capture" of the state by elites and private interests.*

Table 3.3 A comparison of the Worldwide Governance Indicators for Sri Lanka and New Zealand (The World Bank Group, 2013)

Governance Indicator	Year	Percentile Rank (Sri Lanka) (0-100)	Percentile Rank (New Zealand) (0-100)
Voice and Accountability	2010	30.3	97.2
	2011	30.0	98.6
	2012	29.9	98.1
Political Stability / Absence of Violence	2010	17.9	91.0
	2011	24.5	97.2
	2012	22.7	97.2
Government Effectiveness	2010	48.8	96.7
	2011	52.1	98.1
	2012	45.9	96.2
Regulatory Quality	2010	45.9	98.6
	2011	50.2	100.0
	2012	48.3	98.6
Rule of Law	2010	53.6	98.1
	2011	52.6	98.6
	2012	52.1	98.6
Control of Corruption	2010	43.3	99.5
	2011	44.5	99.5
	2012	51.7	99.5

Thomas (2010) argues that these indicators are widely used by researchers and aid agencies to measure the governance quality of different countries. According to Kauffmann et al. (2008), there is a margin of error caused because of unavoidable uncertainty associated with sources in measuring governance quality. They argue that margin of error should be taken into account in cross country

comparisons, especially if the margins of error of two countries overlap, then the data do not reveal statistically significant differences in governance. Such overlaps do not exist for indicator values between Sri Lanka and New Zealand, since the levels of governance quality between the two countries are very different.

Many researchers have criticised the aggregation methodology used for WGI construction (e.g. Apaza, 2009; Christiane & Oman, 2006; Langbein & Knack, 2010; Thomas, 2010). These critiques have been regularly contested and sometimes partially agreed upon by the World Bank (Kaufmann, Kraay, & Mastruzzi, 2007). Despite such critiques, almost all agree that measuring governance quality is a studious task and the WGI should be used cautiously in research work. In this research, the WGI was used as one of the criteria to select the two countries. Level of governance quality of these two countries is significantly different. Therefore, the above-mentioned methodological limitations in constructing the WGI have little or no influence on the findings of this study.

Table 3.3 compares WGIs for the 2010-2012 period between Sri Lanka and New Zealand. In Table 3.3, percentile rank indicates the rank of the relevant country in the respective governance indicator among all countries in the world. According to the WGI, New Zealand shows a consistently higher-level of governance quality than Sri Lanka.

In addition to the above, according to Bührs & Bartlett (1993, p. 12) "…New Zealand is claimed to be a world leader in environmental policy development" with respect to some policy initiatives undertaken in the late 1980s and early 1990s. C. Wood (1995) concludes that the EIA system and domestic legal framework of New Zealand is stronger than in other researched countries, because the RMA 1991 provides a comprehensive legal framework. Therefore, in this research, New Zealand's EIA system was considered as one of the best systems available for comparative analysis.

Accessibility to required data sources and limitations in resources and time were also considered in selecting New Zealand and Sri Lanka. Being my native country, I had easy access to data sources in Sri Lanka at a low cost. The exposure I had to the EIA process and disaster risk management procedures in Sri Lanka over a decade was also considered an advantage in selecting Sri Lanka. As a disaster risk management specialist for an international non-governmental agency, I have led a national dialogue with relevant ministries in Sri Lanka to incorporate disaster risks into impact assessment tools.

3.6 Selection of projects

As mentioned earlier, case study analyses were conducted for selected projects in Sri Lanka and New Zealand to relate the questions to real life contexts. A purposive sampling technique was executed in selecting projects for case study analysis to ensure the availability of sufficient information for

subsequent analysis. The potential significance of the project in terms of economic and social development, actual and potential disaster risks, and the project completion date were considered as the main factors in selecting the projects. Primarily, transport and hydropower projects were selected because of their potential significance in terms of social, economic and environmental impacts. Projects that were recently completed or being implemented were favoured, considering the ease of obtaining expert views and public opinion on the EIA process of such projects. It was expected that both the experts and the public would be able to recall the EIA process of a project recently completed. A maximum 5-year limit was adopted because it was assumed that, with time, some of the extensive disaster risks of the project would become a routine experience of the people and people tend to accept those effects making it difficult to identify such effects in an interview. The projects chosen were a hydropower dam and a transport project in Sri Lanka, and in New Zealand, three roading projects, two hydropower projects, one water storage project and a lake drainage project (Table 3.4).

Table 3.4 Summary project information from Sri Lanka and New Zealand

Project	Key details
Sri Lanka	
The Upper Kotmale Hydropower Project (UKHP)	The project started operations in 2012 with an annual output of 409GWh
The Southern Transport Development Project (STDP)	The expressway has been operating since November 2011
New Zealand	
The Waitohi Irrigation and Hydro Scheme (WIHS)	The resource consent was granted in August 2013
The Transmission Gully Project (TGP)	The consent was approved in 2012
The Basin Bridge Project	The resource consent application was lodged with the Environmental Protection Authority in 2013
Ara Tūhono Pūhoi to Wellsford Road	The resource consent application was lodged with the Environmental Protection Authority in 2013. The consent decision is expected in the second half of 2014
Ruataniwha Water Storage Scheme	The resource consent was granted in June 2014
Artificial Opening of Wairewa/Lake Forsyth	Resource consent application was lodged with Canterbury Regional Council in February 2013
Wrights Road Storage Ponds in Christchurch	Resource consent application was lodged with Canterbury Regional Council in November 2013

The two projects selected in Sri Lanka have received significant public attention because of their potential environmental impacts including disaster risks. It was necessary to conduct interviews and focus group discussions with community members and also field observations to substantiate document evidence and interview data in Sri Lanka, because of a lack of impartial document evidence on the two projects. Even though this has improved the quality of data, it has limited the enquiry to two projects due to time and resource limitations. In contrast, the public submissions, agency reports and even public hearing proceedings of the selected projects in New Zealand are

readily available in relevant agency websites. Therefore, field observations and interviews with community members were not required in New Zealand. In New Zealand, detailed analysis of the full EIA process was done only on the WIHS and the TGP; the remaining projects were included in the enquiry to improve data quantity and quality. Only EIA reports of the last five projects were reviewed in the study.

3.7 Field work and data collection

This section explains Stage 2 of the research conceptual map (Figure 3.1) and discusses how the fieldwork was conducted in the two countries using the selected research methods. Figure 3.2 shows the different research methods used in the empirical study in the two countries. In New Zealand, data were collected from qualitative interviews with selected experts and planners and from document analysis. In Sri Lanka, four different research methods were used in data collection: qualitative interviews with planners, experts and selected community members; focus group discussions with community members; document analysis; and field observations. This decision was reached after carefully reviewing the available information from secondary materials and also considering the time and resource constraints of the study.

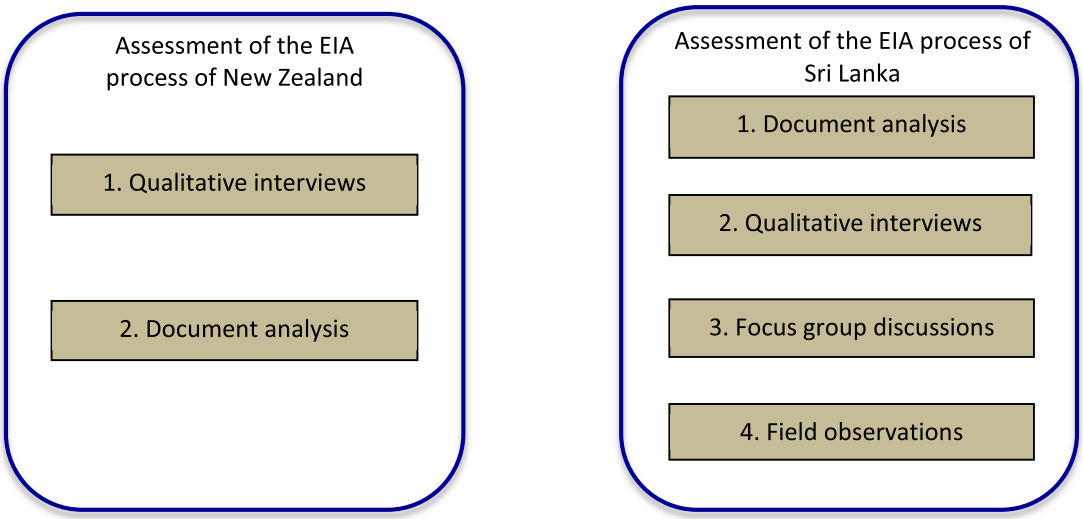

Figure 3.2 Research methods used for empirical study in New Zealand and Sri Lanka

Lack of project-related documents, the poor quality of EIA reports and the poor transparency of state agencies led to the need to investigate and cross check data gathered in Sri Lanka by having qualitative interviews and FGDs with community members and through field observations. In contrast, most project-related documents, including public submissions, were readily available for the two selected projects in New Zealand. The next section explains how human ethics requirements of Lincoln University were met, which is then followed by detailed accounts of how each of the above methods was used in the field study to collect data.

3.7.1 Human ethics

One of the main criticisms of qualitative research is that "…the nature of research … allows close contact with respondents [and] can lead to ethical problems" (Sarantakos, 2005, p. 46). Therefore, it is important to ensure that all necessary measures are taken to avoid any inconvenience to the participants and avoid any circumstances that might pose a risk to the participants as a result of participating in the research.

Within this context, under the Lincoln University Human Ethics Policy (LUHEP), all research that involves human participants that is carried out by students of the university is required to obtain approval from the Lincoln University Human Ethics Committee (HEC) before commencement of field activities (Lincoln University, 2010). It is also a requirement under the LUHEP to submit a copy of the questionnaire and seek approval before the commencement of the study. Therefore, a semi-structured questionnaire was developed and submitted along with the human ethics application to the HEC in October 2012. The HEC gave approval for the field survey on 7 December, 2012 (see Appendix B for the HEC approval letter).

3.7.2 Sample selection and conducting qualitative interviews

Considering the intensity of the study and the complex nature of the questions to be asked of respondents, face-to-face in-depth interviews using a semi-structured questionnaire were used in both countries (see Appendix C for questionnaire for planners and experts). In New Zealand, qualitative interviews were conducted with planners and EIA experts; in Sri Lanka, in addition to planners and EIA experts, qualitative interviews were conducted with selected community members (Table 3.5), using a separate semi-structured questionnaire (see Appendix D for questionnaire for community members).

Samples drawn for the qualitative interviews in both Sri Lanka and New Zealand were based on non-probability sampling techniques. Considering the exploratory nature of the research, purposive sampling was carried out to select interviewees relevant to the research topic (Sarantakos, 2005). Planners and experts were selected based on their role in the EIA process and project planning. Knowledge and expertise of the interviewees about the EIA process of the selected projects was also used as a criterion in identifying the interviewees.

Five planners (i.e., a CEA (Central Environmental Authority) planner, two RDA (Road Development Authority) planners, a UKHP planner, and a DMC planner) and four experts (i.e., legal, disaster management, and two EIA experts) were interviewed from Sri Lanka. Six planners and six EIA experts were selected from New Zealand. Planners represented a district council, a regional council, a major developer and three national agencies, namely, the Department of Conservation (DoC), a national

hazard management agency and the Environmental Protection Authority (EPA). Two of the six experts are social scientists. Three of the remaining experts are: an EIA expert, a hearing commissioner, and a retired Environmental Court (EC) judge. The perceptions of one of the supervisors of this research, who is a hearing commissioner, were also used where needed [listed as an EIA expert in Table 3.5].

Table 3.5 Interviewee categories and sample sizes for qualitative interviews

Interviewee category	Number of interviewees from Sri Lanka	Number of interviewees from New Zealand	Total number of interviewees
National and local level planners responsible for the EIA process /development planning	5 (CEA planner, two RDA planners, UKHP planner, DMC planner)	6 (hazard planner, two local council planners, EPA planner, DoC planner, environmental planner of a major developer)	11
EIA practitioners and experts	4 (legal expert, disaster management expert, two EIA experts)	6 (two EIA experts, two social scientists, hearing commissioner, environmental court judge)	10
Civil society groups/ community leaders living in project area	17	-	17
Total respondents	26	12	38

The selection of the community members in project-affected areas in Sri Lanka was done using a snowball sampling technique. The term 'community' does not have a standard definition in literature and scholars have treated the term based on the context in which the term is used. In this study, MacQueen et al.'s (2001) definition of community is considered appropriate to describe the communities from which members were selected for the interviews and the FGDs. According to MacQueen et al. (2001, p. 1936), a community is "…a group of people with diverse characteristics who are linked by social ties, share common perspectives, and engage in joint action in geographical locations or settings". Project-affected community members in selected project areas are confined to a distinct geographical location and with close social ties.

Two different methods were adopted in screening and selecting community members for qualitative interviews. In STDP, first, the project-affected districts and divisional secretariat (DS) divisions were identified based on newspaper archives, the national disaster event database, and inputs from national and district level disaster management officials. Bandaragama and Dodangoda DS divisions in Kalutara district were selected for data collection. Then, highly affected villages were identified using district disaster management data, disaster relief distribution data and inputs from social services officers of the respective divisional secretariat divisions. Grama Niladharis (village officers) of the identified villages were contacted and consulted with the permission of the divisional secretariats

to identify affected community groups. FGDs were then held with the community members; 11 key informants for in-depth interviews were identified during the FGDs (see section 3.7.3).

In the UKHP, first, the permission of the project director was sought because the resettlement sites were still under the control of the project. Then, based on the project resettlement plan and information from environmental activists, community groups were identified from Kotmale DS division of the Nuwara Eliya district. However, initially I was accompanied to the project-affected areas by the project officials, which obstructed free discussions with community members. Therefore, I waited till the weekend to start the FGDs and qualitative interviews with community members without the influence of the project staff. This also limited the number of FGDs and number of qualitative interviews conducted in the UKHP project sites, but the quality of data was considered high. One FGD and six qualitative interviews were conducted in the Kotmale DS division.

Qualitative interviews in Sri Lanka were carried out from 17 December 2012 to 25 January 2013. Initially, selected planners and EIA experts were contacted either by email communication, via phone calls or meeting them physically. They were briefed about the research and provided with a research information sheet that includes the research objectives, nature of the interview and anonymity of data gathered. Then, a suitable time and venue were fixed for the interviews. Similarly, selected community members were met and basic information about the research was verbally conveyed to them before agreeing on a time and venue for qualitative interviews. Some interviews were conducted at the project sites because the interviewees wanted to show specific project impacts on the environment. Probing and revisiting of responses was done in both countries to explore and inquire further into important aspects raised by the interviewees (while their anonymity was maintained). All interviews were digitally recorded and notes were also taken on the consent of the interviewees. Some planners and community members opted to answer sensitive questions, especially related to political support and influence, off the record. Such interview data were not used in the final analysis, considering the safety of both interviewees and the researcher.

In New Zealand, qualitative interviews were carried out in two rounds. After conducting initial analysis of collected data, it was decided to conduct a further round of interviews to substantiate the data gathered in the first round. Planners and EIA experts for the second round were selected based on the interviews in the first round. The first round was carried out from 25 April to 30 May 2013 and the second round from 1-30 September 2013. Like in Sri Lanka, planners and EIA experts were contacted and the research information sheet was shared with them before requesting appointments for interviews. In two cases, the experts favoured online interviews over physical meetings because of the flexibility of such interviews to fix an appropriate time. Other interviews

were conducted in person. Like in Sri Lanka, all interviews were digitally recorded with the consent of the interviewees.

3.7.3 Sample selection and conducting FGDs

In addition to in-depth qualitative interviews, FGDs were held with community members in Sri Lanka. During both FGDs and interviews with the community members, their experience relevant to a particular project was investigated. The FGDs enabled a better understanding of project-induced disaster risks experienced by the community members, making it easy to structure the questions effectively for in-depth interviews. The method was also favoured in this research because of prior experience I had in conducting FGDs on various topics in similar contexts.

FGDs are considered in the research methodology literature as a key research method of data collection. According to Yin (2011), the method is especially popular among researchers because of its ability to gain efficiency (i.e., listening to several participants at the same time). However, the method has its own limitations including loss of depth (Yin, 2011). Since the method was used as a complementary method with qualitative interviews, the above limitation was avoided in this study. According to Finch, Lewis, & Turley (2014, p. 213), the standard size of a focus group is around six to eight people. However, according to Krueger & Casey (2009, p. 67), smaller groups of four to six are increasingly popular because they are easy to recruit and operate. In this study, smaller groups (i.e., 4 – 6) were usually used for the above two reasons. In addition, pairs and triads were also used in this research to improve the richness of collected data. According to Finch et al. (2014, p. 213), when a smaller group with fewer than four people is used, it loses some of the qualities of group discussions, but is still effective when the participants know each other well.

Recruitment of participants for FGDs was done after visiting the project-affected areas several times and getting used to the community and its issues. Informal leaders, who had played a leading role in organizing public protests and campaigns against two selected development projects, were identified after talking to members of the community. All FGDs were organized at short notice with the above informal leaders. This minimised any political interference with the discussions and made it easy to obtain spontaneous responses from the participants. Timing and venues are two important factors in conducting FGDs (Yin, 2011). Most FGDs in this study were conducted either during lunchtime or after 5pm, when people were usually at home. Altogether, two FGDs, one triad and one paired interview were conducted in the Southern Transport Development Project (STDP) area and one FGD and one paired interview were conducted in the Upper Kotmale Hydropower Project (UKHP) area. Triads and paired interviews were added to substantiate data collected in the FGDs and to identify key informants for in-depth interviews. Using snowball samples generated from both FGDs and triads/paired interviews avoided getting trapped into one line of inquiry in selecting interviewees for

in-depth interviews. FDGs in Bandaragama and Dodangoda were held either in the houses of community leaders or community halls. In Kotmale DS division, a local place of worship was selected as the meeting point because it was the only public space available in the location.

After briefing the participants about the objective of the discussion and other information as per the Human Ethics requirements of Lincoln University, discussions were moderated using the semi-structured questionnaire developed for community members, as a discussion guide (Appendix D). Participant numbers, dates of FGDs and DS divisions in which FGDs were held are listed in Table 3.6.

Table 3.6 Participants in the FGDs

Project	Divisional Secretariat (DS) division	Date	Number of participants
Southern Transport Development Project	Dodangoda DS division	2013.01.03	4
		2013.01.04	3
	Bandaragama DS division	2013.01.05	5
		2013.01.06	2
Upper Kotmale Hydropower Project	Kotmale DS division	2013.01.16	6
		2013.01.19	2
Total number of participants			22

3.7.4 Document analysis

As reported earlier, document analysis was also used as a research method. Document analysis covered funding strategies of key funders in Sri Lanka, relevant legislation and EIA reports. These documents can be categorized into three levels, namely: international, national and local, and project level. Table 3.7 lists the secondary information sources reviewed in this study. Documents at the international level were retrieved from the Internet. In New Zealand, national, local and project level documents were available online. However, in Sri Lanka most project-related documents, local council reports, and local database information were not available online. Such documents were copied with the permission of the relevant agencies or purchased during data collection.

Table 3.7 Document sources for secondary data analysis

International level	National and local level	Project level
• Funding strategies and environmental assessment requirements of the World Bank, the ADB and the JICA • HFA progress reports of Sri Lanka and New Zealand • EIA review reports • Relevant journal articles	• Disaster management and environmental management related policies, acts and bills • National and local disaster databases • Reports from advocacy groups • Newspaper articles on environmental and development issues	• Project EIA reports • Reports and articles from local advocacy groups, and newspaper articles on the environmental issues of selected projects • Local council reports on disaster relief in Sri Lanka

3.7.5 Field observations

Field observations were conducted before the FGDs and concurrently with them and qualitative interviews with community members. During this process, I stayed close to the selected DS divisions and at least one week was spent in each DS division. This helped me to familiarize myself with the project and the community and so to obtain a clear idea about project impacts. Field observations were done both with informal leaders of the community and by myself. Conducting field observation visits with informal leaders helped me to use the knowledge of community members to get a better understanding of project impacts in a short time. Field observations were captured in videos, photographs and field notes.

3.8 Data analysis

Data analysis was a reiterative process. An initial text analysis was done using collected project related documents, newspaper articles and other agency documents using the evaluation criteria listed in Table 3.1. This analysis was helpful in getting a better understanding of the projects and then fine-tuning the semi-structured questionnaire, which was later deployed in field surveys in both countries.

A Computer-Aided Data Analysis (CADA) programme (i.e. NVivo 10.0) was used primarily to record, store and organize data. NVivo 10.0 was also used as the analysis support tool. Interviews and FGDs were later transcribed and loaded into NVivo 10.0 together with notes taken during the interviews. In addition, observation notes, data from agency and government databases, photos, videos, agency and public documents, and quantitative data from secondary sources such as relief distribution data, damage assessment data and infectious disease statistics were all loaded into NVivo 10.0. Selected sections of videos were also converted to text form by transcribing the conversations and descriptions were added to photos explaining the observations captured in the photo. In this sense, all materials were converted into text form before analysing and coding them.

In NVivo, 22 different nodes were created, which represented the evaluation criteria developed for the study. Then, loaded materials were screened and unwanted text was removed (i.e., cleaning) before preliminary text analysis was done and findings conceptually organized and coded into the respective nodes (Figure 3.3). This preliminary analysis was used as a guide for further data collection, processing and analysing until saturation was achieved. After data saturation was achieved, a final analysis was conducted using text analysis methods.

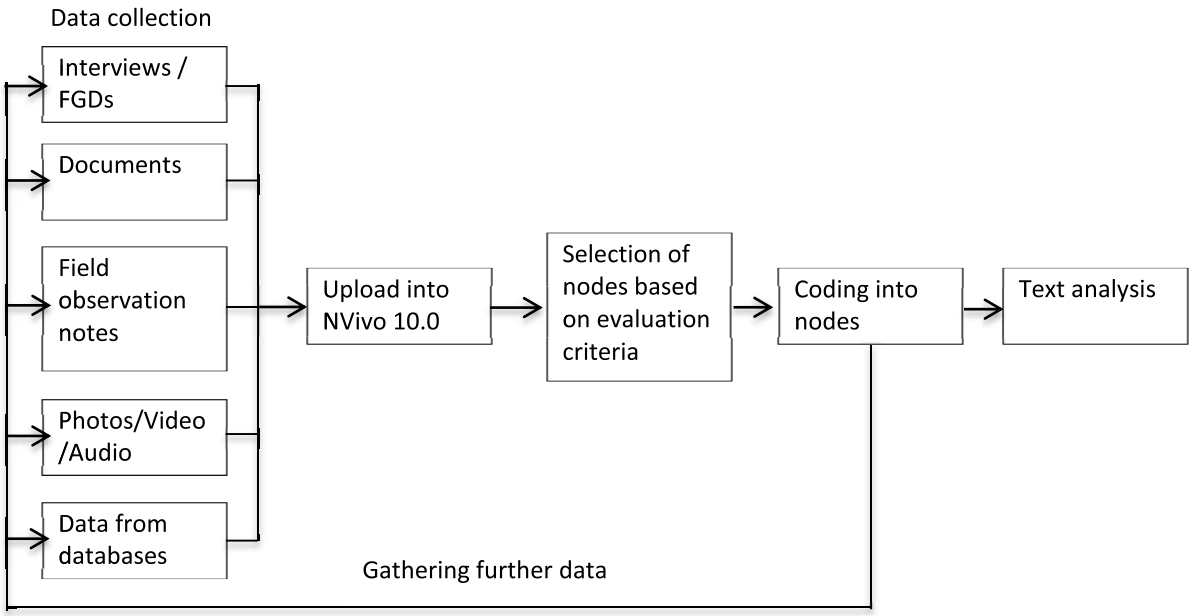

Figure 3.3 Data analysis process using NVivo

Unlike statistical analysis software such as Minitab or SAS, NVivo does not analyse data for you, except for simple analysis such as text search or word frequency analysis. Therefore, coded text had to be carefully reviewed and evaluated against the set of evaluation criteria presented in Table 3.1. In this context, initial screening and cleaning of the text before coding into nodes was highly beneficial. Moreover, having all related text in one place (in a node) was very helpful in analysis, which could otherwise have been an exhausting process.

3.9 Limitations of the study

There were limitations in this research in terms of the methodology and methods adopted. Time and financial resources for the empirical study were limited. It was planned at the proposal development stage to compare three countries, however, this study was later reduced to two countries because of financial and time constraints and also because of the wealth of data generated from the interviews. However, the depth and width of the study in the two selected countries were increased to overcome any effects of the above change. The sample size was increased from 26 in the research proposal to 38 interviewees. In addition to the interviews, FGDs were also added in Sri Lanka.

The current political context in Sri Lanka did not provide a favourable environment to scrutinize politically sensitive plans and projects. Some planners remained silent over any question regarding political support, or otherwise, for the EIA process or state sponsored projects. Even though it was desirable to believe that such projects provide the best case studies to scrutinize the research questions set out in Chapter 1, such projects were avoided in designing the field survey to minimize any risks to both the interviewer and the interviewees. Moreover, the approval of divisional

secretaries of all relevant divisional secretariat divisions was necessary before entering any village for data collection. This 'unhelpful' situation limited the depth and width of inquiry on some occasions, especially during the interviews with planners. The resultant data from planners can therefore be seen as being closer to a government perspective rather than fully reflective views of those involved. However, these data were checked using FGDs, community interviews and expert interviews to overcome this limitation.

3.10 Chapter Summary

This chapter explained the research methodology and research methods used in this research along with the selection of case studies, interviews, data collection and data analysis. As discussed, a qualitative research methodology was adopted as the overall framework to guide data collection methods and strategies. Given the weaknesses of the qualitative methodology, multiple methods and data sources were used for data triangulation to improve the validity and reliability of the data collected and the subsequent analysis undertaken. NVivo 10.0 was used in this research as a computer aided data analysis programme with the collected data analysed using text analysis methods. Table 3.8 summarises the methods used in the study against the research questions set out in Chapter 1. The next chapter explains the environmental and disaster management context in Sri Lanka and New Zealand.

Table 3.8 A summary of the research questions and research methods

Research question	Research method/s
1. Policy Integration: how well, if at all, is DRR integrated into EIA processes?	• Policy/document analysis
2. Procedural Effectiveness: assuming DRR is integrated then how well is it practised?	• Document analysis • Qualitative interviews with planners and experts • Focus Group Discussions
3. Substantive effectiveness: does the EIA process achieve the objectives set and result in disaster risk reduction?	• Qualitative interviews with planners, experts, and affected groups • Focus Group Discussions • Field observations • Document analysis, database analysis
4. Contextual effectiveness: what influence does risk governance have on substantive effect?	• Qualitative interviews with planners, experts, and affected groups • Focus Group Discussion • Document analysis

Chapter 4

The Legislative and Institutional Context for Disaster and Environmental Management in Sri Lanka and New Zealand

4.1 Introduction

This chapter provides an overview of the legislative and institutional context for disaster and environmental management in Sri Lanka and New Zealand. This establishes the basis of institutional constraints and processes that frame the findings reported in Chapters 5 and 6. The chapter starts with the Sri Lankan legislative context followed by the New Zealand context.

4.2 The disaster and environmental management context of Sri Lanka

Sri Lanka is an island nation in South Asia. The country's population in 2013 was approximately 21 million, with a population density of 323 per square km (The Department of Census and Statistics Sri Lanka, 2011). The total land area[4] is 62,710 square km (The World Bank, 2013a). Sri Lanka is a lower middle-income country with per capita annual income of US$2836 in 2012 (CBSL (The Central Bank of Sri Lanka), 2012). However, in 2010, 8.9 percent of the population was still living under the national poverty line (The World Bank, 2013c). The country has the highest level of human development in the region and sits at 92nd in the World's Human Development Index (HDI) (UNDP, 2013).

4.2.1 Structure of the government

Sri Lanka consists of nine provinces. Each province has either two or three districts with the exception of Northern Province, which has four districts. Altogether, the country has 25 districts that are further divided into Divisional Secretariat (DS) divisions. Each DS division comprises several Grama Niladhari (GN) divisions, the lowest tier of government administration. There are 331 DS divisions and 14,022 GN Divisions (Ministry of Public Administration and Home Affairs of Sri Lanka, 2013). On average, each GN division consists of 368 households. Therefore, a GN division is formed by a combination of several villages or a part of a village based on population density and geographical distribution.

Sri Lanka has twin streams of government (Duryog Nivaran & Practical Action, 2008b). One is a three-tiered devolved system whereas the other is a decentralized system (Figure 4.1). Public administration is a function of the decentralized system of the government, where district

[4] Land area is a country's total area, excluding area under inland water bodies, national claims to continental shelf, and exclusive economic zones.

secretariats and divisional secretariats hold administrative responsibilities (Leitan, 2010). A district is administered by a district secretary and a DS division by a divisional secretary. The district secretary represents all the line ministries within the district. Grama Niladharis (village officers) report to the relevant divisional secretaries and carry out functions of the divisional secretariats' at GN division level.

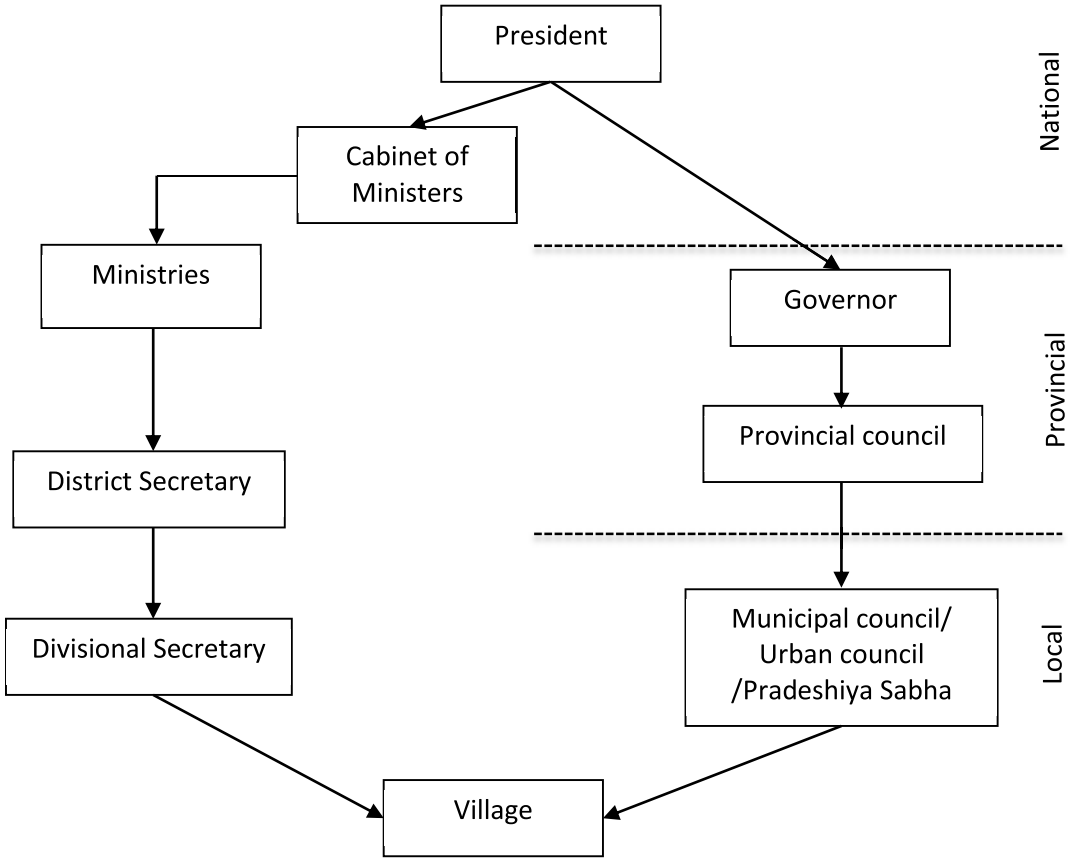

Figure 4.1 Twin-streams of government in Sri Lanka (Adapted from Duryog Nivaran & Practical Action (2008a))

Under the 13th amendment to the constitution passed in 1987, Sri Lanka has attempted to devolve the power of the central government to provincial councils, which have been established in all nine provinces. Both municipal and urban councils have been functioning since the British colonial period. Even though several reforms have taken place in the local government system since independence in 1948, municipal and urban councils remain unchanged. According to the 13th amendment, administration of local government was transferred to the respective provincial councils, which are also elected bodies. As per article 154 of the 13th amendment, the president appoints his/her representative as the governor of the province to exercise executive power in the province. The governor assumes a significant role in the province in exercising executive powers including dissolution of the provincial councils (Leitan, 2010).

The 13th amendment provides three different lists to clarify functions held by central and provincial governments. List 1 provides the functions of provincial governments; List 2 identifies the functions that remain under central government; and, List 3 identifies those functions shared by both the central and provincial government or 'concurrent' functions. Protection of the environment is a concurrent function. The North Western Provincial Council is the only council that has used this provision. The council passed its own environmental statute, which is identical to that being implemented by central government in the rest of the country (Gammanpila, 2008). The council has its own provincial Environmental Authority to implement the provisions in its statute and administers IEEs and EIAs for the North Western Province (FAO (Food and Agriculture Organization of the United Nations), 2013).

In 1987, through the Pradheshiya Sabha (Divisional Council) Act (No. 15 of 1987), local councils were also established in rural areas. These were meant to overlap the divisional secretariat divisions and it was "…expected that these institutions would perform those functions that could best be handled at the rural level, with the Divisional Secretariat acting as the administrative arm of the Pradeshiya Sabha" (Leitan, 2010, p. 10). However, this development never took place and today's decentralized system dominates over the devolved system. The Divisional Secretariat has become the focal point for public administration in rural areas (Leitan, 2010), limiting the role of Pradeshiya Sabhas to providing basic services related to roads and thoroughfares, public health and sanitation, public markets and public utilities (Leitan, 2010; UNESCAP, n.d.).

4.2.2 Disaster management legal and institutional framework

Sri Lanka, together with other South Asian countries, shares the highest number of natural disaster related fatalities in the World (UNISDR, 2011). The South Asia Disaster Report 2008 describes the region as the world's disaster hotspot (Duryog Nivaran & Practical Action, 2008a). According to the Global Assessment Report on Disaster Risk Reduction in 2011, of the total population exposed to flood risk in the world, approximately 65 percent live in South Asia and the population exposed to flooding is growing annually (UNISDR, 2011)(Table 4.1).

Though animal attacks, droughts, floods, landslides, fires and strong winds are common causes of disasters in Sri Lanka, droughts and floods have been responsible for the largest number of affected people in the country over the last four decades (Figure 4.2). Here, the term disaster is interpreted as "…the actual or imminent ocurrence [sic] of a natural or man-made event, which endangers or threatens to endanger the safety or health of any person or group of persons…, or which destroys or damages or threatens to destroy or damage any property…" (Disaster Management Act No. 13 of 2005, s.25).

Table 4.1 Flood exposure of different regions in the world (million people per year) (Source: UNISDR (2011, p. 26))

Region	Year				
	1970	1980	1990	2000	2010
East Asia and the Pacific	9.4	11.4	13.9	16.2	18.0
Europe and Central Asia	1.0	1.1	1.2	1.2	1.2
Latin America and the Caribbean	0.6	0.8	1.0	1.2	1.3
Middle East and North Africa	0.2	0.3	0.4	0.5	0.5
OECD countries	1.4	1.5	1.6	1.8	1.9
South Asia	19.3	24.8	31.4	38.2	44.7
Sub-Saharan Africa	0.5	0.7	1.0	1.4	1.8
World	32.4	40.6	50.5	60.5	69.4

Animal attacks are considered a major disaster in Sri Lanka because of the higher number of events and casualties reported each year. Even though the national disaster event database (i.e., Desinventar.lk) does not specify the types of animal attacks in Sri Lanka, Gunaratne & Premarathne (2006, pp. 2-3) state that 558 people were killed by elephant attacks alone during the 1991-2001 period. The 2004 Boxing Day Indian Ocean tsunami killed nearly 36000 people in coastal areas of the country, making it the biggest disaster the country has ever experienced. Post tsunami evaluations of DRR have revealed the lack of disaster preparedness, the absence of building standards, lack of city planning and zoning regulations, and weak local governance as reasons for the high mortality (UNEP (United Nations Environment Programme), 2005a). Taking the lessons from the tsunami, the Sri Lankan government, with the support of the UN and other international agencies, has taken DRR to a new level by passing the Disaster Management Act 2005 (Pelling & Holloway, 2006) and the National Disaster Management Strategy 2005. Even though the Act is highly emergency management oriented, the national strategy has extended beyond emergency management and has proposed a number of initiatives for risk reduction including introducing a system of Disaster Impact Assessments (DIA) parallel to the existing EIA process.

The Disaster Management Act (DM Act) No.13 of 2005 covers "…the establishment of the national council for disaster management; the disaster management centre; the appointment of technical advisory committees; the preparation of disaster management plans; the declaration of a state of disaster; the award of compensation and for matters connected therewith or incidental thereto". As per the Act, the National Council for Disaster Management is charged with the strategic direction of disaster management in Sri Lanka. The National Council consists of the president, the prime minister, the opposition leader, ministers in charge of key portfolios, chief ministers of all provincial councils and five opposition members as proposed by the Speaker in consultation with the opposition leader. Functions of the council include: to formulate a national policy and programme on the management of disasters, to prepare and formulate a National Disaster Management Plan and National Emergency

Operation Plan based on the national policy and programme, and to monitor the implementation of the National Disaster Management Plan and the National Emergency Operation Plan to facilitate emergency response, recovery, relief, rehabilitation and reconstruction in the event of any disaster.

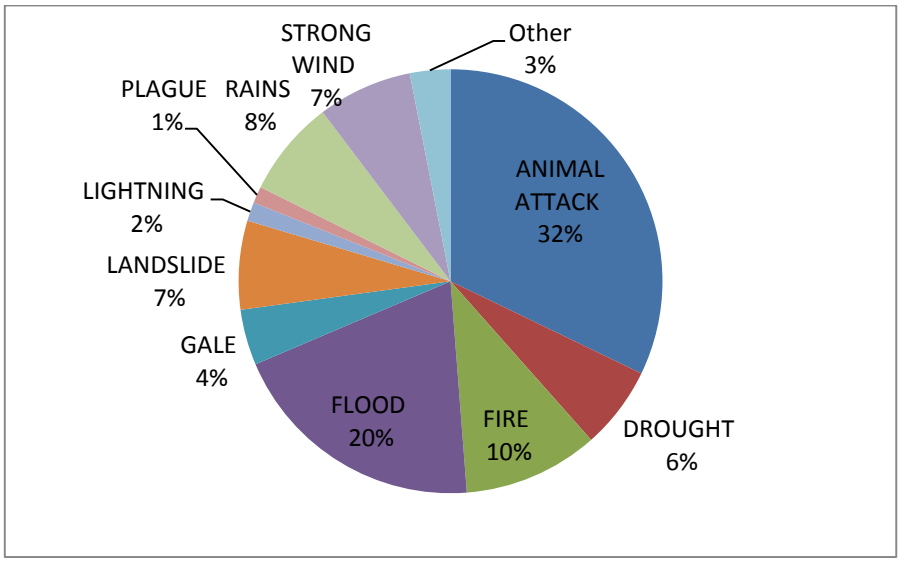

Figure 4.2 Common disasters in Sri Lanka (% events recorded since 1974) (based on *www.desinventar.lk accessed on February 15, 2014*)

The Ministry of Disaster Management was established in 2005 to lead strategic planning for disaster management, followed by the Disaster Management Centre (DMC) the same year. The centre was tasked with implementation of the National Disaster Management Plan and the National Emergency Operation Plan (Ministry of Disaster Management, 2005). Figure 4.3 shows the institutional arrangements under the DM Act 2005.

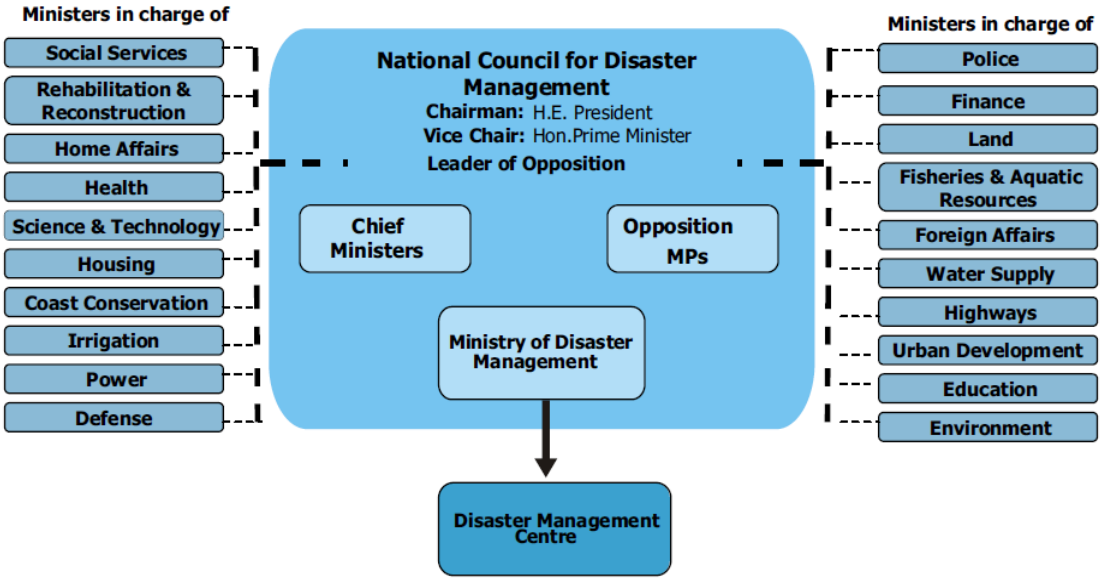

Figure 4.3 Disaster management institutional arrangement for Sri Lanka (Source: Ministry of Disaster Management (2005, p. 6))

The Act is largely dominated by content related to emergency management and does not provide a framework for overall risk reduction. In the same year that the DM Act was enacted, the Ministry of Disaster Management launched the National Disaster Management Strategy called 'Towards a safer Sri Lanka: a road map for disaster risk management'. The strategy identifies the integration of Disaster Impact Assessment (DIA) into the approval process of all development projects as one outcome (Ministry of Disaster Management, 2005). Volume II of the strategy, which consists of a set of project proposals to achieve the objectives in the strategy, was published the following year. Volume II proposes the introduction of a DIA system in Sri Lanka and states:

> *...at present, impact of a project on the environment is considered through a well-established Environment Impact Assessment (EIA) process. However the impact of the same project on life and properties is not assessed properly and mitigation measures are not identified. Conducting disaster impact assessment (DIA) should be made mandatory for specified development projects as in the case of EIA. In order to minimise delays in the approval process, criteria for undertaking DIA could be included in the EIA process (MDM&HR (Ministry of Disaster Management and Human Rights), 2006, p. 169).*

As reported above, under section 4 of the DM Act, one of the functions of the National Council for Disaster Management is to formulate a national policy and programme on the management of disasters. Based on these requirements, the National Disaster Management Policy was drafted by the Ministry in 2013. The draft policy document has also reiterated the setting up of a "…mechanism to evaluate potential disaster impacts of projects in relation to all public and private sector investments" as one of the national strategies for disaster management (Ministry of Disaster Management, 2013b, p. 6). Therefore, the approach towards curtailing development induced disaster risk has been consistent since 2005. The DMC, with the support of the Japan International Cooperation Agency (JICA), is in the process of developing a DIA system in Sri Lanka. Under this system, a checklist has been developed for road construction projects (Mohamed, 2013). Despite the above, the DMC in its progress report to the UNISDR on the implementation of the Hyogo Framework for Action for the 2009-2011 reporting cycle claimed that disaster risks of development projects are addressed through the EIA process (DMC, 2011).

4.2.3 Planning framework and integration of disaster risk

After developing and presenting its first Poverty Reduction Strategy paper[5] in 2002 entitled 'Regaining Sri Lanka', Sri Lanka presented 'Mahinda Chintana' or 'Thoughts of Mahinda', the election manifesto of President Mahinda Rajapaksha as its strategic development policy framework for the

[5] Poverty Reduction Strategy Papers (PRSPs) are prepared by the International Monetary Fund (IMF) member countries through a participatory process involving domestic stakeholders as well as donors. PRSPs describe the country's macroeconomic and social development policy framework at a minimum of a three-year period.

2005-2015 period. The policy framework has a separate section on disaster management. Even though the said section is largely dominated by emergency management and public awareness, it also mentions that "Existing laws on the aspects of safety, licensing and enforcement for the protection of public safety, properties and environment will be reviewed and strengthened" (Department of National Planning, 2010, p. 159). It is required under the present regime that all line ministries including the Ministry of Disaster Management serve the 'Mahinda Chintana' by preparing their annual plans to achieve the targets of the documents.

The Town and Country Planning Amendment Act (No.49 of 2000), which amended the original Town and Country Planning Ordinance (No. 13 of 1946), required development of a National Physical Planning Policy and Plan to promote and regulate integrated planning of economic, social, physical and environmental aspects of land use in Sri Lanka. Under the provisions of the Act, the National Physical Planning Department (NPPD) was established and has since developed and published the National Physical Planning Policy and Plan in 2010. This document has given significant emphasis to DRR. The purpose of the policy and plan is to provide "…a broad framework to secure Sri Lanka's place in the global economy by promoting economic growth" (NPPD, 2010, p. 8). The policy is expected to promote sustainable development. More importantly, the policy is based on guiding principles including applying the precautionary approach towards activities whose effects on the environment are scientifically not well established but may be a serious threat to the environment (NPPD, 2010).

Objectives 1 and 2 of the policy are directly related to risk reduction. Objective 1 states: "Protect the environment through limiting development in fragile areas, the Protected Area Network and areas of local and regional areas of environmental significance" (NPPD, 2010, p. 25). Objective 2 expects to "Ensure that the people of Sri Lanka live in areas that are safe from natural disasters and the effects of global warming including rising sea level" (NPPD, 2010, p. 35). The National Physical Plan also anticipates providing guidance for the preparation and implementation of regional, district and local plans and it is the responsibility of the NPPD to assist in the preparation of such plans. The implementation of the National Physical Plan relies on the preparation and implementation of the regional, district and local plans. However, information regarding the status of the district and local plans is not available.

Under the Urban Development Authority Act No. 41 of 1978, the Urban Development Authority (UDA) was established to promote the integrated planning and implementation of economic, social and physical development of urban areas as prescribed by the Minister. The Town and Country Planning (Amendment) Act 2000 also requires the UDA to follow any guidelines formulated on its behalf by the NPPD in carrying out integrated planning and physical development in urban areas

(s.16). However, there are no clear, explicit connections between these pieces of development planning legislation and the DM Act 2005.

4.2.4 Environmental management in Sri Lanka

The Sri Lankan constitution, enacted in 1978, carries two separate articles related to environmental conservation (Zubair, 2001), Articles 27 and 28. Article 27 (14) states that "The state shall protect, preserve and improve the environment for the benefit of the community". Article 28 (f) requires that "…the exercise and enjoyment of rights and freedoms is inseparable from the performance of duties and obligations", and accordingly it is a fundamental duty of every person in Sri Lanka to protect nature and conserve its riches.

The National Environmental Act (NEA) 1980 recommended the adoption of EIA in Sri Lanka. However, EIA was introduced only in 1988 after the National Environmental (Amendment) Act, (NEAA) No. 56 of 1988 was enacted. Under the NEAA 1988, the Central Environmental Authority (CEA) is responsible for coordinating the implementation of EIA and the approval of the projects with the relevant project approval agencies. The provisions of these Acts came into full effect after a series of capacity building programmes between 1991 and 1997 under the financial assistance of the United State Agency for International Development (USAID) (Zubair, 2001). Part IVC of the NEAA 1988 introduces a section about project approval. It is required, according to the Act, that all prescribed projects undertake an EIA. A full description of the provisions of the NEAA 1988 and gazette notifications on prescribed projects is set out in Chapter 5. Despite the established legislation for EIA, Zubair (2001) identifies a number of shortcomings in the provisions of the Act including inadequate provision for public participation, loopholes because of the list of prescribed projects, lack of tolerance standards, conflicts of interest for project approval agencies, problems with environmental data and inadequate post-EIA monitoring, that seriously threaten the effectiveness of the EIA process.

The NEA 1980 has provisions to establish the Central Environmental Authority (CEA) of Sri Lanka. In 1988, the NEAA introduced the EIA process to Sri Lanka and has made the CEA responsible for governing the EIA process. The NEAA also supplemented the powers, functions and duties of the CEA (provided by the NEA 1980) by adding to "…require the submission of proposals for new projects and changes in or abandonment of existing projects, for the purpose of evaluation of the beneficial and adverse impacts of such proposals on the environment" (NEAA, 1988, s 5 (4)(h)). Part IV C of the NEAA 1988, entitled 'Approval of Projects' has made it mandatory to conduct an Initial Environmental Examination (IEE) or Environmental Impact Assessment (EIA) for projects with significant environmental impacts or 'prescribed projects'. Part IV C of the NEAA 1988 was later amended in 2000 by the National Environmental (Amendment) Act No. 53 of 2000.

Despite these earlier enactments, the Sri Lankan EIA process did not begin until the Gazette extraordinary No. 722/22 of 1993 and the National Environmental (Procedure for approval of projects) Regulations, No.1 of 1993 were passed by Parliament. The Gazette listed 13 government agencies who could act as project approving agencies (PAA) and a list of prescribed projects that either IEEs or EIAs should be conducted for, before an approval is given. The list of PAAs was later amended in 1995 and 2004 taking the list of agencies who can act as PAAs to 23. The list of prescribed projects was amended in 1995 and 1999 to extend the range and type of projects that required environmental assessment.

The National Environmental (Procedure for approval of projects) Regulations, No.1 of 1993 specified the EIA procedure for Sri Lanka. These regulations were later amended by Gazette extraordinary No. 1159/22of 2000. This amendment provided provisions for PAAs to approve projects that require IEEs without subjecting them to public review.

EIA procedure

The following summarises the EIA process of Sri Lanka under the NEAA and associated regulations (see also Figure 4.4). In Figure 4.4, the numbers in circles depict the maximum number of days given for the different steps:

- Once a Project Proponent (PP) submits preliminary information about a project to an appropriate Project Approving Agency (PAA), the PAA should within six days acknowledge in writing the receipt of preliminary information. The EIA regulations also specify that a project proponent should not act as a PAA for its own project.

- Screening of the project occurs to decide whether an IEE or EIA is required for the project. PAA should subject the preliminary information received to environmental scoping to set Terms of Reference (ToR) for either an IEE or EIA. The PAA may consult state agencies and the public in this process. The PAA should inform the PP in writing of the ToR within 14 days for an IEE or 30 days for an EIA.

- The PP should submit the required number of copies of IEE or EIA reports to the PAA.

- Upon receipt of the IEE Report, the PAA should within 21 days:

> *"i. grant approval for the implementation of the proposed project subject to specified conditions; or*
>
> *ii. request the project proponent to submit an Environmental Impact Assessment Report; or*

iii. refuse approval for the implementation of the proposed project with reasons for doing so." (NER, 1993, s. 8 as amended by Gazette 1159/22, 2000).

- Upon receipt of an EIA report, the PAA should determine within 14 days whether the requirements of the ToR are sufficiently addressed in the report. If not, it should request the PP to address those gaps. The PAA may appoint a Technical Evaluation Committee (TEC) to advise the PAA on evaluation of the EIA report. The PAA should invite written comments by the public on the EIA report by publishing a notice in the gazette and in one national newspaper published daily in the Sinhala, Tamil and English languages. Thirty working days should be given to the public to comment on the report. Once comments from the public are received, the PAA may hold a public hearing.

- The PAA should forward the comments from the public to the PP within six days after completing the public phase. The PP should respond to such comments in writing to the PAA.

- Upon receipt of such responses from the PP, the PAA should, within 30 days either:

"i. grant approval for the implementation of the proposed project subject to specified conditions: or

ii. refuse approval for the implementation of the proposed project with reasons for doing so" (NER, 1993, s. 13).

- The NEAA 1988 contains provisions for PPs to appeal PAA's decisions to the Secretary of the Ministry of Environment if an application is rejected.

- The PAA should publish in the Gazette and in one national newspaper published daily in the Sinhala, Tamil and English languages the approval of any project.

- The PAA should, within 30 days of approval of a project, forward a monitoring plan to the CEA.

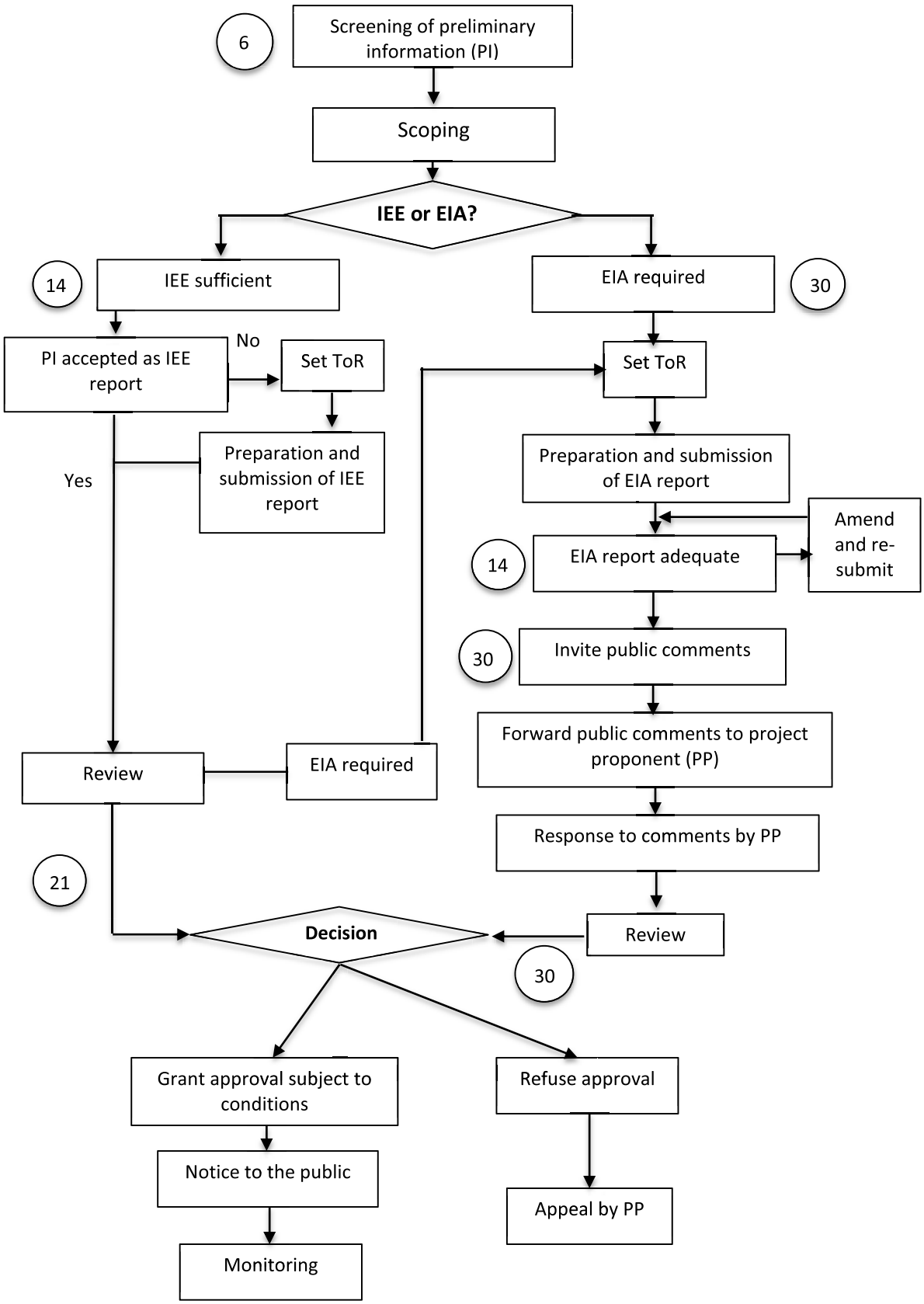

Figure 4.4 The EIA process of Sri Lanka with the maximum number of days for key steps (Adapted from CEA (2006, p. 2))

In addition to the NEA 1980, the Fauna and Flora Protection (Amendment) Act No.49 of 1993 and the Coast Conservation Act No. 57 of 1981 both contain provisions for conducting EIAs in Sri Lanka. The provisions for EIA in the Fauna and Flora Protection (Amendment) Act No. 49 of 1993 have further been amended by the Fauna and Flora Protection (Amendment) Act No. 22 of 2009. As per sub section 9A(1) of the Amendment Act 2009, no development activity of any description whatsoever should be carried out within a distance of one mile of the boundary of any national reserve without obtaining the prior written approval of the Director-General of the Department of Wildlife Conservation. Any such activity seeking the approval of the Director General should accompany either an Initial Environmental Examination (IEE) or EIA, as the case may be. Further, as per the Amendment Act 2009, such an EIA or IEE report should be subjected to the review of the general public as well as a technical committee. The technical committee has 60 days to make its comments; the public has 30 days. Within 60 days of the receipt of both public and technical committee comments and after considering those, the Director-General of the Department of Wildlife Conservation can decide whether a permit should be issued authorizing the applicant to carry out the development activity.

In contrast, according to section 14 of the Coast Conservation (Amendment) Act No. 64 of 1988, "…no person shall engage in any development activity other than a prescribed development activity within the Coastal Zone except under the authority of a permit issued" by the Director of the Coast Conservation Department (CCD). Therefore, the CCD is the final authority in determining whether to permit a development activity within the coastal zone as per the provisions given in the Act. Here, "Coastal Zone" is defined in the Act as an:

> *…area lying within a limit of three hundred metres landwards of the Mean High Water line and a limit of two kilometres seawards of the Mean Low Water line and in the case of rivers, streams, lagoons, or any other body of water connected to the sea either permanently or periodically, the landward boundary shall extend to a limit of two kilometres measured perpendicular to the straight base line drawn between the natural entrance points thereof and shall include the waters of such rivers, streams and lagoons or any other body of water so connected to the sea (Coast Conservation Act, 1981, s.42).*

According to the Act, the Minister in charge of the subject may, "…having regard to the effect of those development activities on the long term stability, productivity and environmental quality of the Coastal Zone" (Coast Conservation Act, 1981, s.8), prescribe the categories of development activity that may be allowed within the coastal zone without a permit issued by the Director of CCD. Such activity should not, however, include any development activity already listed under the NEA as a prescribed activity, which is required to be subjected to an IEE or EIA (CEA, 2008).

As per section 16 of the CCA 1981, once an application is received for a permit, the Director of CCD may require the applicant to furnish an EIA relating to such development activity. Upon receipt of the EIA report, the Director of CCD should:

> *(a) submit a copy of such assessment to the Council [Coast Conservation Advisory Council - The Council is an inter-department, inter-disciplinary advisory body] for its comments, if any; and*
>
> *(b) by notice published in the Gazette, notify the place and times at which such assessment will be available for inspection by the public, and invite the public to make its comments, if any, thereon.*

According to the CCA, the Council and the public have 60 days and 30 days, respectively, to provide comments on such assessments. The Director of CCD should make the decision related to the approval or rejection of the proposed development activity within 60 days after he/she receives comments from the public and the council (Table 4.2).

Table 4.2 Summary comparison of EIA requirements under different legislation in Sri Lanka

Act / Provision	National Environmental (Amendment) Act, No. 56 of 1988	Fauna and Flora Protection (Amendment) Act No. 22 of 2009	Coast Conservation Act No. 57 of 1981
Requirement for EIA	EIA is mandatory for all activities prescribed by the Act	EIA is required for any activity within one mile of the boundary of any national reserve	EIA is at the discretion of the Director for any activity, which is not prescribed as permitted by the Act within the coastal zone
Approval authority	Project Approval Agency	Director-General of the Department of Wildlife Conservation	Director of Coast Conservation Department
Review by a Technical Advisory Committee	Not mandatory	Wildlife Advisory committee has 60 days to review an EIA	Coast Conservation Advisory Committee has 60 days to review an EIA
Reviewing by the public	Only EIAs	Both IEEs and EIAs should be subjected to public reviewing	Only EIAs

On the other hand, the Fauna and Flora Protection (Amendment) Act No. 49 of 1993 (FFAA) provides provisions requiring either an IEE or EIA, as the case may be, before an approval is given to any development activity of any description whatsoever proposed to be established within a distance of one mile of the boundary of any national reserve. Such activity is required to have written approval from the Director-General of the Department of Wildlife Conservation. The Act also states:

> *Every application for approval, under subsection (1) to commence a development activity shall be accompanied by an Initial Environmental*

> *Examination or Environmental Impact Assessment, as the case may be, in terms of the National Environmental Act, No. 47 of 1980, relating to such development activity. The Director shall have regard to such environmental impact assessment in deciding whether or not to grant approval for the commencement of the development activity to which that assessment relates (FFAA, 1993, s.13).*

Even though the Fauna and Flora Protection Act is considered stronger than the other two Acts in terms of the provisions for the EIA process, the Fauna and Flora Protection Ordinance covers only approximately 13 percent of the country (IUCN Sri Lanka & the Ministry of Environment and Natural Resources, 2007). Therefore, this study is limited in its scope to the EIA process in the National Environmental Act 1980.

4.2.5 Case Studies

As reported in Chapter 3, two projects from each country were selected for detailed assessment in this study. This section introduces the two projects selected from Sri Lanka. They are the Southern Transport Development Project and the Upper Kotmale Hydropower Project. These two projects will be extensively referred to in Chapter 5 when the findings from Sri Lanka are reported.

Project I – The Southern Transport Development Project

The Southern Transport Development Project (STDP) is the first access-controlled expressway in Sri Lanka. It connects the country's capital to the southern province (Ministry of Highways, Ports and Shipping, 2013). The project was funded by three major donors including the JICA, the ADB and the Chinese EXIM Bank. The road crosses through four major river basins and also goes over 100 small and large wetlands and paddy fields (Withanage, 2004); the project area is known to be a historical flood plain (University of Moratuwa, 1999b). The road also passes through a number of villages and home gardens and required the demolition of over 1200 houses (Withanage, 2004). This action created many controversies and construction delays and the government had to secure additional funding from the donors to match the additional cost incurred because of design changes and delays. The road is expected to provide many benefits including an increased growth rate in the economically deprived southern province of the country and the promotion of tourism in south-western and southern coastal areas (Ministry of Highways, Ports and Shipping, 2013).

An EIA was initially conducted in 1996 for the original road alignment called the 'Original RDA [Road Development Authority] Trace'. However, this proposal was discontinued because of a lack of funding and for political reasons. Later, in 1998, feasibility studies prepared for a second attempt proposed an alternative alignment for the road called the "Combined Trace". This trace deviated by about 40 percent from the original RDA trace. A detailed EIA was conducted for this trace (University of Moratuwa, 1999b). However, in the latter stages of the project, the alignment was changed and a

new alignment was proposed, known as the "Final Trace". The final trace was not subjected to a detailed EIA, but an environmental study in 2000 and a social impact assessment in 2002 were done for the 29.3km section of the road (approximately one quarter of the total length), which was funded by the ADB (ADB, 2008). The expressway was opened in November 2011.

Project II – The Upper Kotmale Hydropower Project

The Upper Kotmale Hydro-Power Project (UKHP) is located in the central province of Sri Lanka. It is the third largest hydroelectric dam in the country (ABB (ABB Switzerland Ltd), 2013). Even though the original project concept was conceived in 1968, the initial feasibility of the project was conducted only during the 1985-1987 period. The EIA report for the UKHP was published in September 1994; it identified key environmental and social issues including "…impacts on waterfall aesthetics due to stream flow reductions, social impacts due to resettlement of affected people, possible effects on ground water due to tunneling [sic], impacts due to de-watering of streams on downstream water uses and impacts on bio-diversity" (UKHP, 2004). The project planned to tap water from at least five world-class waterfalls that lie within the project area, which created an extensive public outcry against the development (Kodituwakku & Moonesinghe, 2005). The project was approved in 1998 subject to seven mitigatory measures, which were later gazetted in the National Environmental (Upper Kotmale Hydro-power Project – Monitoring) Regulations No. 1, 2003. The proposed mitigatory measures included establishment of a monitoring committee, maintenance of stream flows over the waterfalls, development of a watershed management plan, an assessment of biodiversity, monitoring of groundwater levels and mitigation of the landslide risk of the area (Upper Kotmale Hydro-power Project – Monitoring Regulations No. 1, 2003). In 2005, because of strong protests from professionals, environmentalists, politicians and the general public, the Cabinet decided to limit the scope of the project to only one feeding stream called "Kotmale Oya". This has reduced the annual energy generation but also saved four major waterfalls in the area. The hydropower project was completed in 2012 with financial support from the JICA.

4.3 The disaster and environmental management context of New Zealand

This section describes the disaster and environmental management legislative and institutional context of New Zealand. New Zealand is an island nation in the southwest Pacific Ocean. Its total land area is 271,000 square kilometres (Statistics NZ, 2013a) and its estimated 2013 resident population was 4,470,800 (Statistics NZ, 2013b). This makes the country low in population density with only 16 persons per square kilometre. Compared with the rest of the world, New Zealand is in 196th position in terms of population density. The country is considered a high income country (The World Bank, 2013b) with a per capita GDP of NZ$ 47,487 [Approximately US$ 35,527] (Statistics NZ, 2013b). New Zealand sits 6th in the Human Development Index (HDI) (UNDP, 2013) and in 2012 shared first place

in the Corruption Perception Index (meaning it is perceived as least corrupt) with Denmark (Transparency International, 2014). According to the Worldwide Governance Indicators, New Zealand consistently shows a high level of achievement; it stands in the 90th percentile (among highest ranking countries) in all governance indicators (The World Bank Group, 2013).

The geographic location of New Zealand makes it one of the most seismically active countries in the world. The country lies across the boundary of the Australian and Pacific tectonic plates (OCDESC (Officials' Committee for Domestic and External Security Coordination), 2007). Between 1992 and 2007, New Zealand experienced over 30 earthquakes measured at or above 6 on the Richter scale (GNS Science, 2009). The February 2011 earthquake in Christchurch is considered the world's 10th biggest earthquake of all time in terms of the financial value of the damage (The OFDA/CRED, 2014). Other than earthquakes, the country is also subjected to frequent floods, storms, volcanic eruptions and drought (Table 4.3).

Table 4.3 Major disasters and their impacts in New Zealand 1900 – 2012 (Source: EM-DAT: The OFDA/CRED International Disaster Database[6])

Disaster type	No of disasters	Mortality	Affected	Damage US$ (000)
Drought	2	0	0	1,700,000
Earthquake (seismic activity)	8	459	620186	24,737,669
Epidemic	2	6700	1	0
Extreme temperature	1	0	0	200,000
Flood	34	31	28387	436,300
Industrial Accident	4	29	14145	0
Mass movement wet	1	0	600	2,466
Storm	11	65	3997	73,600
Transport Accident	6	469	20	0
Volcano	2	150	70	0
Wildfire	1	0	130	0

4.3.1 Environmental management in New Zealand

Environmental management and resource development in New Zealand are governed mostly by the Resource Management Act 1991 (RMA). The RMA is considered a holistic integrated piece of legislation (Bührs & Bartlett, 1993; Memon & Perkins, 2000). The Act replaced many other statutes, notably the Town and Country Planning Act 1977 and the Water and Soil Conservation Act 1967 (Ericksen, Berke, Crawford, & Dixon, 2003). New Zealand's local government reforms also occurred in

[6] For a disaster to be entered into the EMDAT database at least one of the following criteria must be fulfilled: 10 or more people reported killed, 100 or more people reported affected, the declaration of a state of emergency or a call for international assistance.

tandem with resource management reforms resulting in a three tiered structure for governance comprising central government, regional and territorial authorities (Ericksen et al., 2003) (see section 4.3.2).

The purpose of the RMA is to promote sustainable management of natural and physical resources. However, many scholars argue that realizing the expected results of the RMA is challenging because of a complex set of reasons, "…including confusion about the RMA mandate, limited local planning capability and weak local plans and inadequate involvement of central government in addressing these capacity building needs" (Glavovic, Saunders, & Becker, 2010, p. 685). Ericksen et al. (2003) suggest weaknesses in local planning are a symptom of fundamental problems of governance and recommend improving local planning capacity.

4.3.2 Planning framework under the RMA

The RMA provides a range of instruments from the national to local level to promote the sustainable management of natural and physical resources (Figure 4.5). At the national level, central government can provide overall direction to local councils to prepare policy statements and plans through national environmental standards (ss. 43, 45, 46) and national policy statements (s 62), which also ensure consistency of plans across the country. At the regional level, every regional council must prepare a regional policy statement (s.62) to provide the basic direction for resource management in the region by setting up of the objectives and policies for the region. In addition, every regional council must also prepare a regional coastal plan (if relevant) and may prepare a regional plan (s.67) for the region; every territorial authority[7] is required to prepare a district plan for the district (s.75). Regional and district plans assist respective local authorities to implement the provisions of the RMA. Therefore, regional and district plans form a crucial part of sustainable management of natural and physical resources in New Zealand. The above instruments are designed in a hierarchical order (Canterbury Regional Council v Banks Peninsula District Council ((1995)1B ELRNZ 415) to achieve integrated management of natural and physical resources.

[7] District or City council

Figure 4.5 Planning Framework under the RMA (Source: MfE (2012, p. 5))

National environmental standards and national policy statements

Under sections 43 and 44 of the RMA, central government may make regulations, known as National Environmental Standards (NES), that prescribe different technical standards, methods or requirements for environmental matters. The purpose of these standards is to ensure a clean and healthy environment especially promoting clean air, water and soil. The New Zealand government has already developed regulations on air quality standards, sources of human drinking water standards, telecommunications facilities, electricity transmission, and assessing and managing contaminants in soil to protect human health (MfE, 2013a).

Section 45 enables the Minister for the Environment to initiate the preparation of National Policy Statements (NPS) (other than the New Zealand Coastal Policy Statement) for the purpose of announcing objectives and policies for matters of national significance that are relevant to achieving the sustainable management of physical and natural resources. The Minister can recommend NPSs for different matters including anything which, because of its uniqueness, or the irreversibility or potential magnitude or risk of its actual or potential effects, is of significance to the environment of New Zealand (s.45). Therefore, even though it is not specifically mentioned, the Minister can initiate preparing a national policy statement for natural hazard management under the above provisions. Ericksen et al. (2000, p. 125) suggest that the Minister has the authority to prepare a NPS on natural hazards under the provisions in section 24 of the Act, which lists the functions given to the Minister under the RMA. However, it is clear none of these provisions makes it mandatory for the Minister to do so. Therefore, even after 22 years of the enactment of the RMA, a NPS specifically on natural hazards is yet to be seen in New Zealand. The Technical Advisory Group (TAG) report on the RMA

principles (Dormer et al., 2012), recommends developing an NPS or NES on natural hazards and expects such regulation would provide national guidance to local authorities on the management of natural hazards. In the summary of proposals for the next phase of RMA reforms, the Minister for the Environment has not indicated that the above recommendation by the TAG will be considered as it is. However, she did specify that decision makers are required to consider natural hazards in their deliberations under the proposed new sections to the RMA (MfE, 2013b). The proposed reforms predict that further guidance, either statutory or non-statutory, on natural hazards will be considered after passing the Bill.

NPSs are currently in place for electricity transmission, freshwater management and renewable electricity generation. There is also a mandatory New Zealand Coastal Policy Statement (NZCPS) (led by the Department of Conservation (DoC)). The purpose of the coastal policy statement is to state policies in order to achieve the sustainable management of physical and natural resources in relation to the coastal environment. The first NZCPS was promulgated in 1994. The NZCPS has two brief sections one on adoption of a precautionary approach to activities with unknown but potentially significant effects; the second is on recognition of natural coastal hazards (DoC (Department of Conservation), 1994). A review of the NZCPS 1994 was carried out in 2004 and concluded that "…the coastal hazard related NZCPS policies need to be changed and added to, if the NZCPS is to be effective in promoting sustainable coastal hazard management in New Zealand in the future" (Jacobson, 2004, p. 109). The NZCPS promulgated in 2010 addresses this concern and provides more elaborate policies on coastal hazard management. One of the objectives of the NZCPS is to ensure that assessment of coastal hazard risks takes into account climate change and risks are managed by locating new development away from hazard prone areas. Other policies address the hazard risks of existing development (DoC, 2010). For this purpose, the NZCPS provides a planning horizon of 100 years. Further, the NZCPS also explicitly requires adopting a precautionary approach "…towards proposed activities whose effects on the coastal environment are uncertain, unknown, or little understood, but potentially significantly adverse" (policy 3) (DoC, 2010).

Regional policy statements and regional plans

The RMA requires that each regional council prepares a Regional Policy Statement (RPS) for its region. The purpose of the RPS is to provide an overview of the resource management issues of the region and policies and methods to achieve integrated management of the natural and physical resources of the whole region in order to achieve the sustainable management of those resources. According to the RMA 1991, it is the function of regional councils to control the use of land for the purpose of avoidance and mitigation of natural hazards. The land can be the bed of a freshwater body or seabed as well as terrestrial land. Section 62 requires regional councils to specify in the RPS

the objectives, policies, and methods for the control of the use of land to avoid or mitigate natural hazards or any group of hazards.

In addition, every regional council is required to prepare a regional coastal plan for all coastal marine areas of the region. Even though it is not mandatory for regional councils to prepare regional plans for other areas, any regional council can at any time initiate preparation of a regional plan. The purpose of the preparation, implementation and administration of regional plans is to assist a regional council to carry out its functions to achieve the sustainable management of natural and physical resources. Section 67 requires the regional plan to give effect to any national policy statement, any New Zealand coastal policy statement, and any regional policy statement. Section 65 enables regional councils to consider the desirability of preparing a regional plan, among other things, whenever any threat from natural hazards arises or is likely to arise.

Regional councils can include regional rules in plans to carry out its functions and to achieve the objectives and policies of regional plans. Regional rules help control the use of land; the taking, use, damming, and diversion of water, and discharges to the environment. Regional rules can define whether the above-mentioned activities in the region are permitted, controlled, discretionary, restricted discretionary, non-complying, or prohibited within the region. These different classes of activities (except for prohibited activities) require different tests to decide whether they should be approved (Table 4.4).

Table 4.4 Class of activity and tests required under the RMA (based on the RMA, 1991)

Class	Test required
Permitted	A resource consent is not required for the activity if it complies with the requirements specified in the Act and does not contravene a NES, regulation, plan, or proposed plan.
Controlled	A resource consent is required for the activity and the consent authority must grant a resource consent except for subdivision consents under special circumstances. The consent authority's power to impose conditions on the resource consent is restricted to the matters over which control is reserved. Controlled activities are specified in a plan.
Restricted Discretionary	A resource consent is required for the activity specified in a plan and the consent authority's power to decline a consent, or to grant a consent and to impose conditions on the consent, is restricted to the matters over which discretion is restricted. If granted, the activity must comply with the requirements specified in the relevant plan.
Discretionary	A resource consent is required for the activity specified in a plan and the consent authority may decline the consent or grant the consent with or without conditions; and If granted, the activity must comply with the requirements specified in the relevant plan.
Non-complying	A resource consent is required for the activity specified in a plan and the consent authority may decline or grant the consent, with or without conditions, but only if the consent authority is satisfied that the adverse effects of the activity on the environment will be minor.
Prohibited	No application for a resource consent may be made for the activity specified in a plan and the consent authority must not grant a consent for it.

Saunders (2012) suggests the tests required for the above classes of activities vary, generally according to the level of risk that such a class of activity can have on the environment. The lower the level of risks the more permissive the planning regime. However, a recent study of 11 RPSs suggests they are not based on any systematic risk assessments (Saunders, Beban, & Coomer, 2014).

District plans

Every territorial authority is required to prepare a district plan for its district. The purpose of the district plan is to assist territorial authorities to carry out their functions in order to achieve sustainable management of natural and physical resources. Like regional plans, territorial authorities may include district rules in district plans. In making a rule, the territorial authority should have regard to the actual or potential effect on the environment of activities including, in particular, any adverse effect.

Like regional plans, territorial authorities too may categorize activities as permitted, controlled, discretionary, restricted discretionary, non-complying or prohibited and also make rules in its plan or proposed plan for each class of activity. In making any plan or policy statement, an assessment, essentially a strategic environmental assessment, is required of the effects of making (or not making) the rule or policy statement (RMA, 1991, s.32). However, it is clear that district plans are also rarely subjected to systematic risk assessments in New Zealand. According to Saunders et al. (2014, p. 21), only 4.3 percent of 67 territorial authority plans they had reviewed have information on systematic risk assessments.

Resource consenting process

Even though the direct provisions related to assessment of environmental effects are confined to Schedule 4 of the RMA, the remaining provisions of the RMA should also be closely studied to understand the EIA process in New Zealand. The EIA process is tightly associated with the resource consent process. Therefore, this section describes the consent application process and identifies connections between that process and the EIA process.

Section 87 of the RMA defines five types of resource consents. They are: land-use consents, sub-division consents, coastal permits, water permits and discharge permits. The consenting authority in charge of an application varies based on the type of ‘resource consent’ or its significance. Central government is responsible for matters of national significance. Territorial authorities are responsible for land use and sub-division consents; regional councils are responsible for other consents,

essentially those that deal with common pool resources. Unitary authorities[8] are responsible for both district and regional council functions (MfE, 1999).

Sections 30 (regional councils) and 31 (territorial authorities) of the RMA specifically provide provisions enabling regional councils and territorial authorities to control the use of land for the purpose of avoidance or mitigation of natural hazards. Regional councils are also responsible for the control of the use, development or protection of land in the coastal marine area (i.e., between mean high water springs and 12 nautical miles offshore) in the region in conjunction with the Minister of Conservation. This includes the avoidance or mitigation of natural hazards. According to section 31 of the RMA, every territorial authority has functions for the control of any actual or potential effects of the use, development, or protection of land for the avoidance or mitigation of natural hazards. Therefore, under the RMA, functions of controlling the use of land, coastal marine area or the bed of a water body in order to avoid or mitigate natural hazards are given to local authorities. According to the above provisions, regional councils are given the control of the use of land to avoid and mitigate natural hazards; it is the function of territorial authorities to control any actual or potential effects of the use of land. It is difficult to control any actual or potential effects of the use of land without controlling the use of land. There is clearly a potential overlap, duplication and administrative conflicts if, for instance, different levels of local government disagree over the use of land and its effects on vulnerability to natural hazards. This was specifically addressed by the Environment Court in Canterbury Regional Council v Banks Peninsula District Council ((1995)1B ELRNZ 415). The court found that the role of the regional council is to exercise controls "…where appropriate on a regional basis, rather than by individual territorial authorities". The decision further stated, "…one way of [the regional councils] doing this would be by the control of the erection of buildings or structures in a flood plain (Canterbury Regional Council v Banks Peninsula District Council ((1995)1B ELRNZ 415, pp. 12-13).

According to section 88, any person can apply to a relevant consent authority for a resource consent. However, it should be made in a prescribed form and manner. As per sub section 88 (2)(b), an application for resource consent must include an AEE in such detail as corresponds with the scale and significance of the effects that the activity may have on the environment. This is required to be done in accordance with Schedule 4 of the RMA. Figure 4.6 shows different stages and timeframes for processing a resource consent application.

As per sub section 88(3), if an application does not include an adequate AEE, the "…consent authority may, within 5 working days after the application was first lodged, determine that the application is

[8] A unitary authority is a territorial authority that has the responsibilities, duties, and powers of a regional council

incomplete and return the application, with written reasons for the determination, to the applicant". Once the application is accepted, if the consent authority decides that it requires further information to make a decision on the application, the consent authority may request further information at any time before a hearing has taken place (s. 92).

The RMA specifies three possible routes for a resource consent application. They are public notification, limited notification and non-notification. According to section 95, a consent authority must make its decision on one of these three routes within 10 working days after an application is first lodged and execute its decision. Any application, which in the consent authority's view has adverse effects on the environment that are more than minor, should be notified to the public. Public notification means that notices are published in a newspaper and are placed at the site. These provide information about the application and where to find more information and about the processes for the public to get further information or make submissions. Under section 95(b), if the consent authority does not publicly notify an application for resource consent, it may decide to limit notification to those people it decides are affected. In Figure 4.6, both public notification and limited notification are shown together. When the above two situations do not apply (i.e., when effects are minor or less), a consent authority may avoid notifying the application. Submissions on an application must be made within 20 working days after the application is notified (s.97).

There are provisions for combined hearings in cases of two or more applications (s.103) and joint hearings if two or more consent authorities are involved (s.102). Section 104 specifies the decision-making tests for resource consents:

> *when considering an application for a resource consent and any submissions received, the consent authority must…have regard to–*
>
> *a) any actual and potential effects on the environment of allowing the activity; and*
>
> *b) any relevant provisions of—*
>
> *a. a national environmental standard:*
>
> *b. other regulations:*
>
> *c. a national policy statement:*
>
> *d. a New Zealand coastal policy statement:*
>
> *e. a regional policy statement or proposed regional policy statement:*
>
> *f. a plan or proposed plan; and*
>
> *c) any other matter the consent authority considers relevant and reasonably necessary to determine the application.*

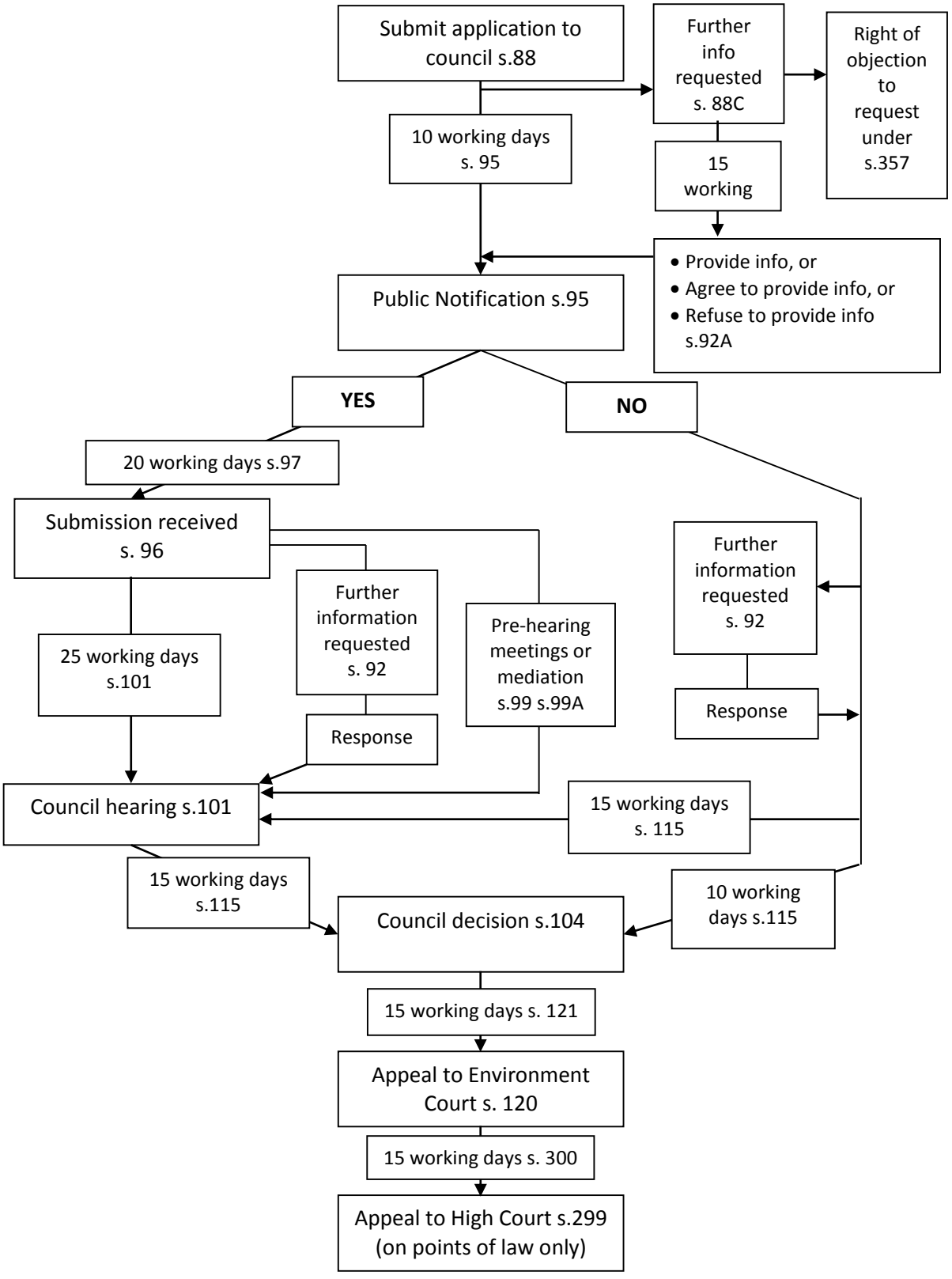

Figure 4.6 Processing of resource consents in New Zealand under the RMA (Adapted and updated from MfE (1999, p. 7))

Section 104 also provides for a consent authority to disregard an adverse effect of the activity on the environment when forming an opinion under section 104 (a) above if a national environmental standard or the plan permits an activity with that effect. Section 108 allows a consent authority to

specify any conditions related to the approval of a resource consent. As per section 114, a consent authority must ensure that a notice of decision on an application for a resource consent is served on the applicant, persons who made submissions, and other persons and authorities that it considers appropriate.

Section 120 of the RMA provides for either the applicant or any person who made a submission on the application to appeal, within 15 days after the decision is served to them, to the Environment Court against the whole or any part of a decision of a consent authority on an application for a resource consent. However, since the Canterbury Earthquake Recovery Act 2011 supersedes the provisions of the RMA, there is no right of appeal against any decision made under that Act. Since the Canterbury Earthquake Recovery Act 2011 is a specific case and relevant only to a small area of New Zealand, this chapter will not discuss it any further. As per section 128, a consent authority may review the conditions of a resource consent to deal with any adverse effect on the environment that may arise from the exercise of the consent that it is appropriate to deal with at a later stage.

In addition to the above, section 100 of the Resource Management (Simplifying and Streamlining) Amendment Act 2009 introduced the Environmental Protection Authority (EPA) and an exclusive process to handle proposals of national significance. Under section 144A (1) of the RMA as amended by the Resource Management Amendment Act 2011 (2011 No 19), the Minister in charge of the subject (i.e., the Minister for the Environment or Minister of Conservation if the application is related to a coastal marine area) can also request the EPA to advise him or her on whether an application is a proposal of national significance.

Section 142 outlines a set of criteria that may be used to decide whether a proposal is nationally significant. According to sub section 142(3), among other things if the proposal: "(i) has aroused widespread public concern or interest regarding its actual or likely effect on the environment (including the global environment); or…(viii) will assist the Crown in fulfilling its public health, welfare, security, or safety obligations or functions" then the Minister may consider such proposals as nationally significant. Under section 142, such proposals originally lodged with local authorities can be 'called in' by the Minister by making a direction to refer the matter to a Board of Inquiry for the decision; or refer the matter to the Environment Court for decision. It is the responsibility of the EPA to provide the Board of Inquiry or Environment Court with all information relating to the matter and any submissions received (MfE, 2014). Therefore, once a consent application is referred either to a Board of Inquiry or the Environment Court, the EPA's role changes to a supporting and advisory role.

4.3.3 Natural hazard management in New Zealand

New Zealand, in its national progress report on the progress of HFA implementation for the 2011-2013 reporting cycle, claims that a strong national legislative framework is in place for addressing hazard risk management and disaster risks of development projects through the EIA process (MCDEM (Ministry of Civil Defence and Emergency Management, 2013)). The report emphasizes the Resource Management Act 1991, the Civil Defence Emergency Management (CDEM) Act 2002, and the Building Act 2004 as three core Acts that promote risk reduction. The National Hazardscape Report (OCDESC, 2007, p. 8) describes these three Acts as "…key pieces of legislation influencing and promoting integrated environmental management and recognition of hazards and risks". According to the report, none of these Acts has priority over the others, they sit alongside each other and other legislation (OCDESC, 2007). Moreover, the National Hazardscape Report identified several other Acts that address specific aspects of hazard and risk management in New Zealand. They are the Biosecurity Act 1993, the Soil Conservation and Rivers Control Act 1941, the Environment Act 1986, the Hazardous Substances and New Organisms Act 1996, the Local Government Act 2002, the Health and Safety in Employment Act 1992, the Maritime Transport Act 1994, the Health Act 1956, and the Forest and Rural Fires Act 1977 (OCDESC, 2007).

Glavovic et al. (2010) and Saunders (2012) argue that of these Acts, five key pieces of legislation in New Zealand are directly related to natural hazard planning. They are the RMA 1991, the LGA 2002, the CDEM Act 2002, the Building Act 2004 and the Local Government Official Information and Meetings Act 1987 (LGOIMA). However, they also point out a lack of clear connection between these Acts and argue that these policies and laws should be better aligned, where appropriate, to facilitate a more holistic and coordinated governance approach to natural hazard management (Figure 4.7).

According to the above scholars, there is a range of tools and mechanisms provided from the above legislation available for planners for hazard risk reduction. These include: regulatory planning tools under the RMA such as National Policy Statements, Regional Policy Statements, Regional Plans, District Plans, and the resource consent process; community plans under the LGA 2002 such as 10-year Long-Term Plans (LTP) that include a description of the community outcomes of the local authority's district or region; building codes and project information memoranda (PIM) under the Building Act 2004; land information memoranda (LIM) under the LGOIMA; and Civil Defence and Emergency Management Group Plans under the CDEM Act 2002. The following sections elaborate further on the provisions of the above Acts.

The Civil Defence and Emergency Management Act 2002 (CDEM)

The CDEM replaced the Civil Defence Act 1987 and was enacted to improve and promote the sustainable management of hazards in a way that contributes to the social, economic, cultural, and environmental well-being and safety of the public and also to the protection of property (s. 3). The Act further aims to "…encourage and enable communities to achieve acceptable levels of risk" (s.3b) and to "…require local authorities to co-ordinate, through regional groups, planning, programmes, and activities related to civil defence emergency management across the areas of reduction, readiness, response, and recovery…" (s.3d). The Act defines hazard as "…something that may cause, or contribute substantially to the cause of, an emergency" and risks as "…the likelihood and consequences of a hazard" (s. 4).

Section 12 of the Act requires that a Civil Defence Emergency Management Group (CDEMG) be established in every region. Every territorial authority must be a member of a CDEMG. Section 17 outlines the functions of such groups including to identify, assess, and manage those hazards and risks and identify and implement cost-effective risk reduction. The Act, however, does not provide clear provisions about how risk reduction can be done; the National CDEM Strategy seeks to address this.

According to the National CDEM Strategy "…the New Zealand integrated approach to CDEM can be described by the four areas of activity, known as the '4Rs'": reduction, readiness, response and recovery (Department of Internal Affairs, 2008a, p. 5). Moreover, according to the national strategy, risk reduction is expected to be handled through local RMA plans and other instruments at the national level. Therefore, as per the risk management strategies of New Zealand, risk reduction should be dealt with through different planning instruments provided by other legislation including the resource consent process of the RMA. Nevertheless, there is no further guidance available on how reduction is included in the RMA (Saunders, Forsyth, Johnston, & Becker, 2007).

It can be argued that local CDEM groups can take measures to incorporate risk reduction into regional and district plans. However, this must be done through the normal planning process of the RMA since there is no special provision for CDEMGs to have an influence on RMA plans.

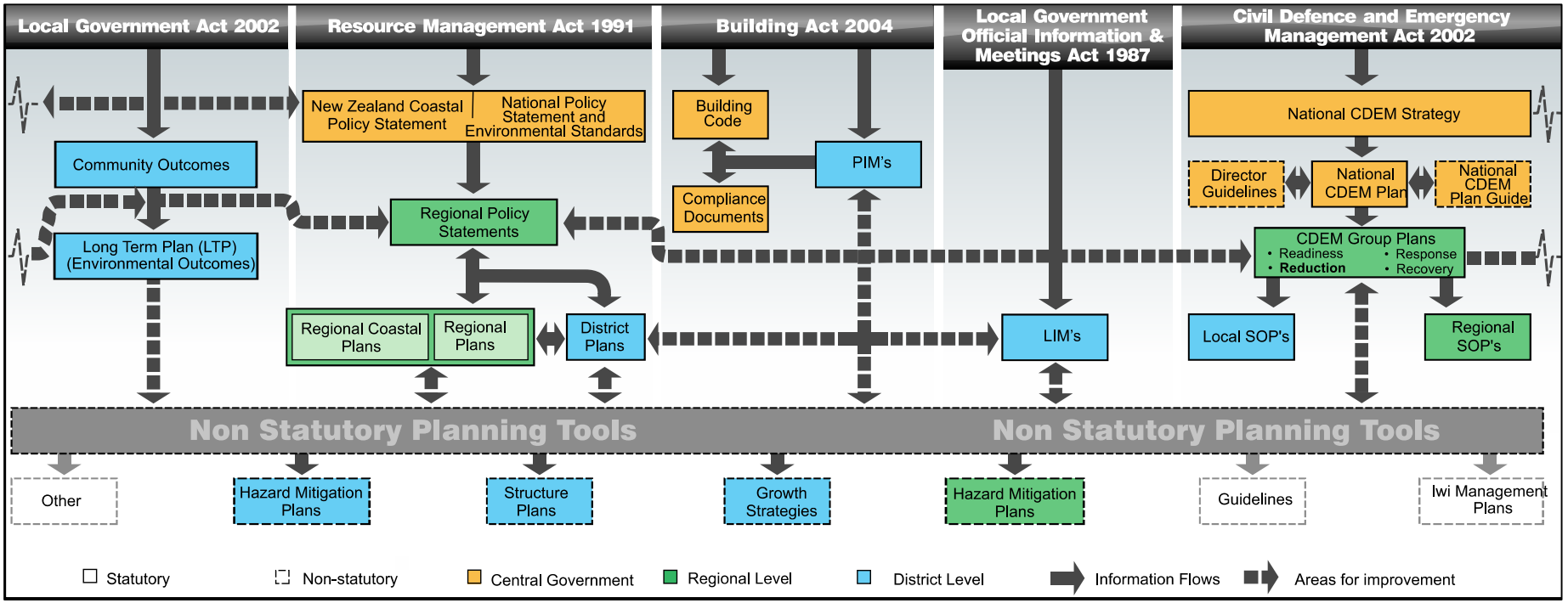

Figure 4.7 Key Acts and responsibilities and areas for improved connections for hazard management in New Zealand (Source: Saunders (2012, p. 87))

The Local Government Act 2002 (LGA)

As reported earlier, under sections 30 and 31 of the RMA, functions controlling the use of land, the coastal marine area or the bed of a water body in order to avoid or mitigate natural hazards are given to local authorities. In this context, the LGA plays a direct role in hazard and risk management in New Zealand. Section 10 of the LGA lists the purpose of local governments as:

> *(a) to enable democratic local decision-making and action by, and on behalf of, communities; and*
>
> *(b) to meet the current and future needs of communities for good-quality local infrastructure, local public services, and performance of regulatory functions in a way that is most cost-effective for households and businesses.*

As per section 11A, in performing its role, a local authority must have particular regard to the avoidance or mitigation of natural hazards as one of its core services to its community. Section 39 provides specific governance principles that each local authority should adhere to in performing its roles. Sections 76 to 81 of the LGA list matters relevant to decision making. As per section 77, a local authority must try to identify all reasonably practicable options for the achievement of the objective of a decision. Under section 78, a "…local authority must, in the course of its decision-making process in relation to a matter, give consideration to the views and preferences of persons likely to be affected by, or to have an interest in, the matter". Public participation in decision-making is given a prominent place in the LGA; section 82 lists a set of principles to be followed in any consultation exercise.

As per section 93, every local authority must prepare a long-term plan (LTP) describing the activities of the local authority and the community outcomes of the local authority area. Further, every local authority must also prepare an annual plan to operationalize the long-term plan (s.95). Clause 2 (2) of Schedule 10 of the LGA lists several activities, including flood protection and control works, that can be considered as groups of activities in LTPs. Clause 2(1)(a) requires local authorities to identify sub-activities within the group of activities to operationalize the group activity. Therefore, risk reduction measures can be included in LTPs; Glavovic et al. (2010) argue that there is a need to ensure that risk reduction is prioritised in these plans in order to ensure that the annual plan provides resources sufficient to take action.

The Building Act 2004

The Building Act 2004 was enacted to regulate building work to ensure the safety and integrity of structures (OCDESC, 2007). According to sections 12 and 13 of the Building Act, regional authorities have become the building consent authority for dams whereas territorial authorities are responsible

for other buildings. Section 71 of the Act permits consent authorities to refuse to grant building consent, if:

> *(a) the land on which the building work is to be carried out is subject or is likely to be subject to 1 or more natural hazards; or*
>
> *(b) the building work is likely to accelerate, worsen, or result in a natural hazard on that land or any other property.*

However, if the building consent authority is satisfied that adequate provision has been made to protect the land, building work or other property referred to above from natural hazards then the building consent may be granted. As per section 71, natural hazards in the above context mean: erosion (including coastal erosion, bank erosion, and sheet erosion); falling debris (including soil, rock, snow, and ice); subsidence; inundation (including flooding, overland flow, storm surge, tidal effects, and ponding); and slippage. According to section 32, if an owner of land is considering carrying out building work and a building consent is required for that work, he can apply for a PIM (Project Information Memorandum). Once the application is lodged, a territorial authority must issue a PIM within 20 working days; it should include natural hazard features of the land known to the territorial authority but are not listed in the district plan.

Subsection 7 of the Act lists provisions on the safety of dams. Dams should be classified as low potential impact; medium potential impact or high potential impact based on assessed damage level and population at risk. Accordingly, an owner of a large dam must first classify the dam according to potential impact from a dam breach and inform the relevant regional council. The Building (Dam Safety) Regulations 2008 (SR 2008/208) provide dimensions for a 'large' dam. The dam classification table is given in schedule 1 of the Building (Dam Safety) Regulations 2008 (Table 4.5).

According to the Building (Dam Safety) Regulations 2008, the assessed damage level is based on the number of residential houses likely to be damaged because of a dam break, damage to critical infrastructure, the time period required to restore critical infrastructure, damage to the natural environment and the community recovery period. Owners of medium or high potential impact dams should prepare a dam safety assurance programme, which includes, among others, safety reviews of the dam, a monitoring plan and also an emergency action plan. According to the regulations:

> *The purpose of a Dam Safety Assurance Programme is to assist the owner of a large dam to ensure good safety management of the dam through the life of the structure and to manage the resolution of any potential deficiencies that may arise (Department of Building and Housing, 2008, p. 16).*

Table 4.5 'Potential impact' classification matrix for large dams in New Zealand (Source: the Building (Dam Safety) Regulations 2008, Schedule 1)

Assessed Damage Level	Population At Risk (PAR)			
	0	1 to 10	11 to 100	More than 100
Catastrophic	High potential impact	High	High	High
Major	Medium potential impact	Medium/high (See note 4)	High	High
Moderate	Low potential impact	Low/medium/high (See notes 3 & 4)	Medium/high (See note 4)	Medium/high (See notes 2 & 4)
Minimal	Low potential impact	Low/medium/high (See notes 1, 3 & 4)	Low/medium/high (See notes 1, 3 & 4)	Low/medium/high (See notes 1, 3 & 4)

Notes:

1. With a PAR of 5 or more people, it is unlikely that the potential impact will be low.
2. With a PAR of more than 100 people, it is unlikely that the potential impact will be medium.
3. Use a medium classification if it is highly likely that a life will be lost.
4. Use a high classification if it is highly likely that two or more lives will be lost.

Local Government Official Information and Meetings Act 1987 (LGOIMA)

The LGOIMA was enacted in order to promote open and participative governance by local authorities. Under the Act, local authorities are required to make publicly available the official information held by such authorities. This is a key mechanism for ensuring transparency and accountability of local government processes and decisions; there is equivalent legislation (the Official Information Act 1982) applicable to central government.

In addition, according to section 44A of the Act, any person can request a LIM in relation to matters affecting any land in the district of the authority. After receiving an application for a LIM, the territorial authority within 10 working days should issue a LIM with any "…special feature or characteristic of the land concerned, including but not limited to potential erosion, avulsion, falling debris, subsidence, slippage, alluvion, or inundation" (s.44A(2)(a)), which is known to the territorial authority but is not already listed in the district plan.

4.3.4 Case studies

As per the research carried out in Sri Lanka, two projects from New Zealand were selected. This section describes the two projects, namely: the Waitohi Irrigation and Hydro Scheme (WIHS) and the Transmission Gully Project (TGP). Assessment was based on relevant document analysis from the two projects and also from interviewing project-related officials from relevant consenting authorities. These two projects will be extensively referred to in Chapter 6 when the findings from New Zealand are reported.

Project I – Waitohi Irrigation and Hydro Scheme (WIHS)

The WIHS involves an approximately NZ$380 million investment in North Canterbury for the purpose of irrigating nearly 60,000 ha and generating hydropower (Harris Consulting, 2012). The project is expected to create over 3300 new jobs for the Canterbury region (Hurunui Water Project, 2013). The scheme is a cascade of four storage dams. The Hurricane Gully Dam is the largest and is designed to store 95 percent of the total capacity of the scheme (Rivett, Morgan, & van Dusschoten, 2012).

The Hurricane Gully site was selected by a project developer as the best site along the river for a large storage area with a minimized volume of the dam structure. The project engineering report also admitted that the project area is located in a tectonically very active zone (Rivett et al., 2012). As per the requirements under the Building (Dam Safety) Regulations 2008, a dam break analysis was undertaken for the Hurricane Gully dam. The results of the analysis show the impact of a potential dam break would be catastrophic and the potential impact category of the dam is high (Rivett et al., 2012). Despite this, the scheme was approved by the Canterbury Regional Council in August 2013 (Hurunui Water Project, 2013).

Project II – Transmission Gully Project

The Transmission Gully project is a planned 27 km expressway forming an alternative inland route connecting the MacKays to the Linden segment of the Wellington Northern Corridor (NZTA (New Zealand Transport Agency), 2009). The project involves lands under the administrative jurisdiction of four separate territorial authorities, Wellington City Council, Porirua City Council, Upper Hutt City Council and Kapiti Coast District Council (Rae & Crack, 2011). In September 2011, the Minister for the Environment confirmed the project is of national significance and directed it to a Board of Inquiry as per s.171 of the RMA.

The project is expected to deliver a number of benefits including improved route security and resilience of Wellington's State Highway network (McGimpsey, Crack, Rickard, & Hall, 2011). The proposal was considered controversial because of long-standing public and media attention over potential impacts of the project on the environment (Dwyer, Howie, McMahon, & Mitchell, 2012). The geotechnical engineering report of the project identifies a number of hazards in the project area including slope instability, debris floods and flows, earthquakes and ground shaking, fault rupture, earthquake-induced landslides, liquefaction and tsunami (Brabhaharan, 2011). In June 2012, the Board of Inquiry granted resource consent for the project subject to conditions (Dwyer et al., 2012).

4.4 Chapter summary

This chapter provides an overview of the disaster and environmental management legislative and institutional contexts of Sri Lanka and New Zealand. It reveals that both Sri Lanka and New Zealand

are significant in the international hazardscape because of the high hazard risks they face. In this context, both countries have enacted disaster management legislation but the legislation is inclined towards emergency management rather than overall risk management. In addition, both Sri Lanka and New Zealand claim that they are addressing the disaster risks of development projects through the implementation of the EIA process.

In Sri Lanka, separate provisions are available in the Coast Conservation Act 1981, the Fauna and Flora Protection Act 2009 and the National Environment (Amendment) Act 1988 to implement the EIA process. However, it is clear that none of the above has explicit links with the Disaster Management Act. In New Zealand, even though the planning framework is more closely attached to the resource consenting and the EIA processes than in Sri Lanka, the Civil Defence and Emergency Management Act has no explicit links to either the planning framework or the EIA process. Attempts are seen in both countries to bridge this gap to ensure more sustainable environmental and disaster risk management approaches. In Sri Lanka, under the National Physical Planning Policy and Plan 2010, DRR has been given a prominent place in land use planning. In New Zealand, DRR is handled by five main pieces of legislation including the Building Act and the Resource Management Act. However, inter-connections among this legislation are weak and implicit. Moreover, the above Acts are more inclined towards a hazard management approach than disaster management. The next two chapters (Chapters 5 and 6) report the country-specific findings on the effectiveness of EIA processes in addressing development induced disaster risks.

Chapter 5

The Effectiveness of the EIA process in Addressing Development-Induced Disaster Risk in Sri Lanka

5.1 Introduction

Using the analytical framework proposed in the literature review (see Figure 2.5), this chapter reports on the effectiveness of the EIA process in Sri Lanka in addressing development-induced disaster risk. The chapter starts with a brief account of the methods used in data collection and then moves to the details of the findings.

In this chapter, findings from the data collected using the methods set out in Chapter 3 are presented under four main sections that reflect the effectiveness dimensions set out in Table 3.1 (i.e., policy integration, procedural effectiveness, substantive effectiveness and contextual effectiveness). Each section presents the document analysis and interview results of the experts and planners, including reference to the case studies. Data based on the community interviews are presented in relevant sections. Summary tables with findings reported against relevant criteria are presented at the end of each effectiveness dimension with a full summary table at the end of the chapter.

5.2 Policy integration

As discussed in Chapter 2, integration of disaster risk considerations into development policies and planning with a special emphasis on disaster prevention, mitigation, preparedness and vulnerability reduction is one of the three strategic goals of the Hyogo Framework for Action (UNISDR, 2005). The HFA monitoring framework of the UNISDR identifies making DRR an integral objective of environment related policies and plans and creating procedures to assess the disaster risk impacts of major development projects are crucial means to reduce the disaster risk of societies (UNISDR, 2014). This section presents the findings related to funding conditions and the integration of disaster risk into EIAs in Sri Lanka.

5.2.1 Integration of disaster risk into EIA legislation

This section covers criterion 1 (see Table 3.1) and investigates whether DRR is an integral part of the EIA process.

Disaster risk reduction in the EIA process

Integration of DRR into the development process has become a widely discussed topic both among environmentalists and disaster management experts in Sri Lanka. However, there seems to be little coordination and communication between these two groups. The Disaster Management Centre (DMC) is trying to incorporate DRR into the development process by introducing a Disaster Impact Assessment process, which is expected to be implemented through development agencies, the Central Environmental Authority (CEA) believes that disaster risk is already addressed in the current EIA process. The CEA, however, is concerned that the support of the DMC is not adequate to obtain the best results. The CEA planner described this in saying:

> *What I understand is; DMC is handling natural disasters, not project induced disasters. That's why they do not come [participate in the scoping committee]. But while you are talking about the natural disasters you cannot discuss about EIA. Those two cannot be integrated. We are very clear, in EIA you can discuss development induced predictable disasters only. Unpredictable natural disasters cannot be discussed within EIA. Truly, we do not like to use the term 'disaster' in the EIA process, because disaster is an unpredictable event. Therefore, it cannot be discussed within EIA. EIA is for predictable disasters.*

On the other hand, the DMC planner argued that the current EIA process does not sufficiently address development-induced disaster risk. The DMC planner stated:

> *EIA has been here for about 20 years in Sri Lanka. Under the EIA there is a disaster risk assessment to some extent. But it is not detailed enough when current development process is considered. It is not sufficient to make decisions on disaster mitigation. The CEA is not flexible to change the existing process as well. EIA consultants are also familiar with the current system. Therefore we are trying to assess disaster risk independently.*

As reported in Chapter 4, the DMC in its National Strategy for Disaster Management, has identified the establishment of a Disaster Impact Assessment (DIA) as one proposed action to curtail development-induced disasters in the country (MDM&HR (Ministry of Disaster Management and Human Rights), 2006). However, the national strategy has not clearly elaborated what the DIA means in the Sri Lankan context and how it can be operationalized in accordance with the existing EIA process.

The National Environmental Act (NEA) 1980 does not categorise humans as a part of the environment when defining the term 'environment'. The NEA defines the environment as "…the physical factors of the surroundings of human beings including the land, soil, water, atmosphere, climate, sound, odours, tastes and the biological factors of animals and plants of every description" (NEA, 1980, s.33). In addition, whether development-induced disaster risk is a part of the EIA process [or not] is decided by the extent to which DRR is emphasised in the purpose of EIA, which thus

governs the level of attention given to disaster risk during scoping and impact identification processes. The purpose of the EIA process is not clearly articulated in the NEA 1980 or any of its later amendments. The National Environmental (Amendment) Act (NEAA) 1988, which introduced the EIA process to Sri Lanka, has two references that can be related to the purpose of EIA in Sri Lanka. The Act defines the EIA report as:

> *"Environmental impact assessment report" means a written analysis of the predicted environmental project and containing an environmental cost-benefit analysis, if such an analysis has been prepared, and including a description of the project, and includes a description of the avoidable and unavoidable adverse environmental effect of the proposed prescribed project; a description of alternative [sic] to the activity which might be less harmful to the environment together with the reasons why such alternatives were rejected, and a description of any irreversible or irretrievable commitments of resources required by the proposed prescribed project (NEAA, 1988, s. 12(b)).*

The NEAA (1988) also points out that it is one of the functions of the CEA to evaluate "…the beneficial and adverse impacts" (NEAA, 1988, s. 5(4)(h) of development proposals that are submitted for their approval. Therefore, the EIA process of Sri Lanka does not have an explicit reference to the development-induced disaster risks of the project, but uses broad terms such as "adverse impacts" or "avoidable and unavoidable adverse environmental effect". The disaster management expert and the two EIA experts identify this as a weakness of the Act. In contrast, the legal expert commented:

> *There is a problem of using the term "disaster", as it has been difficult to define the term. But in the definition of EIA says "probable and possible environmental consequences". When you say consequence, it is broader enough to bring disaster impacts too into it. It is better than you trying to limit yourself to a word that has already made confusions over its definition.*

The CEA also strongly believes that the broader definition of the EIA report in the NEAA 1988 is sufficient and it implicitly covers project-induced disaster risk. The CEA planner stated that, "If it [disaster risk] is predictable, it is already in the EIA process". However, answering the same question as to whether development-induced disaster risk is sufficiently covered in the purpose of the EIA process in Sri Lanka, the second EIA expert argued:

> *No. It is not sufficient. Can you show me a single EIA report that has conducted an extensive assessment on disaster risk? No. In Sri Lankan system if it is not explicitly mentioned then they [developers and EIA consultants] do not take it seriously. They would argue that you did not ask me to do a disaster risk assessment. So, you have to put it in. There is no harm even if it is a repetition.*

According to the DMC planner, the use of EIA in DRR is not completely ignored. The interviewed experts had divided views. The CEA planner and the legal expert argued that disaster risk is implicitly

mentioned under the broader term of “adverse environmental effects” of a development project. They also argued that there is a greater chance of addressing all negative impacts of a development project, including that of disaster risk, if the general terms are used over specific terms in the EIA process, but others argued otherwise. The EIA experts and the disaster management expert argued for more explicit treatment of DRR in the EIA laws and process.

Summary

The findings show criterion 1 is met to a ‘limited’ extent in the Sri Lankan EIA process. It is clear that disaster risk is not explicitly integrated into the EIA legislation in Sri Lanka. There is an implicit reference to disaster risk under the “avoidable and unavoidable adverse environmental effects”, but most experts argued it is not sufficient. Table 5.1 summarises the criterion findings for the integration of disaster risk reduction in the EIA process in Sri Lanka.

Table 5.1 A summary of the criterion findings for policy integration

Criterion	Evaluation	Justifications
(1) Disaster risk reduction is an integral part of environmental assessment.	Limited	Disaster risk is not explicitly integrated into the EIA process. An implicit reference to disaster risk is given in the definition of the EIA report as “avoidable and unavoidable adverse environmental effects”. People are not considered as a part of the environment.

5.3 Procedural effectiveness

This section reports the legal basis of, and guidance given for, the EIA process in Sri Lanka and the extent to which such legal provisions and EIA guidance are being implemented in Sri Lanka.

5.3.1 Legal basis

Five different criteria are evaluated in this section (see Table 3.1). These are: (2) clarity of the legal provisions, (3) whether the impacts of all significant actions are assessed, (4) consideration of alternatives, (5) whether EIA reports contain a separate section on disaster risk, and (6) opportunities for legally challenging a consent authority’s decision.

Legal basis for the EIA process

Both the planners and experts interviewed believe that the Sri Lankan EIA system is sufficiently backed with clear and specific legal provisions, except for a few ‘loopholes’ in the legislation. The legal expert stated:

> *Yes, to a greater extent the provisions are clear and comprehensive. But there are about three gaps in the provisions.*

> *First, there is not a provision to obtain public participation before the EIA report is opened for public comments, especially at the ToR setting stage. There is no mechanism, but if the public have serious objections at the start of the project, public participation is obtained, but it is not required by the law. So the public get only 30 days period to get involved in the EIA process.*
>
> *Second, if an approval for an EIA was not given, according to clause 23.dd of the NEAA 1988, the project proponent can appeal to the Secretary of the Ministry of Environment. However, if the approval is incorrect or unjust the same provision or equal right is not available for the public. This is very serious when IEE is conducted. Even the 30 days public comment phase is not there for IEE. In such cases people only come to know about the project when the implementation is started.*
>
> *Third, in the monitoring stage, when you identify a wrong doing, there is no provision to cease the project immediately. Currently, the CEA suspends the approval. Then they [the CEA] obtain a court order. That should not be the way. If there is an unforeseen danger due to a project, there should be a provision to obtain an injunction within a day. Sometimes, it may not be due to irresponsibility of the project proponent, but due to other unavoidable reasons or due to changes in the context or due to a reason, which was not identified earlier. These are the main weaknesses of the Act.*

The lack of provision for public participation in the EIA process was also emphasised by the disaster management expert and the second EIA expert. They also identified the lack of provision for the public to appeal against an approval decision of the PAA as one such inadequacy of the Act on public participation. Nevertheless, all experts perceive a larger socio-political gap in the rule of law in the country that affects the effective implementation of the EIA rather than the few gaps in the EIA legislation. The second EIA expert stated:

> *I think EIA law is very comprehensive in terms of legal and policy provisions. But the current situation is, EIA process is not taking its full cycle [does not implement the full provisions of the legislature]. That is the only issue. As [with] any other law of this country, enforcement of the EIA and other scientific assessment do not happen properly.*

Assessing the impacts of all significant actions

The National Environmental Regulation (NER) No. 1, 1993, in its list of prescribed actions, identifies the following as highly sensitive environments:

> *any erodable area declared under the Soil Conservation Act (Chapter 450)*
>
> *any Flood Area declared under the Flood Protection Ordinance (Chapter 449) and any flood protection area declared under the Sri Lanka Land Reclamation and Development Corporation Act, No.15 of 1968 as amended by Act, No. 52 of 1982.*
>
> *60 meters from the bank of a public stream as defined in the Crown Lands Ordinance (Chapter 454) and having a width of more than 25 meters at any point of its course.*

> *any reservation beyond the full supply level of a reservoir (NER, 1993, Part III).*

The above list was amended by the Gazette extraordinary 859/14, 1995, to add two more environments as sensitive:

> *within 100 meters from the boundaries of, or within, any area declared as a Sanctuary under the Fauna and Flora Protection Ordinance (Chapter 469).*
>
> *within 100 meters from the high flood level contour of, or within, a public lake as defined in the Crown Lands Ordinance (Chapter 454) including those declared under section 71 of the said ordinance.*

Any prescribed project irrespective of its magnitude, if located wholly or partly within the areas specified in the above, should require an approval from an appropriate PAA and should undergo either an IEE or EIA. All these surroundings except the area within 100 m from the boundary of a sanctuary are also considered as highly disaster prone environments. However, the NEAA 1988 does not explicitly require an assessment of disaster risk of any development project in any of the above situations.

The NER 1993 also provides a set of projects identified by the regulations as 'prescribed projects', which require an IEE or EIA before approval. This list has been amended several times. However, this list has serious limitations. The experts and planners interviewed argued that some potentially high-risk activities are not included in the NEA 1993 as 'prescribed projects'. For example, the widening of the 105 km Mahiyangana-Kandy AA 026 national highway, completed in May 2012, has been criticised by most experts interviewed as a project that has created many new disasters in the area. The disaster management expert stated:

> *Even though the road [national highway AA026] has been constructed, there is no use as there are landslides and rock falling along the road. So there is no safety. There is no meaning of the investment if the road is not safe for the commuters. An EIA was not done for this project as it was an expansion of an existing road and such projects are not listed as prescribed projects.*

The location of the road was considered highly landslide prone even before the recent expansion. However, the above concern of the disaster management expert was not shared by the CEA planner who stated:

> *EIA is done only for new roads. EIAs are not being done for expansions. But in [the] Mahiyangana-Kandy expansion a small assessment was done. [The] Wildlife Department has given the approval as the road has encroached to a part of the wildlife area.*

Both EIA experts were also concerned that the Sri Lankan EIA process is overwhelmingly focused on a few key project components, even though some crucial project actions, such as temporary access and supply routes for project sites and resettlement locations, are left unattended without being subjected to an environmental study. For example, the Upper Kotmale Hydropower Project (UKHP), completed in July 2012, is criticised by the re-settlers, the media and EIA experts for not giving enough attention to the landslide risk of the resettlement sites. Similarly, the supply routes of the Southern Transport Development Project (STDP) have increased the flood risk of the area (Hettiarachchi, Silva, & Thambiah, 2010).

The 1994 EIA for the UKHP paid little attention to the landslide risk of the location. The description of landslide risk in the EIA report was limited to two lines. Even though the report (CEB (Ceylon Electricity Board), 1994, p. 4-19) pointed out that landslide zones are concentrated on both banks of the Kotmale oya, sub section 4.2.1.8.2 of the EIA report on landslide hazards states, "…based on the information presented above [history of landslide in the area], areas where significant landslides might be induced by the project are limited to the Penstock - Powerhouse - Tailrace area and to the Thalawakele pond" (CEB (Ceylon Electricity Board), 1994, p. 4-19). The EIA report has no reference to the resettlement locations. A detailed review of project documents reveals that the resettlement locations had not been identified in the pre-feasibility stage of the project. However, because of unprecedented attention to the environmental issues of the UKHP, pressure from the residents in the project location, and environmental groups, approval for the project was given under strict conditions. These conditions were later legalized by the government via the National Environmental (Upper Kotmale Hydro-power – Monitoring) Regulations No. 1 2003. The regulations list seven mitigatory measures that should be undertaken by the project. Landslide mitigation is identified, as one such mitigatory measure required of the project. Regulation (5A) states:

> *The Project Proponent shall in consultation with the Monitoring Committee, the Central Environmental Authority, the National Building Research Organization and the Geological Survey and Mines Bureau adopt a plan to mitigate as far as possible the risk from landslides in known high risk areas within the area comprising the project and set out safeguards to minimize such risks. These measures shall be implemented as and when the need to do so arises. A geological information base shall be mainted [sic] of all this information in order to prevent as far as possible all danger from such risks. The Monitoring Committee shall supervise all action being taken in this regard.*

A close examination of the Monitoring Committee meeting minutes of the project shows that, even though the construction of permanent facilities for the re-settlers was commissioned in September 2005, mapping of landslide prone areas had not been initiated even by February 2006. This indicates that the re-settlers have been relocated without a proper study of the landslide risk. In 2008, a

provincial correspondent of the Lakbima Newspaper, writing an article about the environmental impacts of the project, also stated that the resettled areas of the projects are infamous for landslide risks (Munaweera, 2008). This was re-emphasized in my interviews with community representatives. A community member stated:

> *The project was dragging until 2005 due to the protest from environmentalists and the people. In 2005, under the present government, the Minister of Power and Energy visited and informed the people about the importance of the project and started the project. Then they have constructed these houses very quickly, as they wanted to acquire lands for the project.*
>
> *They had pre-selected two, three hills for resettlement and we were asked which one you like. This one [location] is comparatively flat. There is an original village closer to this hilly area called Devsiripura. We also had been to there. So we did not see a serious landslide risk here at that time. But after we came here, now there is a risk for about 7-8 houses situated in the slopes. There are water springs appeared in front of houses, saturated grounds and cracks in the houses. They might have constructed those houses in filled lands.*

Consideration of alternatives

According to the NEAA 1988, an EIA report should also provide "…a description of alternatives to the activity [proposed project] which might be less harmful to the environment together with the reasons why such alternatives were rejected" (NEAA, 1988, s. 12(b)). However, the EIA experts argue that the above requirement is not adequately addressed in the current EIA process. The first EIA expert from his experience in Technical Evaluation Committees (TEC), stated:

> *Most of the time when the alternatives are proposed, they [developers] give their proposal with two other obviously inappropriate options without making a deeper analysis of more reasonable alternatives. Therefore, the best or more appropriate option may not be on the table during the decision-making.*

The legal expert too was concerned about lack of attention to assessment of alternative options in the EIA process. According to the legal expert, even though some attention is given to alternative sites for a proposed project, alternative methods are rarely assessed. EIA reports of both the UKHP and the STDP have sections on project alternatives. These list both site alternatives and alternative methods of carrying out the project. For instance, one of the alternatives for the STDP is improvement of the existing railway from Colombo to Matara (University of Moratuwa, 1999b). However, such analyses are not detailed and, for instance, the approved design of the UKHP, which was selected due to public pressure, was not considered in the EIA report. Most experts interviewed argued that the information provided in the EIA reports on project alternatives is misleading. Zubair

(2001, p. 474) argues that the UKHP EIA report avoided more viable options in the analysis of project alternatives, instead other non-viable alternatives had been "cursorily" examined.

Separate section on disaster risk in the EIA report

There is neither a legal requirement nor standard practice to incorporate a separate section in EIA reports on disaster risk. The CEA planner and the legal expert argued that the term disaster itself is a subjective term. Therefore, any attempt to separate disaster-related impacts into a separate chapter will lead to confusion over classification of environmental impacts as disasters and non-disasters. However, the disaster management expert and the EIA experts argued otherwise. They supported having a separate chapter on disaster risk, saying even if it is a repetition of facts in the EIA Report, incorporation of a chapter on disaster risk provides a better chance to identify project-induced disaster risks.

Opportunity for appeal against the approval decision

Clause 23dd of NEAA 1988 provides rights for the person or body of persons aggrieved to appeal against the decision of the CEA if the CEA refuses to grant approval for any prescribed project submitted for its approval. However, this privilege is available only to the project proponent. Based on the provisions of the NEAA 1988, the public does not have an equal right to appeal against an approval decision. The legal expert describing these provisions stated:

> *This is against the constitution of the country. Constitution says everyone is equal in front of the law. This clause was included in the NEAA 1988 and there has not been any attempt to correct this. Sometimes, proponents are giving wrong information and get the approval and people will be helpless, as they cannot appeal against the decision.*

As reported in Chapter 4, the Constitution of Sri Lanka has two clauses relevant to environmental protection (i.e., Articles 18 and 27(14)). In addition, any citizen of the country is entitled to a set of fundamental rights, including the right to freedom of movement and of choosing his residence within Sri Lanka (Article 14(1)(h) of the Constitution). The Constitution also guarantees the right to petition the Supreme Court against the infringement or imminent infringement of the fundamental rights by executive or administrative action (Article 17). These provisions are being used by the public and civil society campaigners against decisions of the CEA. The second EIA expert stated "Most of the time the community seeks the assistance of civil society groups for these [filing fundamental case in the Supreme Court] as the cost of the court process is too high for them to afford". Giving evidence on the involvement of the Supreme Court in some of the petitions filed by civil society groups, the expert stated:

> *Upper Kotmale Hydropower project when they started there was no EIA. Then EFL [Environmental Foundation Limited., a civil society lobby group]*

and few others went to the Supreme Court. And said that this massive project has started without an EIA. Yes, it is a government project. But does not matter. Every project must abide by the law. Then Supreme Court has ordered to conduct a comprehensive biodiversity assessment for UKHP, in addition to the EIA. EIA was done in 1994. If you look at the initial EIA of UKHP environment is only one paragraph. Supreme Court has also ordered to conduct the biodiversity assessment through an independent agency. Then they selected IUCN country office.

So IUCN did a thorough study on biodiversity assessment with a monitoring plan and presented to the Supreme Court. Then Supreme Court asked to use the document as a part of project development document and set aside finances for the plan and implement it.

Summary

According to the criteria findings, criterion 2 is 'mostly' met, and criteria 3, 4, 5, and 6 are met to a 'limited' extent in Sri Lanka. Table 5.2 summarises the criteria findings for procedural effectiveness of the EIA process in Sri Lanka.

Table 5.2 A summary of the criteria findings for the legal basis

Criteria	Evaluation	Justifications
(2) The EIA system is based on clear and specific legal provisions.	Mostly	Legal system is clear and comprehensive to a greater extent. However, a few gaps have been identified in this research. These include, insufficient provisions for public participation, lack of provisions for the public to appeal against a decision.
(3) The impacts of all significant actions are assessed.	Limited	The prescribed project list provided in the NER 1993 has limitations. Some projects, for example expansion of existing roads, are not considered as prescribed projects in the law. Even though most of the prescribed projects can also be categorised as projects that increase disaster risk, assessment of disaster risk is not required under the EIA law.
(4) Alternative methods and locations are considered.	Limited	Consideration of alternatives is required under the NEA. Even though the NEA is not clear about requirement of both alternative methods and locations, in practice both alternative methods and locations are included in the EIA reports. However, a detailed assessment of alternatives has not been conducted in the studied EIA reports.
(5) EIA reports contain a section on disaster risk.	Limited	More obvious visible hazard risks such as flood risk are included as part of anticipated environmental effects. However, the vulnerability of affected people is not included in the EIA reports.
(6) There is an opportunity for appeal or legally challenge the process or decision output.	Limited	A developer can appeal against the decision to the secretary of the Ministry of Environment. However, the public cannot appeal against an approval decisions under the provisions of the NEA 1980. Currently, provisions of the Constitution are used to challenge decisions.

The EIA process is supported by specific legal provisions but there are a few gaps identified in this study. EIA reports are required only for projects listed as prescribed projects under the NER 1993. Generally, EIA reports do not contain a separate section on disaster risks, however, more obviously

visible hazard risks are included in the EIA reports. Consideration of alternatives is required under the NEA. Both alternative methods and locations are considered in the studied projects. However, a detailed assessment of alternatives has not been incorporated in EIA reports. Under the NEA, provisions are not available for the public to appeal against an approval decision.

5.3.2 Guidance on EIA

Guidance on the EIA process is provided in the National Environmental (Procedure for approval of projects) Regulations, No. 1 of 1993. This section reports: (7) the provisions for public reviewing of the EIA reports, (8) the requirements for hazard and vulnerability assessment, and (9) monitoring of project actions in different stages of the EIA process (see Table 3.1).

Public reviewing of the EIA report

As per the National Environmental Regulations (NER) 1993, once the EIA report is submitted by the project proponent, the Project Approving Agency (PAA) should determine whether the EIA report has sufficiently addressed the ToR provided by the PAA. If not, the PAA should ask the proponent to substantiate the report with further information (Figure 4.4). Once the PAA receives the EIA report (after adjustments made, if any), the PAA should notify the public by publishing a notice in the government Gazette and one national newspaper published daily in Sinhala, Tamil and English and invite the public to make written comments within 30 days. The NER 1993 also recommends that the public should be informed about the times and places at which the EIA report can be accessed. The NER further instructs that:

> *It shall be the duty of a Project Approving Agency, upon completion of the period of public inspection or public hearing, if held, to forward to the project proponent comments received for review and response, within six days. The Project Proponent shall respond to such comments in writing to the Project Approving Agency (NER, 2003, s.12).*

According to the CEA, these instructions are duly followed and copies of the EIA reports are kept in the library of the CEA in Colombo and the divisional secretariat office and/or local authority of the concerned area. The Technical Evaluation Committee (TEC) then evaluates both public comments and the measures and explanations of the project proponent to see whether the public comments are true and valid and the measures taken by the proponent are adequate to address the public concerns, before approval is recommended. If the public request further clarification about the project, the CEA decides whether to conduct a public hearing in a venue in the affected area; people who have submitted written comments will be invited for the public hearing. Nevertheless, the community representatives interviewed had neither seen the EIA report nor participated in any public hearings. A community representative from Kumaragama village, one of the resettlement sites of the UKHP, stated that: “No, we have not seen those reports. Some said they write a book on the

project and some said they are doing a report. We have not seen any of these after that. There were a number of assessments done".

The 30-day public phase of the EIA process is highly criticised by most experts, saying it is not effective and the CEA is not taking proper measures to make the best use of it. The legal expert stated:

> *Yes, but it [public comments phase] is useless as the EIA report is full with technical jargon. Sometime, people do not know whether project EIA is available in the DS [divisional secretariat] office, as advertisements related to those are published in government newspapers. People do not usually read those newspapers. People check it only if they are directly affected from it. It is costly to take a copy as the report is too large. People do not have required technical knowledge to understand these. Sometimes the language used there [EIA report] cannot be understood.*

Substantiating this, the first EIA expert stressed that: "If such EIA reports cannot be understood by TEC members, how does a villager understand these[?]". Nongovernmental lobby groups play an important role in this process, especially by informing and educating the public on the environmental risks of proposed projects. According to the second expert, there are many instances where they have organized campaigns against apparently environmentally unsound projects and organized the public to provide comments on EIA reports. These campaigns have resulted in changes to project design or scale and, in some limited cases, even stopped the projects, partly because of public protests. For example, a compliance review was carried out by the ADB on the STDP and a number of alterations to the project implementation were made after several NGOs, led by the Joint Organization of the Affected Communities on Colombo-Matara Highway, lodged a complaint to the ADB head office in Manila, Philippines, saying the project was violating the ADB's operational manual on the environment. The request for a compliance review cited many allegations of violations of the ADB's environmental policy. Some excerpts from the "Request for compliance review" are listed below:

> *… ii). Notification of the EIA to the public was done only through the Government owned newspapers. No attempt was made to advise the local people who might be affected.*
>
> *iii). CEA Public meetings - two along a stretch of 128 Kilometres is inadequate. Attendance for many would be almost impossible, for example the people of Kurundugahetekma [a city in Southern province] would take about 4 hours by public transport to get to the meeting in Panadura [a city in Western province where one public hearing took place], further more the cost would also be a factor.*
>
> *iv). Those being affected were not advised that the EIA was available in the Pradeshiya Sabha [Local Authority] or the Divisional Secretariat in*

> *Bandaragama or Galle. Even if it were, a programme of educating the villagers on the rationale behind the road should have been carried out prior to the final traces being decided.*
>
> *vi). The first people in the South heard was when Notices under the Land Acquisition Act were issued to them more than a year after the EIA was issued and long after the Loan was approved.*
>
> *vii). In the North some were told of its possibility more than one year after the EIA was issued and many, almost two years after it was issued.*
>
> *ix). People were informed, they were not consulted, they were only told their homes and lands would be lost (National Building Research Organization, 2013, pp. 2-3).*

The NEAA 2000 removed the earlier provisions given by the NEAA 1988 to subject IEE reports to public review. According to the CEA planner, the government then decided to relax the IEE process to allow implementation of small and medium scale power generation activities because of the on-going power crisis then. However, the legal expert described the above amendment as a drawback to the Sri Lankan EIA system. He stated:

> *This has started in the 2000 Act. It said an IEE does not require public comments, but there is no clear guidance in the law saying what are the projects to be considered under EIA or IEE. So, they [project proponents and PAAs] use IEE to take the approval for the projects without informing the public. Now this system has been in operation for the last 10 years.*

A separate clause on disaster risk in the ToR

A disaster risk assessment is not required under the Sri Lankan EIA process. Therefore, a separate clause requesting a hazard and vulnerability assessment does not appear in the ToRs set for EIA studies. NEAA 1988 and NER 1993 broadly ask for positive and adverse environmental impacts in the EIA process. Based on the above, the CEA, as a practice, does not include disaster risk assessment in the ToR. The CEA planner also denied any need for a separate clause for DRR in the ToR saying that:

> *No, we do not have DRR as a separate clause in ToR. We see disaster impact as a part of environmental impact. We ask the developer to discuss the impacts to the environment due to the project. We mainly consider the impacts of the project on the environment. It is the duty of the developer to assess the environmental impacts on the project and incorporate it into the project feasibility study.*

However, this discussion led to a larger issue of setting ToRs for the EIA studies during the scoping committee meetings. The CEA planner explained the scoping process and setting up of the ToR as:

> *We scope the project and provide the ToR. So we have to clearly identify the scope. There is a misunderstanding among the developers that they cannot do anything beyond the ToR. There is nothing like that. ToR is just a guideline. When we say impacts of a project, we cannot identify impacts*

> *clearly by having a one day scoping meeting. So we say in broad terms. For instance, in a road project we broadly say "identify the hydrological impacts". Then the EIA consultant should go to the field and spend about one year and he should know to identify those impacts and report them.*

Nevertheless, most experts have a different opinion on this process. They denied the effectiveness of a general ToR for every study, saying that it does not match with the on-the-ground reality. The first EIA expert criticised the scoping process of the CEA saying:

> *They have a model ToR and they keep using it for any project proposal they get. This ends up asking totally irrelevant questions in the ToR. For example, sometimes they ask a question about impact on trees in spray area. Spray area is only relevant if there is a water fall close by. If you are asking a question on spray area in a project, which is not close to a waterfall, it implies that they have not scoped the project properly. So, the first step of the EIA process does not take place properly. Project is not scoped properly. Then the assessment is not delivering appropriate results for the decision-making, as the ToR governs the EIA. If the ToR asks about 60 percent unnecessary stuff, while asking only 40 percent of important information, then there is only 40 percent information that serves the decision-making.*

The second EIA expert and the disaster management expert wanted a separate clause in the ToR for disaster risks saying, "Even if it is a repetition of the information presented in the EIA report; still this will lead to a better assessment".

Compliance monitoring

Often, the CEA gives approvals subject to conditions that should be followed by the project proponents in the implementation of the project. Adherence to such conditions by the proponents is therefore highly important to minimize any negative environmental and social impacts from the projects. Hence, post EIA project monitoring plays a significant role in the success of the EIA process. As per the NEA 1980 and its amendment in 1988, the CEA is responsible for and given the required provisions to monitor projects for their compliance with conditions. However, this process is often subjected to criticism by the public. The legal expert stated that; "There is no proper monitoring mechanism to check the compliance of the approval conditions. So, the entire process is deviating from the faith of the public." The first EIA expert describing his experience in TECs stated:

> *As an example take eco-flow of a dam project. We are arguing for days in the TEC committees about the importance of the eco-flow and recommend a particular diameter of the opening. But I have seen in an approved project that developer has blocked the opening and there was a zero flow. We had been arguing on this for days but the reality is zero flow.*

The expert further argued "What is the meaning of this process without monitoring?". Though accepting these criticisms, the CEA planner stated:

Yes, there is a responsibility upon us on monitoring. It is wrong if we stay aside after giving approval. We have to monitor the approval conditions. It is our duty.

But, there is a problem. When you give an approval for an EIA, it is a site clearance. When site clearance is given and when the project is being done, monitoring should happen through an Environmental Protection Licence [EPL] as a legal tool. Licence is given to start operations. But there is a problem as licence is not required for every project, which gets EIA approval. Licences are required only if there is an emission or discharge. That is a problem of our Act. When we take a highway, licence is not required. Only need an initial approval. But for industries, once you get the initial approval, before you go for the operation you need to take a licence. When licence is given we can do monitoring, because it is legally binding. The problem with environmental protection licence is that, in a licence you check only pollution side of it, only emissions, discharges, noise and vibrations. Because those have standards. So we can check whether the standards are met. For others we have to go for monitoring. I accept that monitoring is weak.

In addition, the CEA planner pointed out to a lack of trained staff to conduct onsite monitoring and insufficiency of the EIA report as reasons for poor post EIA monitoring. The CEA planner stated further:

EIA report is largely on generic terms, because specific levels cannot be given. That's why we rely on approval conditions for project monitoring. But, with those approval conditions, we cannot monitor either. If you see those approval conditions, for instance in a highway project we may have given a condition asking a detailed hydrological assessment and ask the developer to construct culverts and bridges based on the assessment. It is not mentioned where those to be constructed. So, when a monitoring visit was done only with an approval letter, it is not effective. It does not have detail information. The WB and ADB ask for an EMP [Environmental Management Plan] with the EIA, but we do not. We ask developers to identify the environmental impacts and identify the mitigatory measures, but the detailed technical information is not there in those mitigatory measures.

Project EMPs are the biggest problem. Our developers are not trained to develop an EMP. So we do not get EMPs properly. Only in donor-funded projects do we get sound EMP.

However, the CEA does not have any plans currently to rectify the weaknesses of project monitoring. Both EIA experts were not convinced that the monitoring process is weak due to insufficient provisions of the Act or any other reasons given by the CEA. The first EIA expert stated:

In any EIA the chapter six is on monitoring. There is about monitoring team, etc. But monitoring is not taking place. The CEA says they [EIA division of the CEA] do not have money and people. But the CEA is charging a registration fee when a developer applying for an EIA approval. This is to cover administration costs and other expenses for TEC committee etc. I have

> *asked the director of the EIA division to charge monitoring cost too from the developer.*
>
> *There was a World Bank funded project to promote rural energy. It was implemented with the NDB [National Development Bank of Sri Lanka]. In that project, after the EIA was done; NDB had hired independent consultants to do the compliance monitoring. They have done it because the CEA did not do proper monitoring. That is a workable model and it is being done in this country. So, why it cannot be done by the CEA. They cannot say they do not have money or people just because they do not want to do it.*

Some community members interviewed expressed their willingness to engage in the project monitoring. According to them, engaging in project monitoring will give them more opportunity to understand the project impacts and also to ensure that the project is done according to the conditions set by the authorities. The disaster management expert also stated that community participation in project monitoring is important. The expert described the current disaster management system in the country and said vigilance over new disaster risks is one of the tasks of the village disaster management committees. The expert believes that a coordinated programme between the DMC and the CEA can develop such community mechanisms for project monitoring. However, some environmental experts are sceptical about this. The first EIA expert stated:

> *I have not seen that professional discipline among community. From what I saw, if the community member benefits from the project, even if he saw some mismanagement of the project he used to disregard it. Due to the poverty prevailing in these villages by giving a simple bribe these people can be misused.*

The legal expert also argued that most officials are comfortable if the communities are not involved in project works. According to the NEAA 1988, project approval and approval conditions should be made available to the public. However, everyone including the CEA planner, accepted that the above does not happen in practice. The legal expert stated:

> *Yes, according to the law project approval should be available for the community. But it does not happen most of time. Currently, some actions against projects will be taken only if the community have identified negative impacts of the project and protested against the project. Otherwise it is very rare that a government agency is involved in a monitoring of project and take actions.*

Summary

According to the findings, criteria 7 and 9 are met to a 'limited' extent in Sri Lanka but criterion 8 is not met. Even though public review of the EIA report is a legal requirement, sufficient measures are often not in place to facilitate public participation. A general ToR is issued for EIA reports; it does not require hazard and vulnerability assessment. The NEA is clear about compliance monitoring and the responsibility lies with the CEA. However, compliance monitoring is currently weak through a lack of

capacity and motivation. Table 5.3 summarises the criteria findings for guidance of the EIA process in Sri Lanka.

Table 5.3 A summary of the criteria findings for EIA guidance

Criteria	Evaluation	Justifications
(7) EIA reports are subjected to public review.	Limited	Public review of EIA reports is legally required but measures are not sufficient to make maximum use of it. The conduct of public hearings is not consistent. The public is not often provided with information related to project impacts in simple language.
(8) ToR for the EIAs carries specific requirements regarding hazard assessment and vulnerability assessment.	No	A general ToR is used in most occasions. ToRs generally do not have a reference on disaster risk.
(9) Guidance is available to support compliance monitoring taking place and it is being implemented.	Limited	The CEA is legally mandated with a monitoring function. However, monitoring is not taking place adequately. Poor motivation of the authorities is identified as the key issue.

5.4 Substantive effectiveness

Substantive effectiveness of the EIA process is considered the least explored area in effectiveness research. This section reports the level of disaster risk assessment in the EIA process and the influence of the EIA process on project approval and final project design.

5.4.1 Level of assessment

The technical soundness of screening, scoping and impact identification in the EIA process is considered the key element for its effectiveness. Weaknesses in scoping and poor attention towards disaster risk in scoping were reported earlier. This section reports: (10) screening of actions for disaster risks, and (11) whether hazard and vulnerability assessments are conducted as a part of impact identification.

Attention to disaster risk in screening of project proposal

The process for screening of proposals in the Sri Lankan EIA process is not clear and is considered vague. The legal expert stated that: “There is no clear guidance in the law describing what are the projects to be considered under an EIA or IEE”. Screening of proposals happens at two stages. Project proposals are screened based on the prescribed project list provided in the Gazette extra-ordinary No. 722/22 of 1993. Deciding whether an IEE or EIA is required is left to the discretion of the appointed PAA and it is done during the scoping process. The guidance for implementing the EIA process, which was published by the CEA in 2006 states: “…as part of the scoping process the

appropriate PAA should: … determine whether PP should be asked to prepare an IEE or EIA, unless an adequate IEE has already been presented" (CEA, 2006, p. 9).

There is no legal requirement in the NEA 1980 or any of its later amendments to conduct a risk assessment or any other assessment to assess risk involved with projects. As discussed in the previous section, the CEA planner believes that "…a description of the avoidable and unavoidable adverse environmental effects of the proposed prescribed project" is sufficient to cover the disaster risks of the project and it is being done in the current EIA process. The CEA planner explained:

> *Yes, we address the requirement of risk assessments. But here we do it within EIA process. Recently, a project proposal was submitted for approval called the Advance Surfactant Manufacturing Industry at Mathugama. They produce sulphuric acid as well. We told him [the developer] to assess risk for sudden chemical emissions and asked for a preparedness plan. That is the reason for rejecting the proposal; he gave mitigatory measures for environmental impacts. He said this is the emission and I take these measures to control the emission. So, he can mitigate the impacts of his industry. But he cannot mitigate the disaster. He has done a risk assessment and his findings were listed in the EIAR. He has told [us] in the EIA report that in an accidental sulphuric emission, it can disperse to a range of 5 km and this is lethal. So, that has been enough for us to reject the proposal.*

It is evident that the CEA identifies the risk of chemical industries and gaseous plants in the screening and scoping process and gives more attention to preparedness plans in the EIA report. However, such a requirement is not seen in other infrastructure development projects such as dams and highways. For instance, neither an early warning system nor flood preparedness plan was requested in the EIA report of the UKHP. In this context, the UKHP's environmental management documents such as the watershed and environmental management plans, do not contain any reference to the risk involved with dam failure or emergency spillway opening. According to the first EIA expert, an early warning system is yet to be established for the UKHP to alert downstream communities in the event of a spillway opening, even two years after the commissioning of power generation.

Hazard and vulnerability assessment in impact identification

Neither hazard nor vulnerability assessments are conducted in the Sri Lankan EIA process to assess the probable development-induced disaster risk of a proposed project. Nevertheless, specific hazards such as landslide risk or flood risk are assessed to some extent in the two case studies. Close scrutiny of EIA reports from the UKHP and the STDP reveals that such assessments are also not sufficiently detailed to provide a clear picture of the disaster risk of a project. Vulnerability assessments are not conducted, even in their simplest form, in the process of impact identification.

For instance, in the EIA report of the STDP, it was identified that flood risk was the major concern of the project since over 40 percent of the proposed road lay over known flood plains. The EIA report of

the STDP provided detailed maps and an assessment of existing drainage canals, irrigation and flood protection structures, retention areas and water bodies along the proposed expressway project area. The EIA team also conducted a flood survey to obtain data at identified control points on the maximum flood experienced, the most frequent flood, the inundation levels and the period of inundation. However, these data were not converted to a flood hazard map or to a projected flood hazard map for a 25-year return period flood (for which the expressway had been designed) in the EIA report to understand the extent of the flood risk in the upstream area of the expressway project.

Based on the above assessment, the EIA report of the STDP proposed to make the road design flood proof. The EIA report states: "…in fact, the proposed traces [proposed road sketch] cover approximately 40 [percent] of its length over retention areas. This would create the necessity to raise the road surfaces to substantial levels as the road being designed for a particular return period" (University of Moratuwa, 1999b, p. 6-18). The report further pointed out that:

> *The raising of earth embankment would cause interference to the natural balance of flood flows across the road thus leading to increased flood threats at the upstream sides of the road. The choking of flood openings would cause delays in the passage through the proposed road embankment thus creating increased duration of the inundation period.*
>
> *A major part of the proposed project trace will lie on the low flood plains of the major rivers and hence create blockage of streamflow to a greater extent especially at major rivers due to the mildness of the slopes encountered in the flood plains. A significant proportion of streamflows would be moving to and fro [sic] from the road centreline at the flood plains of the major rivers in the project area due to the large network of branches merging at the flood plains. As such, a very significant impact on streamflow movement would take place due to the road embankment of the proposed project and hence the construction of bridges and culverts along the trace (University of Moratuwa, 1999b, p. 6-18).*

Further, the EIA report did not sufficiently attempt to calculate the increased severity and frequency of the flood hazard due to the road construction except for saying that:

> *In regions where the proposed Expressway crosses flood plains, the encroachment of flood level into new regions would be greater than 10 [percent] of the initial retention depth unless the proposed new Expressway cross section width is less than one tenth of the cross sectional width of the detention area (University of Moratuwa, 1999b, p. 6-18).*

However, the EIA report of the STDP has no reference to the existing and future vulnerabilities of the people due to flood hazard. The unavailability of a proper flood hazard map and the failure of the EIA team to identify the existing flood vulnerability of the people has led to an underestimate of the flood disaster risk along the expressway.

The EIA report indicates that the population in the divisional secretariat divisions, in which the proposed project is located, is growing. It says the average annual growth rate in the project area was 3.0 percent during the period 1970 to 1996, while the national population growth rate was around 1.2 percent (University of Moratuwa, 1999b, p. 5-46). This means there will be more pressure for housing and other developments. The EIA report did not attempt to examine the relationship between increased population pressure and the vulnerability of the marginalized groups in the project area, which is characterised as a flood plain.

The report also indicates that nearly 15 percent of the houses in the project area are less than 50 square metres, and 47.1 percent of houses are between 50-100 square metre floor area (University of Moratuwa, 1999b, p. 5-49). Visits to the project area reveal that these houses are mostly poorly engineered and belonged to low-income groups. Such houses are incapable of withstanding prolonged floods. Nevertheless, the EIA report does not look at either the number of vulnerable houses within the existing flood zones or the increased percentage of such houses in the new flood zones due to increased flood levels.

The EIA report also states that nearly 31 percent of the project area comprises paddy fields and marshy lands. It has been estimated that approximately 403 ha of paddy lands will be crossed by the expressway (University of Moratuwa, 1999b, p. 5-35). In some areas, these paddy lands are small blocks of lands, less than 20 ha, but in some areas they are larger blocks or 'yaya' with 20-80 ha of land. The report has looked only at the paddy lands directly affected by the expressway due to filling; it overlooked the vast area of paddy lands that will be uncultivable due to increased flood risk.

The flood risk is getting worse for some marginalized communities with limited access to the main townships. Panape, a small village with 80 households in Bandaragama DS division, is located within 500 m of the expressway. A woman, who has cultivated leafy vegetables for many years to support her family, described the new threats to its livelihood as:

> *There are about five people in this village who engage in leafy vegetable cultivation. We have been doing this cultivation for the last 15-20 years. It takes about one month to harvest the leafy vegetables. When the area gets flooded at that time, the entire crop gets destroyed. Earlier our parents used to say that there is Christmas flood in December and New Year flood in April. But now it is not like earlier. This area gets always flooded when there is some rain. Last year on many occasions we got floods.*
>
> *There is another person who is cultivating banana and his lands also get affected - water logged for about two to three weeks. So we fear to put up a crop. You do not know what will happen to the crop till you get it into the house.*

The EIA report does not provide any information regarding the frequency of floods in the project area. A community member from Dodangoda Divisional secretariat division explained her experience of flood frequency during the data collection of this study. She stated:

> *Flood is a common event for us. I remember in 1966 about 10-15 houses in our village were destroyed due to flood. Then in 1967 we got a flood even one foot higher than previous year. We usually get floods when Rathnapura [a town in upstream] is flooded. Then 1972, 1978 and 1982 all these were large floods, then again in 1989, where my aunt's house was also destroyed. Thereafter, in 1992, which is not a very big flood. Water came only up to my doorstep. Then in 1998. My house was two feet underwater due to 2002 flood. Thereafter in 2007. After 2007 there are no large floods because there were not any heavy rains reported in upstream areas.*

The above comment shows that the area is getting a significant flood every 4-6 years. However, the EIA report for the STDP completely ignored the frequency of the flood hazard. Even though people in the area are used to these large floods, the new situation created by the expressway project is beyond the accepted level for most of them. A self-employed man from Panape village stated:

> *Now the village roads get flooded every time. If there is rain for two days roads get flooded. There were floods in this area earlier too. But definitely the level is high now. Earlier water used to drain from about 3 km stretch of paddy lands. Now it does not drain like previously. They have put only three eight feet culverts along the entire 3 km stretch. So, water does not drain for days. Water level is also high and takes four to five days to recede. This village get isolated as all three access roads get flooded. We do not have even a cooperative shop [government run village boutiques] in this village.*

The increased flood risk around the expressway has already started disturbing the routine work of people in the area. School children find it difficult to attend school on many days. A once-in-5 year event in the past has become a routine experience. A mother of two from Panape stated:

> *Students in the village have to go to Bandaragama [closest town] for a school. They used to travel by boats during the flood time. There had been an accident about five years ago and one person was killed after his boat capsized. After that, parents are concerned of sending students to school during flood time. So, kids lost two to three weeks of studies every year.*

A RDA planner, who had played a key role in the STDP, accepted the communities' concern and stated that:

> *We kept bridge openings [of the expressway] based on the existing Colombo –Galle Road [the expressway constructed in parallel to the existing highway, but towards the inland]. Exact assessments were not done. We got the openings of the old Galle road and some were kept for this. But in these areas, water flows very fast. So, there can be even higher flows under the bridges [these are the access points for the community roads]. During a high flood time, several houses closer to the bridges can be washed away.*

Farmers in the area are facing a new threat because of prolonged water inundation of their paddy fields. *Leptospirosis* has become a common risk for many farmers. People in Kimmanthudawa and Panape villages in Bandaragama DS division and most places in Dodangoda DS division complain about the spread of *Leptospirosis* and dengue in close proximity to the expressway. Local health officials from the Medical Office of Health (MOH) office in Dodangoda also suspect close linkage between the spread of *Leptospirosis* and the expressway project. However, district health officials rejected such claims saying the data available to them do not prove such a relationship. They also claim that increased dengue cases in the area reflect the upward trend of dengue cases throughout the country. District *Leptospirosis* data show a downward trend in the number of patients over the years since 2008. The district authorities were not able to provide a breakdown of such data to village level, but local level data collected from the MOH Office in Dodangoda show a completely different picture. Of 16 *Leptospirosis* patients reported in the Dodangoda area since 2012, eight cases were reported from villages close to the expressway. Before 2012, disaggregated data to the village level are not available with local health officials for further analysis of this issue. Even though the chances of waterlogging in the project area had been predicted in the EIA report, further analysis on the probable environmental impacts of the waterlogging, such as the above, were not identified in the report.

Summary

Both criteria (i.e., 10 and 11) used to evaluate the level of assessment of the EIA process are met to a 'limited' extent in Sri Lanka. Screening of projects is based on the prescribed project list provided in NER 1993. The list is not explicitly based on disaster risks. In addition, even though hazard assessment is being done to some extent, vulnerability assessments are not conducted. Hazard assessments lack the depth and breadth required for DRR. Table 5.4 summarises the criteria findings for the level of assessment of the EIA process in Sri Lanka.

Table 5.4 A summary of the criteria findings for the level of assessment

Criterion	Evaluation	Justifications
(10) Screening of actions for disaster risks is taking place.	Limited	Screening of project proposals is based on the prescribed project list in NER 1993. Screening of proposals to decide whether an IEE/EIA is necessary is an opaque process and is done at the discretion of the PAA.
(11) Hazard and vulnerability assessments are conducted as a part of impact identification.	Limited	Hazard assessments for more obvious visible hazards are done to some extent, but such assessments are not detailed enough to assess the frequency and magnitude of the hazard risks. Vulnerability assessments are not done.

5.4.2 Decision making process

The effectiveness of the EIA process also depends on the extent to which the development planning process is influenced by the findings of the EIA. This section reports on criterion (12), to what extent project approval depends on the findings of the EIA process, and (13), the extent decision makers rely on the EIA process during project planning (see Table 3.1).

Influence of EIA on project approval

Perceptions of respondents on the influence of the EIA process on project approval vary significantly based on their role in the EIA process. For instance, the CEA planner saw the EIA process as the only factor deciding whether a project is approved. However, the EIA experts I interviewed had a different argument. The first EIA expert stated:

> *When we go to the field to conduct EIAs, sometimes they [government] have already laid the foundation stone to start the project. I went for an EIA study in a place called Kuda Gal Amuna project, in Yala block 5 [the second largest national park of Sri Lanka]. When we went to the field, the foundation stone has already been laid and they have even constructed an access road to the project site. That means they have already started the project and what is the purpose of conducting an EIA.*

The CEA planner argued that although some government projects are proposed with a pre-judgement on the approval, most projects proposed by non-state actors are subjected to a full EIA process and decisions are based on the EIA process outcomes. For example, the CEA planner highlighted the Advance Surfactant Manufacturing Industry at Mathugama, which had been proposed by Advance Surfactant Group, India. According to the CEA planner the project proposal was rejected based on the findings of the EIA report.

All interviewed experts argued that the influence of EIA on project approval should be discussed in the larger context of environmental governance of the country. According to the legal expert, the influence of the EIA report on approval decisions has been declining over recent years compared with the first five years of EIA operation in Sri Lanka. The legal expert stated:

> *When we look back the last 20 years of EIA implementation, first 5-6 years was very successful. After that, time to time the EIA process was subjected to different political influences. Therefore, the public has lost their faith in the EIA process. They also do not respect the EIA process compared to the past. So, it is highly dangerous situation, I am not sure whether this will also become a useless process.*
>
> *There is a collapse of rule of law in the country at the moment. When the rule of the law is collapsed the influence of tools like EIA will become zero. At the beginning, when the EIA was initiated, there was a big influence from the EIA on project approval, about 70 percent [3.5 out of 5 in the scale]. It*

> *was getting lower and lower and now it has gone even lower than 50 percent [2 out of 5 in the scale]. It never went back up.*

Most interviewed experts hold the above position (i.e., the influence of the EIA process declining over the years). They consider the influence of the EIA process on project approval is low in Sri Lanka. They believe that the reduction of EIA's influence on project approval is a result of corruption in the authorities and the depletion of public interest and trust in governance arrangements. Describing the situation the second EIA expert stated, "The decisive effect of the EIA is no more there; that is unfortunate. If these tools are failed, then the public will try to get the law into their hand".

The second EIA expert also argued that the major advantage of the EIA process is having a public phase, where activists can inform the public about the project and organize them to take action against the adverse impacts of the project. The expert stated:

> *The approval decision can be influenced, not through PAAs, but through the public. If the citizens get organized, decisions can be influenced. Our problem is, public hearing process taking place very quietly. As an organization, we have lawyers' team who keep an eye on newspapers. So we always comment on EIA reports and participate in hearings.*

The CEA planner also accepted that the EIA does not significantly influence the approval of most government-sponsored projects. The CEA planner stated:

> *For instance RDA [Road Development Authority] has a predetermination to construct a road. So, in public sector projects, government has already made a decision to carry out the project. Even in some private sector projects, government has already decided. At those incidents we can do only few things.*

At the same time, the CEA planner was pointing out a larger issue of development decision making in Sri Lanka. According to the planner, the decision-making process of development projects is not clear. The planner stated:

> *Who is taking the decision? That is our major problem. Now we have an unnecessary burden, as there is no other approval for development projects. So we have become the only approval agency. That should not be happened. We should take only environmental decision. But none of other government organizations take their responsibility. They forwarded everything for environmental approval from CEA. Once the CEA gives the approval others will follow it. This is a gap in the Act too. We are in the process of amending the Act. The term PAA is incorrect. When they see the term PAA, all other agencies stay away from their responsibilities. We do not give project approval. We give only environmental approval.*

Most experts interviewed believe that higher emphasis given to the EIA process in a project's approval is a positive dimension of the environmental laws of the country. The legal expert stated,

"Yes, it should happen like that. This [EIA] should be the decision tool. But it has gone to a level that EIA has also become a just another report. That is our problem".

Influence of EIA on project planning

The influence of an EIA on the final project design is as important as the influence of an EIA on the project approval. If the EIA is unable to influence alterations to the project design to prevent or mitigate adverse impacts it does not serve its purpose. The CEA believes that alterations to the project's activities as suggested by an EIA highly depend on the commitment of the project staff. The CEA planner stated, "It totally depends on personnel. If there is a good project director, things will be taken seriously".

It is also evident that, despite many weaknesses in scoping and impact identification in the EIA process, even identified environmental impacts have not been adequately considered in the project design. For example, although there are a number of deficiencies, the EIA of the STDP identified that the proposed expressway crosses four major flood plains in the southwest of the country. The EIA report also states that of the four major flood plains, the Kalu Ganga flood plain appeared to be very significant. Highlighting feedback from the community, the EIA report suggested incorporating measures to mitigate floods in Kalu Ganga flood plain. The report states:

> *One of the suggestions made by people in Serupita (Dodangoda), Lewwandura (Matugama) and Panwila (Walallawita) GND [Grama Niladhari Divisions – village administrative divisions] is an elevated highway for the areas that are prone to flooding. They fear that constructing of the highway through low lands in the area may aggravate floods, which is already a threat to houses in these GND (University of Moratuwa, 1999b, p. 7-3).*

However, the first RDA planner accepted that even though the flood risk is mentioned in the EIA report, flood risk in some areas has not been identified by the project design team and the required measures are not incorporated into the design. The RDA planner stated:

> *According to the consultant's design I think he has not identified correctly that the trace is on a flood plain in Kalutara [Kalu Ganga flood plain]. In the case of Bentara Ganga [another flood plain in the project site], he has identified that it is on a flood plain and designed about 750 m stretch of the expressway on piers extending both sides of the bridge. This has not been done in Kalu Ganga. There is about 500 m on the flood plain and Kalu ganga overflows at this stretch. This flood comes in about 10-years intervals. This will be an issue. People protested and said they do not like this. They said if this is done they will be affected. There had been a flood in 2007. Trace was halfway constructed at that time, and entire area got flooded. So if a similar flood comes again, the drainage structures we provided in Kalu ganga will not be sufficient. In other places it will be OK.*

Interviews with community members in the STDP project area also revealed the lack of action against flooding in the design, even though flood risk is highlighted in the EIA report. A community representative from Kimmanthudawa [Kalu Ganga flood plain] explained:

> *The 2007 floods affected even project equipment. All drainages were blocked due to the project and during the flood project sites were inundated. After that they [contractors] constructed a dam using large boulder up to the flood level and road was constructed on top of it. So the earth is filled only above the flood level. This dam was constructed from Kolamadiriya to Kadiragoda [two villages in the high flood risk areas of Kalu Ganga flood plain]. Floodwater used to drain from more than a half a km stretch previously, now being limited to three 8 feet culverts and Kapu Ela [a flood control canal] culvert, which is about 60 feet wide.*

A retired schoolteacher from Kalutara, who is affected by frequent floods due to the expressway construction, suggested during the interview, “They could have constructed this on pillars, at least from Bandaragama to Dodangoda. If so, water will flow freely”.

Both the STDP and the UKHP provide examples of changes made to project designs due to public protests during and after the EIA process. The proposed road layout of the STDP was changed three times due to public protests. Moreover, according to the second EIA expert, the much criticized design of the UKHP with an annual power generation capacity of 531.9 GWh was reduced to 409 GWh due to public protests. The EIA report of the UKHP did not identify the above design change as an option to reduce the impact on five waterfalls that were originally proposed to be tapped for the project. In April 2007, the Cabinet of ministers decided to reduce the project to only Kotmale oya because of public protests, limiting its power generation to 409 GWh (The Institute of Engineers Sri Lanka, 2013). However, community members interviewed for this research from both the STDP and the UKHP project sites complained that the voices of politically influential segments of the community were heard over the deprived segments in such changes.

Summary

The findings show that both criteria 12 and 13 are met to a ‘limited’ extent in the Sri Lankan EIA process. It is clear that the EIA process is not a decisive tool for most government sponsored projects and the influence of the EIA process on project approval is declining recently. The findings of the EIA reports of the studied projects are ignored in project planning, which has caused significant environmental impacts, including disaster risks. Table 5.5 summarises the criteria findings for decision-making of the EIA process in Sri Lanka.

Table 5.5 A summary of the criteria findings for decision-making

Criterion	Evaluation	Justifications
(12) Findings of the EIA influence the final decision.	Limited	It is clear that most government-sponsored projects in Sri Lanka are not subjected to systematic environmental scrutiny. EIA is influential in some projects proposed by private entrepreneurs, but not a decisive factor in most projects proposed by the state agencies and political authorities.
(13) Planners use the EIA report as a reference document in project planning.	Limited	Design changes are made in some projects based on the findings of the EIA. This is mostly done because of public protests rather than the findings of the EIA report. There are some cases where the findings of the EIA report have been ignored in project design. For example; the STDP.

5.5 Contextual effectiveness

The importance of effective domestic governance arrangements in the EIA process is emphasized by most experts and planners interviewed in this research. Some experts argued that the improvement of the domestic governance system is the prime requirement to address disaster risk of projects. A senior environmental lawyer stated: “If the system is improved then the disaster issue will be automatically addressed”. This section reports consultation and public participation, the influence of the legal provisions contained in other Acts, transparency and accountability aspects of the EIA process, political will, and the coordination of line agencies on the effectiveness of the EIA process to incorporate disaster risk.

5.5.1 Consultation and public participation

As reported in Chapter 2, consultation and public participation are essential ingredients of an effective EIA process. This section reports on criteria (14), the perceived level of consultation and public participation in the EIA process, and (15), to what extent developers respond to public submissions (see Table 3.1).

Consultation and public participation

Space for the public to engage in the EIA process was seen as the most promising aspect of the EIA process by almost all experts interviewed. However, most are also sceptical about the full use of the public phase in the Sri Lankan EIA process. The legal expert, describing the opportunities for public participation in the Sri Lankan EIA process, stated: “Public participation can be obtained in scoping, public reviewing of EIA reports and monitoring stages of the EIA process”. However, the above expert acknowledged a lack of full use of such opportunities in those stages. The legal expert further stated: “This system has been developed to keep away the community and reduce the workload of the authorities. Such a supreme attitude is there”.

Conversely, the CEA planner argued that it is difficult to engage the public in all those stages. The CEA planner believes it is sufficient to provide a 30 working day period for the public to review EIA reports because that is what is legally prescribed. The CEA planner stated:

> *It is not even compulsory to consult community in impact identification. Secondary information is sufficient for the EIA process. But we ask developers to go to the field when they carry out EIAs and study the area and talk to the people. But we feel that study teams do not talk to the people. They discuss only among themselves. I do not see that they go and meet the people.*

Most experts demand public participation in the scoping process, where the ToR for an EIA is decided. They believe that it will broaden the scope of the EIA report and will also be helpful in prioritising the most important impact areas on which the EIA should focus. The guidance for implementing the EIA process in Sri Lanka, a brief developed by the CEA with financial support from the USAID, recommends that the scoping process involves a series of formal and informal meetings with a sample of people who may be directly or indirectly affected by the proposed project or people who may have special knowledge of the project area and its environment (CEA, 2006). The guidance note reports such a sample "…may include government officials, local farmers, merchants, teachers, physicians, religious leaders, or representatives from non-governmental organizations among other people" (CEA, 2006, p. 7). However, it is evident that such public involvement does not take place in the current scoping process as recommended in the guidance note. Instead, divisional secretaries [meso level of the government administration] and local authority representatives participate in the scoping process representing community interests. Most experts believe that the current practice of getting the public representatives involved in the scoping is not sufficient as they are often unaware of project impacts. The legal expert stated: "It is the responsibility of DSs [divisional secretaries] to convene CBOs [Community Based Organizations] before attending the scoping committee and getting informed about the issues. That is being done very rarely. They are not aware or informed about their role in the scoping committee."

Even though it is not legally mandated, both EIA experts and community members see the impact identification stage as a good opportunity for the public to get involved in the EIA process. Community members also believe that the community should be consulted and given due recognition in the impact identification stage of the EIA process. A community member from Kimmanthudawa, Kalutara, who has been affected due to increased flood risk from the STDP stated: "Officers coming from Colombo do not know where water does flow, but we know. They have not talked to us". Although the EIA reports of both the STDP and the UKHP show the involvement of affected groups in the impact identification process, community members interviewed do not feel it was sufficient.

The community members state that the community consultations were largely conducted to either inform the people about the benefits of the project or to convince them. A chief incumbent of a village temple in Dodangoda division recalling that a community consultation took place in his temple stated: “They tried to convince us. It [the meeting] took place in the temple. An engineer came to talk to us. When we asked questions he got really annoyed. He tried to convince his idea and did not listen to us”. Similar statements are reported in other areas of the STDP and also for the UKHP project site.

As presented in section 5.3.2, the public hearing process takes place irregularly and as the second EIA expert expressed “…very quietly”. Similarly, as discussed under the monitoring section, public participation in post-EIA monitoring does not take place in the Sri Lankan EIA process. Most of the community members interviewed expressed their frustration with the EIA process. The above chief incumbent further stated: “Nothing is happening no matter how much we asked. They do not listen to us. It is like playing the Veena to deaf elephants”. A self-employed community member from the Bandaragama division stated: “Our demands are not big, but those are important for us. Officers do not feel those, as those are not important for them. But we do. We have to live with those every day. If they come to grass root level and talk to the people, these problems could have been avoided”.

Incorporation of public comments

The influence of public comments in the EIA process is also unclear for most experts. The legal expert, explaining the influence of the public hearing process, stated:

> *According to the law, all public comments should be forwarded to the project proponent. Project proponent should address those and written explanations should be given. Then TEC [Technical Evaluation Committee] should evaluate whether public comments are true and serious and whether the measures and explanations of the project proponent are sufficient to address community concerns, before approval is given. There is a problem as we never see the project proponent’s reaction and explanations for public comments. So we do not know whether or not they take actions for these public comments.*

As reported for criterion 18, the TEC proceedings are not publically available. According to the CEA planner, genuine public comments are forwarded to the project proponent and the project proponent addresses those public concerns. However, it was revealed by the interviews with the members of the project areas that most of their grievances have not been addressed in projects. The community members of both studied projects have extensively described various protests they had undertaken to pressurize project staff and authorities to get their demands delivered. According to them, most attempts failed. The legal expert also emphasized the risk that would emerge through neglecting the public phase of the EIA process:

If these tools are failed, then the public will try to get the law into their hand. For one example, there was a project proposal to construct a powerhouse at Lanudorakoda, at Kithulgala in Kelani River [second largest river of the country]. The EIA was approved, but people engaged in a massive protest. Then the political authority was also taken the side of the people. They always get the side, which have more power. This time it was the public. As a result the project was abandoned. It was done by force. But it should not be the way forward.

Summary

The criteria findings show that though criterion 14 is met to a 'limited' extent, it is difficult to measure criterion 15 because of a lack of transparency in the decision making process. Public participation is legally required only at the EIA report review; therefore public participation is minimal in other stages of the EIA process. It is unclear whether project proponents respond to public comments received in the EIA report review because of the lack of transparency of the TEC proceedings. Table 5.6 summarises the criteria findings for consultation and public participation in the EIA process in Sri Lanka.

Table 5.6 A summary of the criteria findings for consultation and public participation

Criterion	Evaluation	Justifications
(14) Consultation and participation are taking place before and following EIA report publication	Limited	Public participation is legally required only at public review of EIA reports. The public is not sufficiently consulted or participation is not adequately encouraged during scoping, impact identification and monitoring stages. Public consultation is done to educate the public on project benefits rather than listening to their concerns. However, public protests and campaigns, both self-initiated or supported by environmental NGOs, have a significant influence on project implementation.
(15) Feedback from consultations is incorporated into project planning	Unclear	According to the CEA, project proponents respond to public comments. However, interviews with community members suggest that most demands by the public have not been addressed in projects. This cannot be verified because the TEC reports are not accessible to third parties other than the CEA and the developer.

5.5.2 Policy context

As reported in Chapter 4, a number of other Acts and policies govern development planning and disaster management in Sri Lanka. This section reports on criterion (16), the influence of such legislation on the EIA process in addressing disaster risks (see Table 3.1).

Disaster management policy context

In addition to the NEA 1980, both the Fauna and Flora Protection (Amendment) Act (FFPAA) No. 49 of 1993 and the Coast Conservation Act (CCA) No. 57 of 1981 also require EIAs before approving relevant projects. According to the legal expert:

> *EIA is first introduced by the Coastal Conservation Act in 1981. In 1993, when the CEA was struggling to bring the current EIA process, Wildlife [Wildlife Department] has brought forward an EIA process under the Wildlife Protection Act. So, CCD [Coast Conservation Department] and Wildlife have established two separate EIA systems within their purviews. Even today, the strongest EIA system can be seen within the Wildlife Department.*

Nevertheless, the FFPAA 1993 covers only a limited land area of the country. Therefore, as reported in Chapter 4, this research covers only the EIA process provided under the NEA 1980. It is also clear that none of the above three Acts has provisions to assess the disaster risk of development projects. A comparison of the EIA processes of all three Acts was provided in Chapter 4. On the other hand, the National Strategy for Disaster Management (NSDM) in 2006 identified the importance of the establishment of Disaster Impact Assessment in order to assess the disaster risk of development projects. However, neither the NEA 1980 nor the CEA has recognized the above requirement of the national strategy. Therefore, a lack of coordinated support and a lack of explicit provisions from both the DM Act and the NEA 1980 on the DIA system has already created much confusion among development planning agencies and has increased the coordination challenges between the DMC and CEA.

Summary

Criterion 16 is met to a 'limited' extent in Sri Lanka. Two other Acts (i.e., CCA 1981 and FFPAA 1993) have provisions for separate EIA processes. However, neither have specific provisions to address disaster risks. The DM Act 2005 is largely emergency management legislation. Even though the NSDM has provisions for addressing the disaster risk of development projects, the DMC does not have any influence on the EIA process. Table 5.7 summarises the criterion findings for the influence of disaster management policy context on the EIA process.

Table 5.7 A summary of the criterion findings for disaster management policy context

Criterion	Evaluation	Justifications
(16) Legal provisions given by other legislation to control development-induced disaster risks do influence the outcome of the EIA process.	Limited	None of the other three Acts reviewed in this research has any provisions to control development-induced disaster risks. The NSDM does carry provisions to develop a DIA system but does not have any authority to influence the EIA process.

5.5.3 Accountability and transparency

This section reports on criteria (17), whether the EIA assessment process and EIA report is subjected to independent verification, and (18), whether the decision making process is made clear to all interested parties in Sri Lanka.

Independent verification

It is a common practice that the CEA or other relevant PAAs appoint a Technical Evaluation Committee (TEC) for every EIA to assess the technical soundness of the EIA report and assist the PAA in the approval process. Explaining the TEC structure, the CEA planner stated:

> *We invite all relevant stakeholders. We also include DSs [Divisional Secretaries] and LAs [Local Authorities] to represent the public interest. …other than that, in some areas, we do not have expertise within the government agencies. At those times, we take subject experts.*

Usually, a senior officer of the respective PAA chairs TEC meetings. It is the responsibility of the TEC to evaluate EIA reports forwarded to them for their comments. In this process, the TEC is expected to assess whether the given EIA report has sufficiently addressed the ToR issued by the CEA. The TEC also reviews the public's comments and the outcome documents of public hearings, if such have been held, against the responses of the project proponent to the public comments. If the information is not adequate to make a decision, the TEC requires the project proponent to provide additional information. Based on the review process, the TEC forwards its recommendations to decision-making levels of the respective PAAs, for instance, the Chairman of the CEA. Therefore, the TEC report is an internal document that is not accessible to the public.

Most experts and planners interviewed believe that the TEC is a decisive structure in the Sri Lankan EIA process. The legal expert stated, "Public comment is just one critical factor of EIA. The TEC should be more decisive than public comments and be able to influence the process. We cannot expect technical expertise from a lay person". However, the first EIA expert expressed his concerns about the effectiveness of the TEC and stated:

> *Whether EIA is done properly or not is decided by who is sitting in the TEC. In some cases TEC members have not read the EIA report, or have not participated in the field visits organized by the PAA or did their homework before sitting on the committee. TEC members should visit the site. Then only they will understand the real environmental impacts of the project. So the conclusion can be wrong if the TEC is not aware or expertise enough to evaluate an EIA.*
>
> *If you look at EIA reports approved by some TECs, those have wrong information provided. For instance, a salt factory in Trincomalee [A coastal district in the Eastern province of the country], which was approved by a TEC. When I checked the list of species listed in the EIA report, half of those animals are not available in Sri Lanka. So, the expert in the TEC should have noticed this. It means neither EIA practitioners nor TEC members were qualified enough to evaluate the EIAs. So, there are times where EIA is successful and sometimes it is totally unsuccessful. That depends on the EIA practitioner as well on the evaluator in the TEC. Even though the practitioner has not done his work properly, if the evaluator does his job*

properly this could have been avoided. Most times TECs are not competent. So from an incompetent TEC we cannot expect a good result.

Making the approval clear to all

According to the NEA, the PAA should publish the approval, where such approval is granted for the implementation of any prescribed project, in the Gazette and in one newspaper each in Sinhala, Tamil and English languages. However, the conditions attached to the approval are not legally required to be made public. Most approvals are attached with conditions and mostly the public does not have access to those conditions. Some experts see this as a drawback of the Act, which also affects post-EIA project monitoring. The CEA planner stated:

> *Conditions can be accessed by the interested parties. We have written in conditional approval asking the developer to keep the approval letter in the site and give access to the community. But they do not do it. The CEA also does not keep a copy of the approval letter in the library [the CEA library is a public space].*

The CEA planner further stated that "It is not legally required to disclose the conditional approval. So, the proponent can show it only if he is willing to do so". The second EIA expert complained that even they could not obtain conditional approval letters, and stated:

> *Theoretically the approval should be accessible for the public. A copy of the letter should be displayed in the project site office. But practically, not only the community, even government agencies cannot access some of the approval letters. For example; Wildlife Department was the monitoring agency for the Mattala Airport project; even they are not allowed to enter into the project site. That is the situation. They have to gain permission from the defence ministry to enter into the project site.*

Summary

The findings show criterion 17 is 'reasonably' met in the Sri Lankan EIA process. Criterion 18 is met to a 'limited' extent. EIA reports, public comments and developers' responses to the public comments are assessed by technical evaluation committees. A TEC is a multi-agency mechanism and most planners and experts interviewed considered it an important aspect of the Sri Lankan EIA process. However, lack of transparency and poor commitment have reduced the effectiveness of TECs. Lack of transparency is seen in many stages of the Sri Lankan EIA process. Even though the project approval is publicly available, any conditions attached to the approval are not available to the public. Table 5.8 summarises the criteria findings for transparency and accountability of the EIA process in Sri Lanka.

Table 5.8 A summary of the criteria findings for transparency and accountability

Criterion	Evaluation	Justifications
(17) EIA assessment processes and EIA reports are subjected to independent checks and verification.	Reasonably	The EIA reports are assessed by a TEC, which is a multi-agency mechanism. Almost all planners and experts interviewed believed that this is an important aspect in the EIA process. But a lack of transparency and poor commitment of the state agencies and experts make the TEC ineffective in some cases.
(18) Decision-making and approval stages are made clear to all.	Limited	Approval decisions are published in government Gazette and local newspapers. However, any conditions attached to the approval are not available to the public.

5.5.4 Political will

Support from the political authorities is a key influence for the success of any EIA process. This section covers criterion (19), whether such support is available in Sri Lanka (see Table 3.1).

Political will

Most experts interviewed consider that having the support of the political authority for the EIA is one unusual feature in the Sri Lankan EIA process. The second EIA expert interviewed rated political will for the Sri Lankan EIA process as "zero". He further stated: "They [politicians] see this [EIA process] as a barrier for development and corruption. They see this is important only for environmentalists. They see us as people against development".

Community members also expressed their disappointment and frustration over the negligence of the political authority at both the local and national level on their issues. They believe that most development projects are being implemented with the blessing of politicians. The chief incumbent of a village temple in Kalutara area said: "Even MPs [members of parliament] are afraid to voice against these developments, as those are initiated at the top level." Both the STDP and the UKHP are considered by many as politically motivated projects. Experts argued that the feasibility of these projects was not properly studied because the decisions had already been made to implement the projects. The first EIA expert stated:

> *Problem is they are trying to do development on political objectives. They try to justify and legalize the political projects through EIAs. One of the reasons behind the failure of EIAs is unnecessary urgency of the authorities as project deadlines are decided based on political motives. Those motives are not sustainable.*

Planners and government officials did not answer any questions related to the political will on the EIA process. The CEA planner added:

I can say one plus point. All politicians are at least aware that an EIA is required for a larger project. They also know that in an EIA everything is checked in details. That's why they say if the EIA approval is given everything is OK.

Some experts believe that giving greater emphasis to the disaster risk of a development project would reduce unwarranted political interference in the EIA process. The disaster management expert stated: "There is a heightened development-induced disasters in the country in recent past. So, if the risk is too high on human lives they [politicians] are not prepared to touch it. Politicians are afraid of disaster risk than any other impact on the environment".

Summary

Criterion 19 is met to a 'limited' extent in the Sri Lankan EIA process. There is minimal political support for the EIA process and some politically influenced projects evade environmental scrutiny. Table 5.9 summarises the criteria findings for political will in the EIA process in Sri Lanka.

Table 5.9 A summary of the criterion findings for political will

Criteria	Evaluation	Justifications
(19) Political support is available for the EIA process.	Limited	Political support for the EIA process is low. Some government-sponsored projects evade systematic environmental scrutiny. Still, there is some respect among politicians towards the EIA process since public protests could emerge on socially unacceptable projects.

5.5.5 Coordination

The National Environmental Regulation 1993 and its later amendments identify 23 different state agencies as PAAs in the Sri Lankan EIA process. The Fauna and Flora Act and the Coastal Conservation Act also provide provisions to conduct EIAs in Sri Lanka. According to the EIA legal framework, scoping committees and TECs comprise multi-level and multi-agency participation. Therefore, coordination and cooperation among these agencies is highly important for the above committees to be effective. The current EIA processes require different government departments, both at national and local level, to work together for smooth functioning of the Sri Lankan EIA process. This section covers criteria (20), inter-agency coordination, and (21) involvement of the DMC in the EIA process (see Table 3.1).

Inter-agency coordination

After the Disaster Management Centre (DMC) was established through the DM Act 2005, the DMC began to play a role in the development planning process. It has identified that development-induced disaster risk should be addressed to reduce the disaster risk of communities. As reported earlier, the National Strategy on Disaster Management proposes a disaster impact assessment

system in Sri Lanka, in which the DMC will have to play a key role. According to the DMC planner, initially, the DMC attempted to incorporate disaster risk into the current EIA process of the country, but did not succeed because of resistance from the CEA. Later, the DMC re-started the DIA process but with a different approach. The DMC planner stated that "Here, we attempt to do it through a developer". In this, the DMC is working with the Road Development Authority (RDA) in a pilot project to incorporate disaster risk assessment into RDA projects. The pilot project is financed by the JICA under its Disaster Management and Capacity Enhancement Project (DiMCEP). According to the second RDA planner, JICA is one of the key funders in road sector development; therefore the RDA is obliged to support this pilot project.

Lack of coordination and cooperation among state agencies in working on development processes was very evident during the interviews with government planners in different agencies. According to the DMC planner, lack of support from the CEA and EIA planners has compelled them to look for other strategies to work around project-induced disaster risks and to develop a separate system. The proposed DIA does not have any links to the current EIA system in Sri Lanka or look at EIA as a credible mechanism to collect the required crucial information on disaster risk for detailed design approval. However, it has already created much confusion among state agencies and experts. The second RDA planner stated: "This is a nuisance. For the same project we have to develop different documents for different state agencies and even for donors".

Though strongly criticising the DMC's attempt to introduce a separate system, the CEA planner was not willing to improve the current EIA process to incorporate disaster risk. According to the CEA planner: "It [disaster risk] is already being addressed". Therefore, the CEA considers the growing concern over project-induced disaster risk as an issue of coordination rather than a technical gap in the current EIA process. The planner further stated: "Coordination with other agencies is very good, but not with the DMC. It is not sufficient." The second EIA expert saw this as a common problem in the Sri Lankan administrative system. The expert stated:

> *It is an inherent issue of Sri Lankan institutes. Nothing to do with CEA. It had been really difficult to bring Forest Department and Wildlife Department to one table to discuss the matters related to the environment. No one wants to talk to other organizations and learn from their expertise.*

The second RDA planner supported the above statement, as he expressed his dissatisfaction over the poor coordination among agencies in the EIA process and the disaster impact process.

Involvement of the DMC in the EIA process

The on-going mistrust and poor relationship between the DMC and the CEA surfaced in the interviews I had with the two agencies. It was clear that even when opportunities exist for greater

coordination, they appear not to be taken up. The interviewed CEA planner strongly opposed the involvement of the DMC in a proposal for strengthening or improving the existing EIA process. The CEA planner agreed that the DMC can play a significant role within the current EIA process by assisting to set up the ToR and reviewing and commenting on the EIA reports. However, according to the CEA planner, the DMC does not play such a role in the current EIA process. The CEA planner added:

> *When we invite them [the DMC] for TEC meeting, they do not at least come to TEC meetings. We invite them for scoping committee. They do not come. We ask them to come for scoping committee to decide the ToR, but they do not. They are even not giving comments for EIA reports.*

The DMC planner had a different view. Even though the DMC planner was still hopeful about some dialogue between the two agencies, the planner believes that a lack of flexibility and preparedness to change is the problem in CEA. Therefore, the DMC planner seemed more comfortable working directly with developers, such as the RDA, without getting involved with CEA. The DMC planner also accepted that the lack of in-house capacity has restricted DMC from participating in scoping committees.

Summary

The findings show that criterion 20 is met to a 'limited' extent but criterion 21 is not met in the Sri Lankan EIA process. Coordination among agencies is a challenging task in the EIA process and the DMC is not a part of the current EIA process. The DMC has initiated a separate DIA system, which could aggravate coordination issues among agencies. Table 5.10 summarises the criteria findings for coordination of the EIA process in Sri Lanka.

Table 5.10 A summary of the criteria findings for coordination

Criterion	Evaluation	Justifications
(20) Inter-agency coordination and cooperation is available across sectors and different levels (national/local) of government departments at all stages of the EIA process	Limited	There are 23 different PAAs under the NEA. Therefore, inter-agency coordination is required in the EIA process, especially at scoping and TECs. Coordination with provincial governments was not studied in this research. Lack of coordination among agencies, especially the DMC was visible in the interviews.
(21) Disaster management agency is involved (receive information and get coordination) in all stages of the EIA process	No	The DMC does not play an active role in the EIA process.

5.5.6 Funding conditions

This section covers criterion 22 of the analytical framework, which is the influence of funding agencies and funding conditions on the EIA process.

DRR as a part of funding conditions

The conditions attached to development funding are not a new phenomenon in developing countries. The World Bank, the Asian Development Bank (ADB) and JICA include conducting environmental assessments as a condition attached to their development assistance. These three institutions together provided nearly 45 percent of all foreign aid received by Sri Lanka in 2012 (CBSL (The Central Bank of Sri Lanka), 2012). Table 5.11 shows the annual lending from 2008 to 2013.

Table 5.11 Foreign borrowing for Sri Lanka from 2008 to 2013 (Source: CBSL (The Central Bank of Sri Lanka), 2008, 2009, 2010, 2011, 2012, 2013)

Lender and project	Amount disbursed (US$ millions)					
	2008	2009	2010	2011	2012	2013
Asian Development Bank	247	243.5	306.3	262.5	292	279
International Development Association (World Bank)	95.3	148.1	144.5	195.7	166	171
Nordea Bank Denmark A/S	28.6	24.8	30.8	38.6		
Government of Japan (JICA)	262.9	295.1	302.9	346.4	367	265
Government of France	20.8	19.4	50.2			
Kingdom of Spain	20.1					
Government of the People's Republic of China	40.4	291.4	103.7			
HSBC Bank PLC (UK)	32.4	98	77.4			
HSBC Limited (Hong Kong)	26.3					
European Investment Bank	28.7	21.2			33	
Dunske Bank A/S	14.1					
Bank Austria Creditanstalt AG	27.7					
Government of India		30		201.2	26.1	189
AB Svensk Export Credit Corporation		22	28.5			
Export-Import Bank of China			692.2	333.5	615	810
Government of Republic of Korea			36.7	26.6	43	36
Calyon Credit Agricole (CIB)			17.1	18.5		
China Development Bank Corporation			152.8	75.4	229	129
Australian and New Zealand Investment Bank				35.7		
Export Development Bank of Iran				17.1	49	
Government of the Russian Federation						65
Rabobank of Netherlands						55
International Bank for Reconstruction and Development						32
Total Lending	844.3	1193.5	1943.1	1551.2	1820.1	2031

The World Bank, ADB and JICA have operational procedures regarding environmental assessment. For instance, the World Bank carries out environmental screening of project proposals and classifies

funding proposals as category A, B, C and FI based on type, location, sensitivity, and scale of the project and the nature and magnitude of potential environmental impacts (The World Bank, 1999). The above categories require different levels of assessment. A project is categorized as category A if it is likely to have significant adverse impacts on the environment and is requested to have a comprehensive environmental assessment. A project where less adverse impacts on the environment are predicted is in category B, which is required to have a narrower environmental assessment than a category A environmental assessment. A proposed project is classified as category C if it is likely to have minimal or no adverse environmental impacts. No environmental assessment is therefore required for a category C project. Category FI is for investments that involve a financial intermediary and in such cases an appropriate environmental assessment is required. According to Operational Manual 4.01 on environmental assessment of the World Bank, it is the responsibility of the recipient country to carry out the environmental assessments. Like the World Bank's operational procedures, both ADB and JICA have a screening process for their development lending; projects are categorised into A, B, C and FI (ADB, 2003; JICA, 2010). As indicated in Table 5.12, this categorization is based on very similar criteria to the World Bank ones and with similar requirements. None of the WB, ADB or JICA operational procedures on environmental assessment pays special attention to development-induced disaster risk. Nevertheless, the Safeguard Policy Statement 2009 of the ADB requires:

> *… project teams, through social and environmental screening and classification, to gauge the extent of exposure of projects to natural hazards or their potential to exacerbate risk; to assess the risk of natural hazards for projects that are found to be highly exposed to natural hazards or have high potential to exacerbate risk; to conduct an alternative analysis of prevention and mitigation measures; and to include appropriate structural and non-structural mitigation measures in project design and implementation (ADB, 2009, p. 86).*

Further, in the latest country partnership strategies issued for the 2012-2016 funding cycle for Sri Lanka, both ADB and the World Bank emphasise not only environmentally friendly development, but also the importance of integrating disaster and climate risk into development planning processes. The World Bank has identified mainstreaming of DRR into the development process as one of its 14 Analytic and Advisory Activities (AAA) proposed for the 2012-2016 Country Partnership Strategy period:

> *The World Bank will continue to engage in this area [environmentally friendly economy], seeking opportunities to support the mutually reinforcing aspects of economic growth and environmental sustainability as well as ensuring compliance to environment-related safeguards.*
>
> *The ongoing AAA on Mainstreaming Disaster Risk Management looks to strengthen Sri Lanka's early warning system and the capacity of*

Government to assess risks, integrate disaster risk reduction into the planning process and prepare post-disaster assessments (The World Bank, 2012, p. 62).

Table 5.12 A comparison of the categorization of projects of ADB, WB and JICA

Organization	Category and criteria used			
	Category A	**Category B**	**Category C**	**Category FI**
ADB	Projects with significant adverse environmental impacts. An environmental impact assessment (EIA) is required.	Projects with some adverse environmental impacts, but of lesser degree and/or significance than category A projects. An initial environmental examination (IEE) is required.	Projects unlikely to have adverse environmental impacts. No EIA or IEE is required.	A financial intermediary is involved. The financial intermediary must apply an environmental management system.
The World Bank	The project is likely to have significant adverse environmental impacts. The borrower is responsible for preparing an EIA.	Potential adverse environmental impacts of the project are less adverse than those of Category A projects. The scope of environmental assessment is narrower than that of a Category A EIA.	The project is likely to have minimal or no adverse environmental impacts. Beyond screening, no further EIA action is required for a Category C project.	A proposed project is classified under this category if it involves a financial intermediary. An appropriate EIA for each subproject is required.
JICA	Proposed projects with significant adverse impacts. An environmental impact assessment (EIA) is required.	Potential adverse impacts are less adverse than those of Category A projects. The scope of environmental reviews is narrower than that of Category A projects.	Projects are likely to have minimal or little adverse impact. No EIA is required.	JICA's funding of projects is provided to a financial intermediary or executing Agency. Environmental reviews are conducted by the JICA.

Similarly, the ADB, in its Country Partnership Strategy, states that: "…all investments will be designed to be resilient to climate change and ADB will endeavour to tap other sources of funds for climate change" (ADB, 2011, p. 4). However, neither the World Bank nor ADB have clearly articulated how DRR is mainstreamed into the development planning process.

The influence of the funding conditions from the ADB, the World Bank and JICA to implement environmental planning is very evident in the Sri Lankan context. This means that some projects, which are not covered under the National Environmental Act (NEA), are at least required to undergo an EIA under conditions set by the funders. For example, expansion and widening of existing roads is not categorised as a prescribed project under the Gazette extra-ordinary No. 722/22 of 1993. Nevertheless, the World Bank in 1993 agreed with the CEA to require projects that are like the above

to undergo an environmental assessment if lending from the World Bank is sought. However, according to a major donor, the NEA provisions are above that of the funders and the funding agencies are required to adhere to the NEA requirements (personal communication, Environmental Officer of a major donor to Sri Lanka, 12 January 2013). Some community members and experts respect the influence of funding conditions towards implementing environmental assessment in development projects, but some are sceptical about the long-run sustainability of relying on such conditions. The legal expert stated:

> *There is an influence of it [conditions of the funders]. But that also shows a bad situation. People try to implement EIA properly due to the influence of either the World Bank or ADB. It says projects that do not come under the World Bank or ADB can be done in any corrupted way.*

Almost all planners and experts interviewed are concerned that current lending is skewed towards Chinese banks (see Figure 5.1) and such a trend is not healthy for implementation of environmental management principles in the development process. The CEA planner stated: "There is a problem we are now facing. Most of the current projects are Chinese funded. They do not consider about environment, they *even do not want* an EIA approval" (emphasis added). Re-emphasizing this concern the second EIA expert stated:

> *Chinese EXIM Bank does not have any of these [environmental policy]. If the World Bank or JICA takes two years to negotiate a loan, the EXIM Bank takes only two months. For example, the Moragakanda Hydro Power project [Moragahakanda Kalu Ganga Multi- purpose Development Project in the Central Province of Sri Lanka], which was earlier rejected by the JICA on environmental concerns, is now funded by the EXIM Bank.*

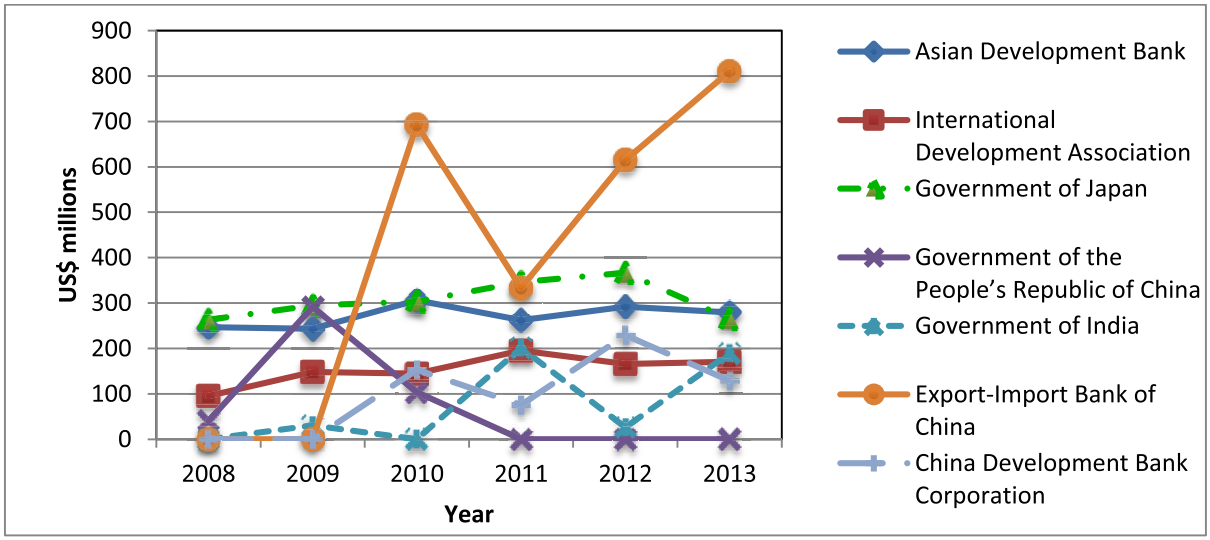

Figure 5.1 Foreign borrowings for Sri Lanka from major lenders 2008 – 2013 (Source: CBSL (The Central Bank of Sri Lanka), 2008, 2009, 2010, 2011, 2012, 2013)

Summary

The findings show that criterion 22 is 'mostly' met in the Sri Lankan EIA process. It is clear that the Sri Lankan EIA process is influenced by the policies and demands of the development funders and some agencies are also increasingly looking for disaster risk and climate change impacts in development projects. However, the influence of such agencies is decreasing due to the changes in the foreign development aid flow to the country. Table 5.13 summarises the criterion findings for funding conditions in Sri Lanka.

Table 5.13 A summary of the criterion finding for funding conditions

Criteria	Evaluation	Justifications
(22) Funding agencies carry specific funding conditions to curtail the disaster risk of the project.	Mostly	Conditions set by the funders significantly influence how projects are done in Sri Lanka. The latest funding strategies also emphasize disaster risk and climate change. However, the increased influence of Chinese funding has negative implications on implementing the full EIA process, therefore on addressing disaster risk.

5.6 Chapter Summary

This chapter reports the effectiveness of the Sri Lankan EIA process to address project-induced disaster risk. The findings show that most criteria are either met to a limited extent or not met in the Sri Lankan EIA process. Exceptions to the above can be seen only in criteria 2, 14, 17, and 22. The EIA process is backed with clear and specific legislation. Nevertheless, the legislation has several gaps that have limited its effectiveness. As reported earlier, even though a lack of transparency and poor commitment of the state agencies reduce its effectiveness, having a TEC in place is considered an important aspect of the EIA process. It is also difficult to verify whether developers address public comments because of the above-mentioned poor transparency of the TEC process. The influence of multi-lateral and bi-lateral agencies on assessing the disaster risk of development projects is highly visible in the EIA process. These agencies are also increasingly looking for disaster risk and climate change impacts in development projects. However, the influence of such agencies is decreasing because of changes in foreign development aid flow to the country. Table 5.14 summarises the findings of the empirical study under the evaluation criteria identified in Table 3.1. The next chapter will present the data collected from an empirical study carried out in New Zealand on the effectiveness of the New Zealand EIA process to address project-induced disaster risk.

Table 5.14 A summary of the findings for the Sri Lankan EIA process against the criteria in Table 3.1

Effectiveness Dimension	Criteria cluster	Criterion	Evaluation	Comments
Integration	Purpose of EIA	(1) Disaster risk reduction is an integral part of environmental assessment.	Limited	Disaster risk is not explicitly mentioned in the EIA legislation.
Procedural	Legal Basis	(2) The EIA system is based on clear and specific legal provisions.	Mostly	Legal system is clear and comprehensive to a greater extent. However, a few gaps have been identified in this research. These include, insufficient provisions for public participation, lack of provisions for the public to appeal against a decision.
		(3) The impacts of all significant actions are assessed.	Limited	The prescribed project list provided in the NER 1993 has limitations. Some projects, for example expansion of existing roads, are not considered as prescribed projects in the law. Even though most of the prescribed projects can also be categorised as projects that increase disaster risk, assessment of disaster risk is not required under the EIA law. In addition, sub-activities of main development activity (i.e., supply routes) are often not subjected to an EIA.
		(4) Alternative methods and locations are considered.	Limited	Consideration of alternatives is required under the NEA. Even though the NEA is not clear about requirement of both alternative methods and locations, in practice both alternative methods and locations are included in the EIA reports. However, a detailed assessment of alternatives has not been conducted or incorporated in the studied EIA reports.
		(5) EIA reports contain a section on disaster risk.	Limited	More obvious visible hazard risks, such as flood risk are included as part of anticipated environmental effects. However, the vulnerability of affected people is not included in the EIA reports.
		(6) There is an opportunity for appeal or legally challenge the process or decision output.	Limited	A developer can appeal against the decision to the secretary of the Ministry of Environment. However, the public cannot appeal against an approval decisions under the provisions of the NEA 1980. Currently, provisions of the Constitution are used to challenge decisions.

Effectiveness Dimension	Criteria cluster	Criteria	Evaluation	Comments
Procedural	Guidance	(7) EIA reports are subjected to public review.	Limited	Public review of EIA reports is legally required but measures are not sufficient to make maximum use of it. The conduct of public hearings is not consistent. The public is not often provided with information related to project impacts in simple language.
		(8) ToR for EIAs carries specific requirements regarding hazard assessment and vulnerability assessment.	No	A general ToR is used in most occasions. ToRs generally do not have a reference on disaster risk.
		(9) Guidance is available to support compliance monitoring taking place and it is being implemented.	Limited	The CEA is legally mandated with monitoring function. However, a monitoring is not taking place adequately. Poor motivation of the authorities is identified as the key issue.
Substantive	Level of Assessment	(10) Screening of actions for disaster risks is taking place.	Limited	Screening of project proposals is based on the prescribed project list in NER 1993. Screening of proposals to decide whether an IEE/EIA is necessary is an opaque process and is done at the discretion of the PAA.
		(11) Hazard and vulnerability assessments are conducted as a part of impact identification.	Limited	Hazard assessments for more obvious visible hazards are done to some extent, but such assessments are not detailed enough to assess the frequency and magnitude of the hazard risks. Vulnerability assessments are not done.
	Decision Making	(12) Findings of the EIA influence the final decision (van Doren et al., 2013).	Limited	It is clear that most government-sponsored projects in Sri Lanka are not subjected to systematic environmental scrutiny. EIA is influential in some projects proposed by private entrepreneurs, but not a decisive factor in most projects proposed by the state agencies and political authorities.
		(13) Planners use the EIA report as a reference document in project planning (van Doren et al., 2013).	Limited	Design changes are made in some projects based on the findings of the EIA. This is mostly done because of public protests rather than the findings of the EIA report. There are some cases where the findings of the EIA report have been ignored in project design. For example; the STDP.

Effectiveness Dimension	Criteria cluster	Criteria	Evaluation	Comments
Contextual	Consultation and Public participation	(14) Consultation and participation are taking place before and following EIA report publication.	Limited	Public participation is legally required only at public review of EIA reports. The public is not sufficiently consulted or participation is not adequately encouraged during scoping, impact identification and monitoring stages. Public consultation is done to educate the public on project benefits rather than listening to their concerns. However, public protests and campaigns, both self-initiated or supported by environmental NGOs, have a significant influence on project implementation.
		(15) Feedback from consultations is incorporated into project planning.	Unclear	According to the CEA, project proponents respond to public comments. However, interviews with community members suggest that most demands by the public have not been addressed in projects. This cannot be verified because the TEC reports are not accessible to third parties other than the CEA and the developer.
	Policy context	(16) Legal provisions given by other legislation to control development-induced disaster risks do influence the outcome of the EIA process.	Limited	None of the other three Acts reviewed in this research has any provisions to control development-induced disaster risks. The National Strategy for Disaster Management does carry provisions to develop a Disaster Impact Assessment system but does not have any authority to influence the EIA process.
	Transparency and accountability	(17) EIA assessment processes and EIA reports are subjected to independent checks and verification.	Reasonably	The EIA reports are assessed by a TEC, which is a multi-agency mechanism. Almost all planners and experts interviewed believed that this is an important aspect in the EIA process. But a lack of transparency and poor commitment of the state agencies and experts make the TEC ineffective in some cases.
		(18) Decision-making and approval stages, (setting out what is required of proponents and government agencies and when) are made clear to all.	Limited	Approval decisions are published in government Gazette and local newspapers. However, any conditions attached to the approval are not available to the public.

Effectiveness Dimension	Criteria cluster	Criteria	Evaluation	Comments
Contextual	Political Will	(19) Political support is available for the EIA process.	Limited	Political support for the EIA process is low. Some government-sponsored projects evade systematic environmental scrutiny. Still, there is some respect among politicians towards the EIA process since public protests could emerge on socially unacceptable projects.
	Coordination	(20) Inter-agency coordination and cooperation is available across sectors and different levels (national/local) of government departments at all stages of the EIA process.	Limited	There are 23 different PAAs under the NEA. Therefore, inter-agency coordination is required in the EIA process, especially at scoping and TECs. Coordination with provincial governments was not studied in this research. Lack of coordination among agencies, especially the DMC was visible in the interviews.
		(21) Disaster management agency is involved (receive information and get coordination) in all stages of the EIA process.	No	The DMC does not play an active role in the EIA process.
	Funding conditions	(22) Funding agencies carry specific funding conditions to curtail the disaster risk of the project.	Mostly	Conditions set by the funders significantly influence how projects are done in Sri Lanka. The latest funding strategies also emphasize disaster risk and climate change. However, the increased influence of Chinese funding has negative implications on implementing the full EIA process, therefore on addressing disaster risk.

Chapter 6

The Effectiveness of the EIA Process in Addressing Development-Induced Disaster Risks in New Zealand

6.1 Introduction

This chapter reports the effectiveness of the New Zealand EIA process in addressing development-induced disaster risks, using the analytical framework proposed in Chapter 2 (see Figure 2.5) and the criteria formulated in Chapter 3 (Table 3.1). The chapter starts with an introduction, moves to detail the findings and finally summarises the findings.

The perceptions of six planners and six EIA experts on the New Zealand EIA process were used as the key empirical data for this chapter. Table 6.1 lists the experts and planners interviewed and the generic titles used to refer to them in this chapter.

Table 6.1 Planners and experts interviewed and generic title used

No.	Planner/ expert	Generic title used
1	Regional council planner	Regional planner
2	District council planner	District planner
3	Environmental planner of a major energy company	Development planner
4	Planner from Department of Conservation	Conservation planner
5	Planner from a national hazard management agency	Hazard planner
6	Planner for the EPA	EPA planner
7/8	Two social scientists	First social scientist and second social scientist
9	EIA expert	First EIA expert
10	Hearing commissioner	Hearing commissioner
11	Retired EC judge	EC judge
12	One thesis supervisor	Second EIA expert

Like the Sri Lankan case, interview data were supplemented with document analysis from government and agency publications, project documents, legislation, policies, journal articles and newspaper reports, where appropriate. In this chapter, the findings from the collected data will be presented under four main headings that reflect the effectiveness dimensions of the analytical framework (i.e., policy integration, procedural effectiveness, substantive effectiveness and contextual effectiveness). Each section presents the document analysis and interview results of the experts and planners. Summary tables with criteria findings are presented at the end of each effectiveness dimension and a full summary table is at the end of the chapter.

6.2 Policy integration

According to the national progress report (MCDEM, 2011) submitted to the UNISDR by the New Zealand Ministry of Civil Defence and Emergency Management (MCEDM) on the progress of implementation of the Hyogo Framework for Action (HFA) for the 2009-2011 reporting cycle, development-induced disaster risk is integrated into the existing EIA process. This section will investigate the details of this claim and see to what extent disaster risk is factored into the New Zealand EIA process.

6.2.1 Integration of disaster risk into EIA legislation

This section covers criterion 1 and investigates to what extent disaster risk is integrated into the EIA process.

DRR in the EIA process

The Environmental Impact Assessment process in New Zealand is largely governed by the Resource Management Act (RMA) 1991. As noted in the Chapter 2, the RMA is considered a comprehensive environmental management framework that promotes "…the sustainable management of natural and physical resources" (RMA 1991, s.5). Sustainable management in the RMA context means:

> *…managing the use, development, and protection of natural and physical resources in a way, or at a rate, which enables people and communities to provide for their social, economic, and cultural well-being and for their health and safety while—*
>
> *a) sustaining the potential of natural and physical resources (excluding minerals) to meet the reasonably foreseeable needs of future generations; and*
>
> *b) safeguarding the life-supporting capacity of air, water, soil, and ecosystems; and*
>
> *c) avoiding, remedying, or mitigating any adverse effects of activities on the environment." (RMA, 1991, s. 5(2)).*

Sub section (c) above is directly related to the purpose of an EIA process. Therefore, sub section (c) can be identified as a direct provision shaping the EIA process within the RMA. Schedule 4 of the RMA sets out the minimal requirements of the EIA process in New Zealand. The EIA report in the RMA context is called an 'Assessment of Effects on the Environment' (AEE), but mostly from hereon I will refer to it as an EIA report. The term 'environment' has been broadly defined in the RMA as:

> *a) ecosystems and their constituent parts, including people and communities; and*
>
> *b) all natural and physical resources; and*

c) *amenity values; and*

d) *the social, economic, aesthetic, and cultural conditions which affect the matters stated in paragraphs (a) to (c) or which are affected by those matters" (RMA, 1991, s. 2)*

Therefore, in the RMA, people and communities are considered as a part of the environment and when the Act says avoiding, remedying and mitigating any adverse effects of activities on the environment, it should also be read as any effects on the people and communities, which is an important dimension of DRR. In addition, the term 'effect' is also given a broad scope in the RMA, but "…in a non-exhaustive way…" (Dye v Auckland RC (2001) (7 ELRNZ 209)) as:

a) *any positive or adverse effect; and*

b) *any temporary or permanent effect; and*

c) *any past, present, or future effect; and*

d) *any cumulative effect which arises over time or in combination with other effects—*

e) *regardless of the scale, intensity, duration, or frequency of the effect, and also includes—*

f) *any potential effect of high probability; and*

g) *any potential effect of low probability which has a high potential impact. (RMA, 1991, s.3)*

Sub sections (e) and (f) above are therefore legally required to be a part of any EIA report under the RMA. Some experts interviewed for this research argued that these requirements refer to disaster risks in the RMA, as disasters can also be described under those explanations. As discussed in Chapter 2, the UNISDR has used similar descriptions in defining "extensive" and "intensive" types of disasters (UNISDR, 2009a). However, the same terms can also be used for any other environmental impacts without being specific reference to disaster risks. The interviewed experts and planners had different views over the provisions in the RMA on disaster risks. For instance, the regional planner described integration of disaster risk in the EIA process as: "It starts with the definitions of words used in the fourth schedule. … effects are defined very comprehensively. That includes things that can happen with very low probability with high consequences."

According to the regional planner, disaster risk is more explicit and if there is a risk of disaster because of a proposed project it is covered as part of 'effects'. Clause 2(f), Schedule 4, requires "…any risk to the neighbourhood, the wider community, or the environment through natural hazards or the use of hazardous substances or hazardous installations" to be addressed by an EIA report. This

is a more specific reference to natural hazards in the RMA than the broad definition of effects as set out in section 3 (g) (noted above).

According to the Technical Advisory Group (TAG) report on the principles of the RMA (Dormer et al., 2012, pp. 21-22), the management of natural hazards is explicitly provided for in a number of sections of the RMA. The report emphasises that sections 2, 30, 31, 59-62 and 106 are directly related to natural hazard management. The term 'natural hazard' is defined in section 2 of the RMA as "any atmospheric or earth or water related occurrence (including earthquake, tsunami, erosion, volcanic and geothermal activity, landslip, subsidence, sedimentation, wind, drought, fire, or flooding) the action of which adversely affects or may adversely affect human life, property, or other aspects of the environment". Section 30 refers to the control of the use of land for the purpose of the avoidance or mitigation of natural hazards as a function of regional councils. Section 31 refers to "…the control of any actual or potential effects of the use, development, or protection of land, including for the purpose of... the avoidance or mitigation of natural hazards" (s. 31 (1) (b)) as functions of territorial authorities. This may appear as though the regional and territorial authorities may have particularly conflicting roles but, as reported in Chapter 4, the Environment Court clarified the role of the two councils early in the life of the RMA.

Sections 59–62 are relevant to regional policy statements and under section 62, regional councils should specify in the regional policy statement "…the objectives, policies, and methods for the control of the use of land… to avoid or mitigate natural hazards or any group of hazards". Further, according to section 106, a consent authority may refuse to grant a subdivision consent in special circumstances, including where land is likely to be subjected to erosion, subsidence, slippage, or inundation. However, section 106(2) allows granting such subdivision consent subject to conditions for the purposes of avoiding, remedying, or mitigating the effects.

Nevertheless, the interviewed experts argued alternatively that disaster risk in the EIA process is more implicit than explicit. The first social scientist stated: "It is not a specific requirement. It is more an implicit requirement in New Zealand. The guidance [the RMA provisions] about hazards for instance, are on physical hazards". According to the social scientist, hazard assessment does not investigate the vulnerability of people or effects on society. The social scientist added:

> *…it [disaster risk] is not an effect, not a specific reference [to disaster risk] in Part 2 of the Act, which talks about the purpose and principles although there are indirect references. I think in schedule 4, there are lots of deficits in terms of [disaster risk]. I think it is not emphasized as much as …it could be.*

Summary

The findings show, criterion 1 is met 'reasonably'. Hazard risk is explicitly integrated into several places in the RMA, including Schedule 4. However, it is clear that such provisions concern hazard risk, but not disaster risks. Table 6.2 summarises the criterion findings for the integration of DRR into EIA in New Zealand.

Table 6.2 A summary of the criterion findings for policy integration

Criterion	Evaluation	Justifications
(1) Disaster risk reduction is an integral part of environmental assessment.	Reasonably	The EIA process is required to address natural hazards risks. However, neither disaster risk nor vulnerability of affected people is required to be assessed.

6.3 Procedural effectiveness

This section covers the legal basis in more depth and the guidance for the EIA process in New Zealand and the extent to which legal provisions and regulations are being implemented in New Zealand.

6.3.1 Legal basis

Five different criteria are evaluated in this section in relation to the RMA provisions (Table 3.1). They are: (2) clarity of the legal provisions; (3) whether impacts of all significant actions are assessed; (4) the consideration of alternatives; (5) whether EIA reports contain a separate section on disaster risk; and (6) the opportunities for legally challenging a consent authority's decision.

Legal basis for EIA

It is a general perception among the interviewed planners and experts that most provisions of the RMA for the assessment of environmental effects are clear. However, the experts argued that some ambiguities exist. The first EIA expert added: "Case law can be quite important as well. Those decisions might point the way" [to resolving any ambiguities]. The expert further argued: "… [however, it is] still possible for people to do what I regard as quite ineffective assessments. Other times you get developers who will do very comprehensive assessments". According to all the experts, the above difference in depth of assessment is a result of the capacity of assessors and their experience with the existing EIA process. The first EIA expert further argued that the process depends on whether the applicant anticipated they would be required to provide information, in which case they volunteer it, or thought council might not note it and so left it to the awareness of the council staff to specifically request DRR relevant information.

The general view of the experts was that developers would tend not to include information that might lead to adverse outcomes of their application. According to the experts, although that attitude of developers results in inadequate EIA reports, there are checks along the way at council review, hearing and Environment Court stages where further information can be requested. The hearing commissioner argued: "... commissioners often nowadays ask for more information. …and then obviously when you get to the Environment Court stage, that process is also a quite big check in terms of the comprehensiveness of the information".

Despite the consensus among most planners and experts on the provisions of the RMA for EIA reporting, some showed their discontent about Schedule 4[9]. Local council planners argued Schedule 4 of the RMA is too specific and some consent applications do not align properly with the list of matters that should be included in an EIA report given in Schedule 4. Local council planners seem to be more comfortable with a broader framework where they can more easily fit different consent applications. For instance, the regional planner described Schedule 4 as:

> *I think the fourth schedule is probably the only area where we wish for more clarity around. The fourth schedule is often used by lawyers as a checklist for EIA. Here it is often used to undermine EIA. Those who want to provide good EIA are often pointed to the fourth schedule to say, what you are dealing with is not mandated by the RMA. I wish the fourth schedule was bit clearer about what it intends to do. Not a shopping list of what to include in the EIA.*

Nevertheless, most experts interviewed have an alternative view. The first EIA expert stated, "… the problem with the fourth schedule is that it is too broad and undiscriminating. Essentially the matters that need to be considered are just a re-statement of the definition of environment, the definition of effects. …it is setting the broadest possible nets". According to this expert, this broadness has made the EIA process rely on practitioners to narrow the focus down on important issues (i.e., make the details appropriate to the significant scale of the impacts). The expert further argued:

> *That means you are entirely relying on the skills of a very diverse practitioner community. Some of them are engineers, some of them are surveyors, some are planners, some are environmental scientists, most of them will not have had any impact assessment training. Therefore, how the assessments have been done, is very dependent on what influences those people [have] at the time and how they tackle the work.*

The hearing commissioner argued that the current issues seen in the EIA process are far greater than an issue with Schedule 4 or lack of guidance on EIA reporting. The commissioner further argued that

[9] It is important to note that schedule 4 of the RMA has been amended by the Resource Management Amendment Act (RMAA) 2013, after these interviews were conducted. However, clauses 1 and 2 of the RMA remain unchanged in the amendments.

the RMA is inherently deficient of some vital ingredients that make any impact assessment tool effective. The commissioner stated: “When you move from the old style of impact assessment into the RMA, the fourth schedule really diminished the coverage. It reduces the need for consultation. It reduces the scope of the inquiry”. However, the second EIA expert strongly denied this claim saying “I cannot find any logical or empirical basis for this view”.

Assessing the impacts of all significant actions

Coverage of activities in an EIA system is an important dimension in the potential effectiveness of the EIA process to address disaster risk. In other words, even if the legal provisions and guidance of the system are clear, if the system does not cover the whole spectrum of activities that potentially can increase disaster risk, then it diminishes the effectiveness of the whole system.

As reported in Chapter 4, under the RMA provisions there are five types of resource consents, which theoretically cover all activities (except fishing) that affect the environment. They are: land-use consents, sub-division consents, coastal permits, water permits and discharge permits. Therefore, any resource user should obtain a resource consent before he/she engages in any such activity unless it is a permitted activity. As per section 88 of the RMA, any such resource consent application must also be accompanied with an EIA report in accordance with Schedule 4 of the RMA. So, almost all development actions, unless they are permitted or prohibited in the relevant district or regional plans, will be subject to a standard scrutiny process to check for any environmental effects.

In addition, an assessment of actual or potential effects prepared in accordance with Schedule 4 must take into account relevant cumulative effects “…of the development as a whole” (Burton v Auckland CC [1994] NZRMA 544 (HC)) and “…even those arising from associated activities which did not require consent in themselves” (Harris, 2004, p. 102). Cumulative effects also include considering effects of the activity in combination with existing activities, but not future activities requiring consent (Maassen, 2010).

Consideration of alternatives

Schedule 4 of the RMA requires inclusion of “…a description of any possible alternative locations or methods for undertaking the activity” in the EIA report if the proposed activity “…is likely to…result in any significant adverse effect on the environment”. This provision has been elaborated in detail in ‘A guide to preparing a basic assessment of environmental effects’ (MfE, 2006). According to the guide, it is important to “…consider alternatives in the widest possible way” (MfE, 2006, p. 24) only if the proposal is likely to cause significant adverse effects. Even though it is specifically not required under the RMA, the guide says that complex applications require considering alternative locations, including the option of not proceeding. Further, the guide has given more emphasis to alternative

locations but not the methods. The guide further warns developers not to use identification and analysis of alternatives as a means to merely dispose of alternatives in favour of a selected option by the developer. However the term 'significant' is seen as being very debatable among the planners and experts interviewed. This has been made clear in Meridian Energy Ltd v Central Otago District Council ([2010] NZRMA 477), where the High Court ruled that if the consent authority concludes that an adverse effect of a proposed activity is likely to be significant then the consent authority and the Environment Court are entitled to seek a description of any alternative locations for the proposed development activity. However, accepting that under section 104(c); the consent authority can look at the description of alternative sites and methods in making the decision, the High Court ruled out the need for an explicit and comprehensive cost benefit analysis on alternative locations. Here too, alternative methods were not discussed.

It is evident that both in the Transmission Gully Project and the Waitohi Irrigation and Hydro Scheme, alternative options were not considered adequately even though both projects are considered to have substantial adverse effects on the environment. For instance, the engineering report for the WIHS (Rivett et al., 2012) provides alternative dam locations but does not provide any details on any alternative methods for the proposed activity. Similarly, in the TGP, the EIA report has restricted itself to alignment options for the proposed highway.

Separate section on disaster risk in the EIA report

In all seven EIA reports reviewed from New Zealand, a section or a chapter was allocated to hazard risk. In most cases, natural hazard risk was identified as a key area of effects and separate studies were commissioned to assess hazard risks. For instance, in the WIHS, a separate study was carried out on the engineering features of the project covering geological and hydrological aspects; it also investigated natural hazard risks. In addition, a separate analysis was conducted of potential breaks in all three dam projects considered (i.e., the WIHS, Wrights Road Storage Ponds and Ruataniwha Water Storage Scheme) as per the requirements of the Building (Dam Safety) Regulations 2008. However, even though a cultural impact assessment and an economic impact assessment were done for the WIHS, neither a social impact assessment nor vulnerability assessment was prepared for the scheme. Similarly, in the TGP, Technical Report No. 03 addresses geotechnical engineering aspects of the project; it also covered hazard risks. Unlike the WIHS, in TGP a social impact assessment was carried out and presented separately in Technical Report No. 17. However, the social impact assessment did not relate to the findings of the hazard assessment and there is no reference to hazards in this report.

It is clear in all reviewed EIA reports that the geophysical studies on natural hazards are clearly disconnected from social studies. Both social and cultural assessments do not refer to the natural

hazard risks of the project. Therefore, both studied projects contain a hazard assessment but lack detailed disaster risk or vulnerability assessments. This will be further reported under the criterion on hazard and vulnerability assessment in impact identification.

Opportunity to appeal against an approval decision

Under the RMA section 120, the applicant or consent holder, or any person who made a submission on the application has a right of appeal to the Environment Court against the whole or any part of a decision of a consent authority on an application for a resource consent. Section 274 lists persons who can be a party to any proceedings before the Environment Court. The EC judge, explaining the provisions for appeal against the decisions of consent authorities, stated:

> *If [an application is] publicly notified, anyone can make a submission anywhere in the country. Submitters are entitled to take the matter into the Court if the consent is granted; if the consent is refused the applicant is entitled to take the matter to the Court. Within the confines of limited notification[10] the same applies. The only other way an application gets into the Environmental Court is that it is a non-notified application and the consent is refused or it is granted with a condition that the applicant does not like. Then the applicant can appeal to the Environment Court. So in non-notification, the public never get to go to the Court.*

The interviewees, regardless of their role in the development planning process, argued that the provision in the RMA for appeals against consent or notification decisions is a very important feature of the RMA in order for it to achieve its objectives. They also argued that decisions of the Environment Court have been useful in interpreting the RMA provisions and have later become part of environmental law in New Zealand.

The interviewees also emphasized that the EIA "…process requires lots of judgements". Therefore, as the first EIA expert stated: "Having that legal, pretty fair-minded organization [the Environment Court] in the background is really really important". The regional planner, referring to the importance of having the Environment Court, stated:

> *If anybody thinks that a decision was wrong. It is a judgement call. … [for instance] talk about effects being major and minor; those are clearly discretionary and very debatable. What's minor or what's major. The decision therefore can be appealed to a court and a judge can look at that decision and see if it is a reasonable one or not.*

[10] Limited notification is when the consent authority decides not to publicly notify an application, but if there are any affected people, affected protected customary rights group or affected customary marine title group, then the consent authority must notify such affected persons unless a rule or national environmental standard precludes this. Regardless of rules or national environmental standards, a consent authority must notify any affected protected customary rights group or affected customary marine title group.

Summary

According to the findings, criterion 2 is 'mostly' met. The New Zealand EIA process is backed with specific legal provisions and the EIA process is well integrated into development planning. However, Schedule 4 lacks the clarity that most planners and experts expected. Criteria 3 and 6 are 'fully' met in the EIA process (Table 6.3). It is a legal requirement that all development activities (unless permitted or prohibited) are subject to an EIA. Therefore the EIA has a wide coverage of activities. There are also adequate provisions to legally challenge a consent decision by any party involved in the EIA process. However, criteria 4 and 5 are 'reasonably' met. Even though the RMA is clear and explicit about the requirement for consideration of alternatives, in practice, consideration of alternative methods is weak. EIA reports have a separate section on hazard risk, but disaster risk has not been estimated.

Table 6.3 A summary of the criteria findings for the legal basis

Criteria	Evaluation	Justifications
(2) The EIA system is based on clear and specific legal provisions.	Mostly	The EIA process is based on specific provisions provided in Schedule 4 of the RMA. It is the general perception among most planners and experts that Schedule 4 is too broad and unspecific.
(3) The impacts of all significant actions are assessed.	Fully	Five types of resource consents are listed in the RMA. These theoretically cover all possible development activities. Any activity, unless it is permitted or prohibited, should require an EIA report to accompany any resource consent application. In addition, effects arising from associated activities and cumulative effects are also included in the EIA process.
(4) Alternative methods and locations are considered.	Reasonably	The RMA is clear about the requirement of alternative methods and locations. However, in practice, consideration of alternative methods is weak. The High Court ruled out the need for explicit and comprehensive cost benefit analysis on alternative options.
(5) EIA reports contain a section on disaster risk.	Reasonably	Hazard (risk) assessments are being done in detail in most cases and presented in a separate section of the EIA report or as a separate report. However, neither vulnerability assessment nor disaster risk is estimated and included in the EIA report.
(6) There is an opportunity for appeal or legally challenge the process or decision output.	Fully	Provisions are available for any aggrieved party to appeal against the decision or part of it to the Environment Court.

6.3.2 Guidance on EIA

There is no specific government policy or regulation that contains guidance on the EIA process. Schedule 4 of the RMA provides general guidance for the information required in an EIA report and matters that must be addressed in an EIA report. Guidance on the EIA process is also provided by the Ministry for the Environment and relevant local councils. The Ministry for the Environment's

publication 'A guide to preparing a basic assessment of environmental effects' (MfE, 2006) and a series of guides 'An everyday guide to the RMA' (MfE, 2012) provide more detailed information on the EIA process. In addition, the Quality Planning website (http://www.qualityplanning.org.nz accessed on June 12, 2014) also provides important information for resource management practitioners. This section includes three criteria: (7) public review of EIA reports, (8) requirements for hazard and vulnerability assessment, and (9) compliance monitoring of resource consents.

Public review of the EIA reports

As reported in Chapter 4, there are three possible routes that a consent application can follow after it has been lodged with a relevant consent authority, namely: public notification, limited notification and non-notification. As per section 95A of the RMA, "…a consent authority may, in its discretion, decide whether to publicly notify an application for a resource consent for an activity". However, the consent authority must publicly notify an application if "…the activity will have or is likely to have adverse effects on the environment that are more than minor"; or "the applicant requests public notification of the application"; or "a rule or national environmental standard requires public notification of the application" (RMA, 1991, s.95A (2)). Further, section 95B requires the consent authority to notify the application to any affected person in situations where public notification is not considered necessary (e.g., where a neighbour might be affected by shade from a proposed new shed). Explaining the opportunities given for the public to review EIA reports, the first EIA expert stated:

> *Formally, the people can get involved in the process through the formal submission under the Act, which is that when an application is notified. Then they have an opportunity to put up their submissions.*

According to the regional planner, the notification decision is made based on the criteria given in the RMA, which is "…again a judgement call". The regional planner argued that the notification decision, therefore, has to be made by people who are competent to make it. The planner stated "It is done in the regional council, usually by the senior staff". However, the EC Judge stated that if an application is not publicly notified, provisions are limited to appeal against such decisions. The Judge further added, "You can only challenge the decision of notified or not notified in the High Court [in a process] called a judicial review. You cannot challenge a notification decision in the Environment Court. It is a weakness of the Act".

According to the conservation planner, most often it is organized community groups who afford to review and comment on EIA reports. The conservation planner further stated:

> *In New Zealand, it [public review] relies a lot on environmental groups or community groups. Organized groups. There are a lot of such groups. We*

> *have some bigger ones like Forest and Bird, ECO [Environment and Conservation Organisations of New Zealand]. Then every community has its own little groups. So, quite often the duties for those groups, who are the motivated individuals, try to deal with these things.*

The hearing commissioner, however, argued most of the public submissions are not based on genuine reasons and do not have a proper base. The commissioner further stated:

> *…most of the submissions that the public bring through are opposed to development. Most of the reasons why they are opposed to it are it is a change. That is the starting point and now they look for reasons. Climate change, or tsunami or something. So it is retrofitting if you like, rather than principal concern.*

Accessibility of the documents is a fundamental requirement for the success of public review of an EIA report. According to the regional planner "The public can request …copies of AEE [EIA report] to be viewed". Sub section 35(5) of the RMA requires local authorities to make consent applications available in the local authority and, as per section 10(1) of the Local Government Official Information and Meetings Act 1987, any person can request a local authority to release such information. The RMA does not specify how and where an EIA report of a consent application should be made available for the public to view. However, under Schedule 1, Forms 12 of the Resource Management (Forms, Fees, and Procedures) Regulations 2003, the consent authority is required to include in a public notice of a resource consent application where the application (including the EIA report) can be inspected by the public. In addition, as a practice, EIA reports of larger projects are usually made available online at the consent authority's website. These provisions will be further reported in subsequent sections.

A separate clause on disaster risk in the ToR

The specific term 'ToR' (Terms of Reference) is not used in the RMA. According to the regional planner, "It is the scope of the AEE [EIA report]" in the RMA context, hence, clauses 1 and 2 of Schedule 4 can be considered as a general ToR. The MfE (2006) guidance note on preparing an EIA report advises applicants not to use this as a blue print for their EIA reports but to use it as a guide. As noted under criterion 1, clause 2(f) requires that "…any risk to the neighbourhood, the wider community, or the environment through natural hazards…" must be addressed by an EIA report. According to the regional planner interviewed, natural hazard risk should be considered in the scoping process.

According to local council planners interviewed, the RMA process makes applicants think seriously about their development proposal. This is also emphasised in the MfE guidelines. The guideline says "An AEE [EIA report] should be seen as part of the process of shaping your proposal" (MfE, 2006, p. 8). Nevertheless, some planners who demand more clarity in guidance on EIA processes argued that

gaps in assessments can result through deficiencies of the scoping process. The first EIA expert argued:

> *The Fourth Schedule really does not give them [practitioners] any firm guidance on how to go from the big picture down to specific issues. So I think that's where we lack real assistance from the legislature, from the statutory procedures.*

Setting up the scope of an EIA report is the responsibility of the applicant and, according to the RMA, the applicant may consult regional or district council staff in this process. The regional planner, explaining the responsibility of scoping an EIA report, stated:

> *It is the developer's job. If they choose to come to us. They do not have to. But if anybody asks me should they? I would say for anything with a decent size absolutely they should. But if they have a very competent team of professionals, there is no reason why they have to come to us.*

Therefore, the scope of an EIA report does not require consent from a relevant local authority and is not subjected to an independent or a public review before the full assessment is started. The development planner argued that most EIA reports fall short of the required quality because of poor emphasis given to the scoping process. Explaining the gaps in the EIA process, the planner added:

> *… [in an EIA report] first all you have to do is an assessment of what the place is like. So describe the environment and that's people, …everything. Then you need to understand very clearly what the changes are going to be. This is where people fall out. Then you need to say what is the implication of change and we missed that step. It does not matter [the level of implications]. Is it catastrophic, is it quite serious and then what can you do about it. Then … you have to make a judgement call as to what is the right response. That is the spirit of the process.*

According to the first social scientist, the implication of change could be a social effect, which is mostly being left out. The social scientist argued that Social Impact Assessments (SIAs) are not being done in most cases and, therefore, vulnerability is also not being addressed. According to the social scientist, social effects are not scoped adequately in the early stages of the EIA process.

Therefore, a deficiency in scoping can lead to poor and inadequate EIA reports. As the scope of the EIA report is not subjected to any reviews, the public have to wait until the formal public notification stage to see whether the whole spectrum of effects has been covered in the EIA report, including social effects. However, according to the hearing commissioner "Unless, the application is publicly notified then nobody gets to look at the AEE [EIA report] except the consent authority". The interviewed local council planners argued that the review of adequacy of the EIA report by council staff should lead to the identification of any deficiencies in the EIA report. Nevertheless, the commissioner argued, "But it [inadequacy] is not a ground for refusing a consent. Inadequacy in the

AEE [EIA report] may lead to the exercise of discretion because the effects have not been adequately addressed…". In addition, according to the experts, most resource consent officers are trained in biophysical sciences and not in social aspects.

According to the first social scientist, "Normally the understanding that a social report is needed and could come from a number of different sources. It usually comes from, for instance, the legal team or planning team who are advising [the developer] on what kind of assessment is required". When these concerns were put to the first EIA expert, he responded that some legal teams who work on behalf of developers do not have an interest in a full spectrum of effects as they try to obtain the consent with minimum effort. The expert added:

> *… [The social scientists] are really concerned about how communities relate to issues, how they see the proposed project, how they view potential consequences and so on. So that's what they feed back into the decision-making process, but they are not always asked for that input. So the big problem about SIA in relation to development is whether the project manager is going to scope the assessment in a way that will allow for SIA, or health impact assessment or cultural impact assessment. All the softer areas that traditional impact assessment in this country tended to not include. So a lot of those decisions are really down to one or two critical people and the consultants who are hired by the developers or the environmental lawyer who works for the developer on how to get their project through the RMA with the least fuss. They will influence the studies that they carried out and set boundaries on the assessments.*

The expert further added:

> *… a good example [is]… Meridian Energy … was pushing a project called Project AQUA on the Waitaki River. …the AEE [EIA report] for that project initially did not look at social impacts and it did not look at health impacts. But both of those areas became very important the longer the project was being discussed and proposed and so on. At the end they had to commission a SIA to plug the gaps in the original AEE [EIA report]. They were on the verge of commissioning a health impact assessment because the district health board was really concerned about the health issues. When I questioned the consultants [Boffa Miskell] who managed that process for Meridian…. They …said well we did originally propose that to Meridian, but their environmental management lawyer said …do not do that, just do what is required, required by the RMA. Clearly, social impacts were important, but do not have any institutional sort of recognition and the same for health impact assessment at that time. So, those were left out.*

The experts argued that the scope of EIA reports is influenced by a few strong personnel in companies or the consultants hired by them. One expert stated, "[The entire process] depends on how they see it". Therefore, most experts are concerned about the scoping process in New Zealand. As reported in the Chapter 2, inadequacy of the scoping process has already been raised by some scholars. However, none has identified the importance of a more streamlined process that leads to

consensus building on the scope of an EIA report. The experts interviewed for this study argued for integration of disaster risk into impact assessment, thinking that disaster risk would be assessed as a part of impact assessment. More empirical evidence on this issue will be reported in section 6.4.1.

Compliance monitoring

A workable definition for compliance monitoring under the RMA context is available in the 'Handbook of Environmental Law' (Harris, 2004). According to Harris (2004, p. 94), "…compliance monitoring involves monitoring the compliance of resource users with permitted activities, standards and conditions placed on resource consents". He further states, "…review and monitoring conditions are routinely placed on a consent" (Harris, 2004, P. 94). Sub section 35(2) of the RMA lists the monitoring function of a local authority as "…every local authority shall monitor… (d) the exercise of the resource consents that have effect in its region or district...". Lynch (1997, p. 60) in her evaluation of monitoring under the RMA, states "Section 35(2) is very broad leaving much open to different interpretations". 'The monitoring guide' of the Ministry for the Environment, gives a more detailed explanation about section 35(2):

> *The monitoring of resource consents has two components. Firstly, compliance monitoring checks that the consent holder is meeting the stipulated conditions and regulations. Secondly, impact monitoring checks that the environmental effects of the activity are as predicted in the application (MfE, 1996, p. 20).*

Under section 36, a local authority may fix charges payable by holders of resource consents to enable the local authority to carry out of its functions in relation to monitoring and supervision of resource consents. However, Harris (2004, p. 94) reports:

> *The amount of effort varies between local authorities and the variation is (1) a product of the philosophy of the consent authority and whether they place conditions on the consent, (2) the type of the consent, (3) the local importance given to the resource, (4) whether consent holders are charged for monitoring, and (5) budget priorities of the council.*

Even if the project is nationally significant and the EPA is involved in the initial stages, monitoring is left for local councils. The EPA planner added:

> *… the decision on nationally significant proposals once it is made is given back to the council. The EPA does not have a monitoring or compliance role. If we look at the Transmission Gully Project, for example, once the decision on that has been made the consent was sent back to the relevant district councils as well as regional councils. The obligation for monitoring and compliance with those conditions now rests with those councils.*

So, the RMA leaves the responsibility for monitoring mainly at the local authority level. Schedule 4, however, does not clearly demarcate the responsibility of monitoring between the consent authority

and the applicant. Instead, Schedule 4 states that the applicant should include in his/her consent application a description of how, once the proposal is approved, effects will be monitored and by whom, where the scale or significance of the activity's effects are such that monitoring is required. Therefore, the current EIA process requires developers to think about their monitoring plan before a consent application is lodged. This could lead to incorporating the monitoring plan as part of the consent approval. The regional planner explained:

> *If you are the developer and you come to me and say I want to do this development and you want to put some storm water into the river and storm water is very clean. Then the question I have for you is how do you know that it is clean? How will you confirm afterwards that it is clean? You will say I will test it 10 times per year [and] two of those events will be when flooding, and the other eight might be every month…, that goes in as a condition into your consent. That does not stop you doing more but you can't do less. It also does not stop us coming and checking or duplicating what you do by looking over your shoulder.*

The regional planner also stated it is the responsibility of both the council and developer to monitor resource consents, but the planner put more weight on the developer. The planner further stated:

> *[For] any monitoring after the consent is granted, the first responsibility is on the developer. So they should make sure that the dam is built to the right height, size and all done properly, but if they violate that, the regional council should also be out there either to make sure the developer does proper monitoring or doing independent monitoring. But there is a move towards putting more of that ownership on the developer, on the use of the resource.*

Some larger developers also believe that monitoring is a responsibility of the developer and they welcome the responsibility that they are given to monitor project impacts. The development planner stated:

> *…I want to know it [monitoring] was done properly. So I would not be comfortable if someone else is doing that. … it is our responsibility to do it properly. The government, the council has a responsibility to regulate that I do it properly. Not to manage it.*

The views of small and medium size developers are not available in this research, since they were not selected as a sample group for the study.

Summary

According to the findings, criterion 7 is 'fully' met. There are adequate measures in place for public review of the EIA report. However, public notification is a decision of the consent authority, which can be challenged only in the High Court. Criterion 8 is met to a 'limited' extent in the New Zealand EIA process because of a lack of explicit requirements in the RMA to consider disaster risk in the

scoping process. Setting up the ToR is a function of the developer. There is no mechanism available for public review of the ToR or for subjecting the ToR to an independent review. Criterion 9 is 'mostly' met. Guidance on compliance monitoring is explicitly provided. Both local authorities and developers are legally required to monitor project impacts. Table 6.4 summarises the criteria findings for guidance for the EIA process in New Zealand.

Table 6.4 A summary of the criteria findings for EIA guidance

Criteria	Evaluation	Justifications
(7) EIA reports are subjected to public review.	Fully	The public can review and make submission on notified applications. The public notification decision is taken by the consent authority, which can be challenged only in the High Court.
(8) ToR for the EIAs carries specific requirements regarding hazard assessment and vulnerability assessment.	Limited	Setting up the ToR for the EIA report is the responsibility of the applicant. There is no mechanism for public review or independent review of the ToR. Social issues, especially vulnerability assessments are not conducted in any of the reviewed projects, which suggests that such requirements are not included in the ToR.
(9) Guidance is available to support compliance monitoring taking place and it is being implemented.	Mostly	The RMA explicitly requires local authorities to conduct compliance monitoring. In addition, Schedule 4 implicitly requires developers to conduct monitoring. In practice, both the interviewed developer and consent authorities conduct compliance monitoring.

6.4 Substantive effectiveness

As reported in Chapter 2, the substantive effectiveness of an EIA process is considered as the least explored area in effectiveness research. This section covers the level of assessment and decision-making of the EIA process.

6.4.1 Level of Assessment

As stated in section 5.4.1, the technical soundness of screening, scoping and impact identification is a key element of an effective EIA process. This section reports on criteria (10) screening of actions for disaster risks, and (11) whether hazard and vulnerability assessments are conducted as a part of impact identification.

Attention to disaster risk in screening of project proposal

As reported in Chapter 4, section 87A of the RMA lists six classes of activities: permitted, controlled, discretionary, non-complying, restricted discretionary and prohibited. Regional and district plans follow the above classification in categorizing potential development activities in their areas. These consent classes also influence the content of EIA reports required to be submitted with consent applications. According to the MfE (2006, p. 5):

> *Knowing the status of an activity and the type of the consent required is a critical step in determining the effects of an activity and, therefore, the basis of the AEE. The activity's status should give you an indication of what needs to go into the AEE:*
>
> - *controlled or restricted discretionary applications – by stating the area of discretion, the council's plan also states the effects it is concerned about. Your AEE need only address these effects*
>
> - *discretionary or non-complying activities – for these activities, your AEE may need to be more substantial. This is because all your activity's environmental effects (not just those stated in the plan) determine the degree of impact, and hence the comprehensiveness of your AEE.*

Consent applications are required to be screened based on the consent classes. Therefore, the responsibility of screening of development activities rests with the project proponent or consent applicant. According to the first EIA expert:

> *That screening is entirely based on how the planning authority views different types of development. So in the district plan they will set their rules as to what is not to be allowed at all, what is to be permitted as of right. Then between those two extremes are discretionary, and controlled and non-complying. So it is really done on activity type.*

According to the EIA Guide, these classes are generally ranked according to the expected effects they might have on the environment (MfE, 1999), but "…it is known that variation does exist between the approaches of different regions" (Nixon & Peterson, 2011, p. 6). The first EIA expert contested MfE's claim that activity classes are based on the effects they have on the environment. The expert argued:

> *It [classes of activities] is supposed to be based on some sort of effects analysis that goes into developing the plan. But experience suggests... that the effects based plans are still to be seen. They are not coming through very strongly at the moment. So you are not really getting a sense of consent process and the categorisation of development types is itself being informed by the ideas of, "we need to control both the social impacts and the risk area". It seems to be still sort of old-fashioned town and country planning thinking. Residential v industrial, rural v urban so on. So I do not think it got very sophisticated. So, I think the question is whether the people should be looking at the social impacts of their activity or whatever. If it is non-complying then they should be looking at the full range of potential impacts. …I think there we lack skills, guidance, awareness and so on.*

In a recent study, GNS Science claimed that district plans and regional policy statements have very low or no information on systematic risk assessments within their plans (Saunders et al., 2014). In that study, GNS Science reviewed the policy statements and plans of 11 regional councils and 67 territorial authorities to assess the provisions of such policies and plans for natural hazard management. The study found that only 4.3 percent of the district plans and none of the regional

policy statements have systematic risk assessments to be conducted (Saunders et al., 2014, p. 21). The first EIA expert further argued that unless regional councils make deliberate attempts to identify potential disaster risks of development activities and take the necessary steps to include those into regional and districts plans, disaster risks will not be reflected in the screening process. The EIA expert further stated:

> *… for instance the development induced risk issues may not be considered unless they come in under other procedures with the regional council classifying lands as flood prone, and that somehow is then transmitted into the district plan. So I think a lot of those issues depend on the higher order planning and policy type mechanisms. I am not sure the current status of impact assessment in this country is consistently rigorous enough to pick up on those issues.*

Hazard and vulnerability assessment in impact identification

As per the conceptual model used in this research, conducting a systematic hazard and vulnerability assessment is fundamental in assessing the disaster risk of development proposals. This section reports the use of such assessments in impact identification in New Zealand and the adequacy of current practice.

Under clause 2, Schedule 4, an EIA report must address the effects on different aspects of the environment and therefore a number of assessments are warranted. These can include risk assessment, social impact assessment (SIA), economic impact assessment, cultural impact assessment, health impact assessment (HIA) and even recreational impact assessment. Some experts argue that an EIA report is a combination of all these assessments including cumulative impacts. The regional planner stated:

> *I heard over the years that we should have cumulative impact assessment, SIA, risk assessment and all these different assessments. …EIA covers all of them. We make it very complicated for ourselves if we start to have different branches coming off. There is no reason why EIA cannot have a social impact section and a disaster impact section. Ultimately, when you are thinking every environmental impact is really also a social impact.*

The Environment Court, in Clifford Bay Marine Farms Ltd v Marlborough DC (2003), outlined the approach to assessing risk. The Court held that each potential effect raised in the evidence should be assessed qualitatively (or preferably quantitatively) in the light of the principles of the RMA, and the objectives and policies of the relevant instruments (e.g., relevant plans) as to: (a) probability of occurrence; and (b) force of impact. The Court also suggested a five-step process to assess risk:

1) *Identify the risks - All the relevant risks caused by a proposed activity must be identified. Relevance is determined by reference to the principles, objectives and policies.*

2) *Identify the consequences - For each relevant adverse effect this may require estimation of the impact or magnitude of the effect and this needs to be assessed in the context of:*

   - *the spatial scale of the impact;*
   - *the temporal scale of the impact (how long it will take to show and how long it will last);*
   - *any other relevant 'dimension'.*

3) *Estimate the probability of harm - Simply because an effect on the environment occurs, this does not mean it will be adverse. That depends on the sensitivity of the species or resources being affected, and on the amount and duration of the exposure to the activity causing the effect. This step is very likely to involve a value judgement by the deciding authority.*

4) *Evaluate the significance of a risk - This also involves a value judgement under the objectives and policies of the relevant plans (and under Part II of the Act). If a risk is adverse then the steps (and their costs) which can be taken to avoid, remedy or mitigate the adverse effects must be analysed. Such an evaluation may also need to consider the existing environment.*

5) *A comparative risk assessment - All the relevant risks will then be assessed in relation to each other. All these evaluations then become part of the Court's overall weighing of the evidence (Clifford Bay Marine Farms Ltd v Marlborough DC C131/2003, pp. 30-31).*

Step 3 above discusses the sensitivity of the potentially affected species and resources. As discussed in Chapter 2, the sensitivity of the receiving environment is closely associated with vulnerability. So, the above steps are consistent with the disaster risk assessment framework (i.e., R = H x V) used in this research. However, the specific mention of species and resources appears to support the experts' views reported earlier in this chapter (section 6.3.2) that the emphasis is on the biophysical and natural rather than the human and social.

The remainder of this section investigates the risk assessment approach of the seven reviewed projects with special consideration of the Transmission Gully Project (TGP) and the Waitohi Irrigation and Hydro Scheme (WIHS) in light of the above approach and the disaster risk assessment framework proposed for this research. Detailed hazard assessments have been conducted for all seven projects studied, including the TGP and the WIHS. However, none of the seven projects has a vulnerability assessment within the context of the EIAs despite the fact that all projects are considered to have substantial hazard risk on affected groups. For instance, though firmly emphasizing the likelihood of

a dam breach is very minimal (Rivett et al., 2012), an engineering study was done for WIHS to identify the risk in a possible dam breach event. That study states: “The project area is located in a tectonically very active zone on the east side of the Alpine Fault which forms the convergent boundary between the Australian (west) and Pacific (east) tectonic plates” (Rivett et al., 2012, p. 12).

Appendix B of the Engineering Report for the WIHS is dedicated to a dam break assessment. According to Morgan & Memon’s (1993) definitions reported in Chapter 2, this is a risk assessment. Appendix B identified that of four proposed dams in the scheme, risk associated with a possible dam break exists only for the Hurricane Gully dam. According to the report, the Hurricane Gulley reservoir holds approximately 95 percent of the total storage of the proposed scheme (Rivett et al., 2012). The report describes the dam and reservoir characteristics as:

> *The proposed dam is 105 m in height with a top crest level at RL [Reduced Level] 505 m and a proposed normal operating level of RL 500 m. At normal operating level the total reservoir storage volume has been calculated to be 232 Mm³ based on topographical data. The base width of the dam is restricted by the narrowness of the valley topography with the river having formed a gorge within the valley (Rivett et al., 2012, p. B-2).*

According to the report, the distance between the Hurricane Gully dam and the Hurunui river mouth is 82 km. The report further describes the risk of possible dam breach as:

> *The flood inundation map indicates that extensive lengths of road would be inundated, including several bridges. This includes both the SH1 [State Highway] and SH7 bridges along with the main north railway line. No major settlements are located downstream of the dam, and only scattered rural dwellings and farm buildings are likely to be affected. Two minor settlements are indicated on the map: Hurunui consists of several buildings, and Hurunui Mouth has a cluster of holiday dwellings adjacent to the coast. Severe environmental damage would also be expected throughout the length of the downstream river channel and floodplain areas due to the size of the flood wave and expected inundation areas (Rivett et al., 2012, p. B-10).*

The assessment considered a normal sunny day dam breach, which the report considered as a worst-case scenario. Based on the assessed damage level and population at risk due to a break in the Hurricane Gully dam, a possible event is categorized as a high potential impact event. The report says:

> *The Building (Dam Safety) Regulations 2008 [Explained under INDICATOR 16] necessitates identification of the population at risk (PAR). The PAR is defined as those people affected by floodwater depths greater than 0.5 m. ….The number of dwellings affected has been derived from aerial photography of the inundated areas (Google Earth) to ensure estimates are accurate. The maximum number of dwellings considered at risk from the dam break has been determined as 85. With an assumed average of 3*

> *persons per dwelling the PAR will be approximately 255 (Rivett et al., 2012, p. B-10).*

As per the report, because of the nature of the downstream topography of the Hurricane Gully reservoir, water will move quickly and the whole length of 82 km (from the dam to the river mouth) will be covered in less than six hours. A risk assessment of this kind is important information for emergency management authorities.

It is important to look at whether the findings of the risk assessment give any assistance to the emergency management authorities in a crisis. In this context, the report lacks detail about either the demographic details of the population or detailed assessment of the types of houses they live in (i.e., whether the houses are single storeyed, or multiple storeyed). Some houses in the flood path will be more vulnerable than others that are marginally away from highest flow. The occupants of some houses may have easier access to safe routes and safe locations than others. None of that information is available in the risk assessment conducted for WIHS, which is usually within the scope of a vulnerability study. As reported earlier, even though a cultural impact assessment has been done for the WIHS, a social impact assessment has not been done. The cultural impact assessment (Vial & Hill, 2012), available in the WIHS application is largely dominated by water rights and the customary rights of user groups.

Medium and large dams in New Zealand should comply with the Building (Dam Safety) Regulations 2008 (see criterion 16). According to the above regulations, an Emergency Action Plan (EAP) should be prepared for such dams. The New Zealand Society on Large Dams (2000) provides guidelines for developing an EAP for larger dams. According to the guidelines, although the EAP requires an inundation map to be included, which is the hazard map for the area; it does not have any reference to vulnerability assessment (New Zealand Society on Large Dams, 2000).

Similarly for the TGP, the EIA report identified that the project area is prone to different hazards (McGimpsey et al., 2011). In Technical Report No. 3 of the EIA report, which is a geotechnical engineering report, a detailed hazard assessment has been carried out and required measures have been proposed to protect the proposed highway from any possible natural hazards. According to that report, the project area is prone to primary hazards such as earthquakes and storms. The report further notes that such primary hazards have the potential to induce a number of secondary hazards within the project area, such as earth slips, liquefaction, rock falls, storm induced slope instability, debris flows, and flooding (Brabhaharan, 2011). The EIA report of the TGP summarises the findings of the geotechnical report and states:

> *Debris flows have previously affected the existing SH1 near Paekakariki during major storm events. The most recent event was in October 2003,*

> *which also caused debris flows in a number of tributary gullies on the western flank of Te Puka Stream valley. Debris flows remain a risk, particularly where there are colluvium deposits in the Te Puka and Horokiri Stream valleys. …Flood events with potential to cause damage to properties have been known to occur in the following flood plains:*
>
> - *Te Puka Stream and Wainui Stream;*
> - *Horokiri Stream;*
> - *Pauatahanui Stream and Lanes Flat; and*
> - *Kenepuru Stream (McGimpsey et al., 2011, p. 105).*

The geotechnical report raised concerns about potential earthquake induced landslides and stressed that those can be influenced further by the height and slope of cuttings formed for the TGP (Brabhaharan, 2011). Because of the anticipated high social impacts, the EIA report for TGP also included a social impact assessment (SIA) (Technical Report 17). However, the SIA for TGP did not investigate the vulnerability of the people in this environment and how their existing vulnerabilities would be reshaped by the new project. The SIA report was limited to noise and vibration (construction and operational phases); air quality (construction phase); traffic and access (construction phase); amenity (operational phase); recreation (construction and operational phase) and other socioeconomic issues (Ray & Crack, 2011), but disaster risk is neglected. There is no visible link between the hazard assessment and the SIA. This, therefore, does not fulfil the requirements of a vulnerability assessment as stated in Chapter 2. The first social scientist explaining the vulnerability assessments in SIA in New Zealand stated:

> *We do not use specific vulnerability terms in New Zealand. If it is a good social impact assessment, that would consider those issues. It would consider how the particular sector of the population based on their income or other point of view [is] …vulnerable.*

This social scientist reported that they sometimes consult local authority officials to get an idea about the scope of the study but usually it is based on their own expertise and understanding of the context. However, the interviewed social scientists are confident that if a SIA is done for a project, vulnerability assessment can also be covered under the SIA. The first social scientist added:

> *… if SIA is done properly then you will look at physical risk and then you will address vulnerability issues absolutely as part of social assessment. That would be a major contribution of SIA. We argue as well for integrated assessment approaches. So if you are building a road or hydro project or whatever, …you are integrating potential for physical risks… and if social is integrated into the assessment that is the point you will absolutely look at those vulnerability issues.*

The above social scientist argued that conducting a SIA for every development project is very unlikely even though social effects are identified in initial scoping stages. SIAs have been done only in four of the seven projects (i.e., Basin Bridge Project, Ara Tūhono Pūhoi to Wellsford Road, Ruataniwha Water Storage Scheme, TGP). None of those has clear, explicit links to hazard assessments done in the EIA report. The social scientist further added:

> *Obviously that [ignoring social effects] happens a lot. That comes back to the quality of the process. … checks and balances are important, through things like hearings or legal processes or abilities to appeal or whatever they might be.*

The regional planner argued that current checks in the system are sufficient to address issues such as vulnerability. According to the regional planner: "All those effects are real. There is no reason therefore why they can't or why they should not be considered, as part of the analysis of the hazard." The planner added further that: "…if it [vulnerability] was not done, that is usually what comes out then when you start to have public meetings, and people pointed out for you to consider the impacts on average, but not on different social groups." The hearing commissioner, supporting the concern of social scientists on an inadequate emphasis on SIA, argued some multinational corporations have their own SIA tools and they usually do rigorous SIAs in their proposals. The commissioner further stated:

> *The other agency that does it [SIA] regularly is NZTA [New Zealand Transport Agency]. They look at social impacts of roads and motorways and they are generally done very badly. … if you go to the Fourth Schedule there is nothing in there. That is a strong trigger for SIA. The regional council is usually for major developments, a lead consenting agency and some of them are social impact oriented and some are not. For instance, Waikato Regional Council has had a head social scientist on the regional council forever. So they tend to put questions to the applicant involved during formal or informal screening.*

The commissioner further argued that some regional councils do not have social scientists or people oriented toward social impacts. So such councils do not tend to put more emphasis on social effects in the EIA process. The experts also argued that local councils are more inclined to assess biophysical effects over social issues. The first EIA expert added:

> *…the regional councils tend to still focus on bio-physical, so anything that, in particular risk and hazard type things, they will tend to be looking more… at the bio-physical aspects, rather than really drilling down and looking at the social consequences, to any greater extent.*

As stated earlier, according to the regional planners, social issues can be raised even in the later stages of the EIA process when resource consent applications are notified. Local council planners also argued that consent authorities can request SIAs even at later stages under section 92, where they

are allowed to request further information. However, according to the first EIA expert: “That comes back to the quality of the staff in the council, how active they are, their knowledge to understand and readiness to listen to the local community”. The first social scientist, commenting on whether the public can ask for a SIA in later stage of the EIA process, stated:

> *… if there is an opportunity for formal public involvement and if the public actually point out these issues, and that leads to the requirement. That's fine, it is good. Even at a later stage, but it is not perfect. …it is happening in this country. Social being brought in at a very late stage.*

Nevertheless, the hearing commissioner stated the above provisions are mostly used for technical issues rather than social issues. The commissioner added:

> *… if the council is contesting it [consent application at a hearing] they will have evidence. The law provides we as commissioners can direct further inquiries of someone, …[to say] this is fine, but we do not understand this. This is a gap, please go and fill this gap. That provision is not often used. I am not familiar with it being used for SIA. It is mostly around technical issues.*

The commissioner further argued for better provisions in the regional and district plans to take care of social effects. As noted earlier, some experts believe that the public does not pay enough attention to local plans when they are notified, but the commissioner stated:

> *...the plans can be more explicit about requiring it. So that can be an avenue. Plans are reviewed time to time, and that is an avenue for the public or professional organizations to put pressure on the regional councils to make the plans more explicit about taking account of social effects. That could be done.*

Summary

The findings show that both criteria 10 and 11 are met to a ‘limited’ extent in New Zealand. Even though screening is based on consent classes in relevant policies and plans, those consent classes are not based on systematic risk assessment. In addition, even though hazard assessments are done in the EIA report, vulnerability assessment or disaster risk is not estimated. It was also revealed that social impacts are often left out in impact identification. Table 6.5 summarises the criteria findings for level of assessment.

Table 6.5 A summary of the criteria findings for level of assessment

Criterion	Evaluation	Justifications
(10) Screening of actions for disaster risks is taking place.	Limited	Screening is based on the classes of activities (i.e., permitted, controlled, discretionary, restricted discretionary, non-complying, prohibited). The findings suggest that the above classes of activities are not based on systematic risk assessments.
(11) Hazard and vulnerability assessments are conducted as a part of impact identification.	Limited	Hazard assessments are done in detail. Social impacts are left out in most cases. Therefore, vulnerability is not assessed in such cases. Social impact assessments are also disconnected from hazard assessments in the reviewed projects.

6.4.2 Decision making

The role of the EIA process in consent decisions and the role of EIA findings in project planning are important to any effectiveness research; those two aspects demonstrate the actual influence of the EIA process on development decision making. This section reports on criteria (12) to what extent project approval depends on the findings of the EIA process, and (13) the extent to which decision makers rely on the EIA process during project planning (see Table 3.1).

The influence of EIA in project approval

There was a difference among planners and experts about how they perceive the EIA in terms of its influence on project approval. Planners and most experts considered the influence of the whole EIA process, including submissions and further information requests, on the project approval. In contrast, the hearing commissioner and the EC judge limited their views to the EIA report. In this study, the whole EIA process is considered, with special attention to the EIA report.

It is evident that the influence of the EIA report on consent approval varies based on the decision pathway that the consent application takes in the decision making process and the decision making authority. As reported in Chapter 4, the decision related to a resource consent could be the decision of the relevant council, hearing committee or the Environment Court. The hearing commissioner, describing the influence of EIA (i.e., EIA report) on the final decision, stated “Almost none”. However, the commissioner further added, “…small proposals are considered entirely by the staff of the regional councils or district councils. They rely on the EIA [report] totally. That is all the information they get. If the EIA [report] is not sufficient they can go back and request further information”.

Most other experts and planners claimed that the EIA process has the highest level of influence on the decision. The first EIA expert stated: “I would say under the RMA it is the only influence. There are obviously other influences, e.g., financial matters. But you have to have the consent”. According

to the regional planner, in addition to the EIA report, more sources of information are also considered in the decision-making process. The planner added:

> *…three sources of information [are used] if it [consent application] goes to a hearing and two sources if it is not notified. If it is not notified there is an officer report done, which means council staff prepare a report, which may or may not rely on the EIA. …if you go to a hearing you have that report [officer report], and the EIA and also the public submissions. They again can comment on the EIA whether they agree or not, also on the officer's report, whether that's a good report or not.*

The EC judge, in explaining the influence of EIA reports on consent decisions, stated that the EIA report, "…has an influence but it is not critical". The judge further added:

> *When it comes to the actual hearing, the consent authority or decision maker is actually required to first of all to look at other things like objectives or policies and rules of relevant statutory plans and give weight to those and ultimately to the matters in Part 2 of the Act, … those are actually the determining factors. Ultimately, will this achieve the purpose of the Act? Now the AEE [EIA report] will assist the formulation of judgement. But what often happens is, if there are inadequacies in the AEE as prepared by the applicant, and those are picked up by the submitters then the applicant tends to address those in the course of presenting their case to the consent authority.*

The hearing commissioner, describing the status of the regional and district plans, stated: "The plan has got a very high legal status". The commissioner further argued: "In New Zealand, risk matters come out of both the plans and policy making not just through the AEE [EIA report]. The AEE is just one element of the assessment of effects overall". The commissioner added:

> *…the regional plans or policy statements have got a great deal of influence on the decisions. [For instance], in Otago, the regional plan has a good section on natural hazards. That is flooding, landslides. …but it also provides as one of its rules that if the person wanting to do a development understands the risk of the hazards and can mitigate against it, then they can undertake the activity in a hazardous area. So, as a decision maker we have to put weight on that...*

Explaining the on-ground reality of planning and resource consenting processes the EC judge argued:

> *…of course the resource consent process is …ideally coming after the planning process rather than before. It is the plans that should dictate what activities required consents, or what kind of consents should be or so forth. But …in a lot of our planning, planning is catching up. The resource consent process just carries on, whether the plans are adequate or not. Starting to get around the other way [only] now [plans coming before applications for development]…*

The first EIA expert stated that the EIA report "…does not have any status at all in the Environment Court". The Environment Court in Transit New Zealand v Auckland Regional Council ([2000] NZEnvC 285) held that the Court is better assisted by direct evidence (that can be tested by cross-examination) of any such effects, than it could by derivative evidence based on what it is claimed should have been, but was not, contained in a document prepared often some time before. The EC judge added:

> *The Environment Court is required to have regard to the hearing commissioner's decisions. The commissioner's decision will address the AEE [EIA report]. There is case law saying you cannot challenge the AEE [EIA report] in an appealing process because you can only challenge the submission to the local authority. But that does not stop the Court from addressing issues that might arise out of the AEE [EIA report].*

The first EIA expert stated "Yes, there is an influence [of the EIA report], but it was sort of quite different person to person as to the degree and nature of that influence". Using psychosocial methods, Schijf (2003, pp. 291,292) investigated the influence of environmental effects information on resource consent decision-making in New Zealand and stated: "…results demonstrated vividly that the EIA information features in the mental maps that decision-makers construct of the decision that they need to make". However, the influence of an EIA report on the consent decision is diminished by the increased amount of information the decision makers get from other sources during the EIA process that expose inadequacies of poorly done EIA reports (Schijf, 2003).

Influence of EIA on project planning

Most planners and experts interviewed are confident that the EIA report findings are used in project designs. According to them, the EIA process is articulated in a way that the EIA report influences the shape or design of a development activity. Developers also believe in the use of the EIA report to shape investment plans. The development planner argued:

> *If you are smart, you down play those problems [environmental issues identified in the EIA report] yourself. … so then you refine [the proposal] as you go. Use information in making the decisions. …If you do not, you are just making it more difficult for you in succeeding with your proposal.*

Planners argued that consent decisions usually have conditions attached that are intended to require actions that mitigate potential negative environmental effects. The regional planner stated:

> *If they [developers] do an EIA, that puts out that "we are going to do a subdivision" or "we are going to build a dam", these are all the impacts and this is how we are going to mitigate those, then get the consent. Now all the things that they put in the EIA ideally should translate into conditions on the consent. So yes, you can build a dam but it can't be any wider than this, higher than that and it must be built to certain strength [etc.].*

According to the planner, even though the conditions are not in place that is not an excuse for developers not to adhere to required measures to curtail the effects of the development activity. The regional planner argued, "If some of those conditions do not capture something in the EIA, under New Zealand law they are still required to do it". However, the above is more relevant to physical design changes or biophysical effects management. There seems to be less attention to social impacts and using the findings of an EIA report to manage social effects. Emphasizing the inadequacy of social impact management in New Zealand, the first social scientist stated:

> *There is increasing awareness of areas of EIA follow up and monitoring. In New Zealand, it is entirely dependent on the decision. So the decision could be the commissioner's decision, the council decision or Environmental Court decision. Increasingly, you see attention paid to the conditions that are put on the consent. So the conditions that are put on the consent might be on reducing risk or whatever from some sort of physical disaster and those conditions now increasingly are tied up to environmental management plans, formal environmental management plans. We see some request for social impact management plans. … [this is a] quite philosophical recognition that the decision is only part of the processes. …and that for it to really be an effective decision then you have to have conditions and you have to have environmental management plans. [However] We are not really taking the lead on social impact management plans…*

Summary

The findings show that criterion 12 is 'mostly' met in New Zealand. Even though the influence of the EIA report on project approval varies based on the decision pathway and the quality of information in the report, eventually, project approvals are based on the findings of the EIA process. However, consent authorities are required to disregard any adverse effect of the activity if a national environmental standard or the plan permits an activity with that effect. Criterion 13 is fully met. The EIA process has been designed in a way that EIA findings eventually shape project design. Table 6.6 summarises the criteria findings for decision-making in the EIA process.

Table 6.6 A summary of the criteria findings for decision making

Criterion	Evaluation	Justifications
(12) Findings of the EIA influence the final decision.	Mostly	The influence of the EIA report on final consent depends on the decision pathway that a consent application takes. Local councils primarily rely on the EIA report. When notified, public submissions and an officer's report are also considered in making final decision. At the Environmental Court, the EIA report has quite a low profile. In addition, when considering the full EIA process, decisions are based on the EIA process. However, provisions of the national environmental standards and plans are superior to the EIA findings.
(13) Planners use the EIA report as a reference document in project planning.	Fully	The findings of the EIA process are translated into conditions of the resource consents. Many believe that the EIA process influences the shape of the development activity.

6.5 Contextual effectiveness

Like the Sri Lankan case, the importance of strong domestic governance arrangements for an effective EIA process is emphasized by most of the experts and planners interviewed in New Zealand. This section reports public participation in the EIA process, the influence of legal provisions given by other Acts, transparency and accountability aspects of the EIA process, political will and coordination of line agencies on the effectiveness of the EIA process to incorporate disaster risk.

6.5.1 Consultation and public participation

As reported in the Literature Review, consultation and public participation are essential ingredients of an effective EIA process. This section reports on criteria (14) the perceived level of consultation and public participation in the EIA process and (15) to what extent the developers respond to public submissions.

Consultation and public participation in the EIA process

The RMA does not define the term 'consultation'. However, consultation has been defined by the Court of Appeal in the judgement on Wellington International Airport Ltd v Air New Zealand in 1992. According to the judgement, "Consulting involves the statement of a proposal not yet finally decided upon, listening to what others have to say, considering their responses and then deciding what will be done". The Court of Appeal further states:

> *Implicit in the concept is a requirement that the party consulted will be (or will be made) adequately informed so as to be able to make intelligent and useful responses. It is also implicit that the party obliged to consult, while quite entitled to have a working plan already in mind, must keep its mind open and be ready to change and even start afresh. Beyond that, there are no universal requirements as to form. Any manner of oral or written interchange which allows adequate expression and consideration of views will suffice. Nor is there any universal requirement as to duration. In some situations adequate consultation could take place in one telephone call. In other contexts it might require years of formal meetings. Generalities are not helpful (Wellington International Airport Ltd v Air New Zealand [1993] 1 NZLR 671).*

Based on the above definition, consultation occurs before producing an EIA report and during public review of the EIA report. The first social scientist describing the opportunities available for the public to participate in the EIA process stated that other than the formal submissions when a resource consent is notified:

> *…there is also guidance in the Act to say that in undertaking of primary resource consents and even for council preparing a plan that they should undertake consultations for the interest of affected parties. So there is clear guidance. The process requires consultation.*

Under section 36A of the RMA, neither the applicant nor local authority has a duty to consult any person about a consent application. However, according to clause 6(3) of Schedule 4, an applicant is obliged to report as to the persons identified as being affected by the proposal, but does not "…oblige the applicant to consult with any person" or "create any ground for expecting that the applicant will consult with any person". Therefore, it is evident that there is no statutory requirement for an applicant to consult the public or affected parties before an application is lodged for resource consent. However, the MfE (1999) recommends consultation at early stages of the resource consent process and the Environment Court has commented that it is "…foolish for a party not to consult those with those with a known interest in a proposal..." (Watercare Services Ltd v Auckland Council [2011] NZ EnvC 155 at 33).

Moreover, according to section 95E, persons who have given written approval to the activity saying they have no objections are not considered as affected persons by the consent authority. So the developers have a strong incentive to obtain written permission from potentially affected people, which requires some level of consultation and participation at the early stage of project planning.

Provisions for public participation after a consent application is lodged with a relevant consent authority are clearly provided in the RMA. Section 95 of the RMA provides for public notification or limited notification of applications. As reported earlier, the RMA does not specify how and where the proposal or consent application with EIA report should be made available for the public to view, but the public must be notified about where it is available. This provides an opportunity for the public to get formally involved with development proposals and raise their concerns. Even though public notification is subject to the discretion of the consent authority, major developments with more than minor effects on the environment are legally required to be publicly notified. However, according to Barton & Shaw (1999, p. 15), "…consultation is not required under the RMA when a proposed project is a permitted activity in the relevant plan". This is because public consultation as to what activities are "permitted" is required to be done during the plan-making process.

Despite all the above provisions in the RMA and LGA 2002, public concern over a lack of adequate consultation can be witnessed even today. The recent public outcry against the proposed Ruataniwha dam in Central Hawke's Bay is an example of such inadequacies in public consultation. On 8 August 2013 (during the writing of this thesis), Radio New Zealand reported, "Ngati Kahungunu Incorporation chairperson Ngahiwi Tomoana says his tribe did not have enough time to consider the council's proposal [the Ruataniwha dam]".

The proposed dam is a part of the Tukituki Catchment Proposal (EPA, n.d.) and will be located on the Makaroro River in Central Hawke's Bay (Goodier, 2013). According to the dam break assessment:

> *The proposed dam is approximately 83 m high at the river's deepest point, approximately 500 m long, and has a crest width of 8 m. The dam is proposed to be a Concrete Faced Rockfill Dam (CFRD), which consists of bulk coarse rockfill material, with a concrete face slab on the upstream side (Goodier, 2013, p. 5).*

The dam break assessment concludes the dam is in the high potential impact category (PIC) with more than 1000 people at risk in an event resulting from a dam breach. As reported in Chapter 4, according to the Building (Dam Safety) Regulations 2008, owners of dams with high PIC should prepare a Dam Safety Assurance Programme including an emergency action plan. The dam break assessment for the Ruataniwha dam recommends "…such a plan should ideally have a buffer zone and include any and all of the potentially affected properties, taking into account the existing potential flow paths" (Goodier, 2013, p. 35). A social impact assessment for the Ruataniwha dam does not go into details of the risk and vulnerability of the population but referred to the dam break analysis and says:

> *While technically there is a low risk of failure, perceived risk can have a negative psychological effect on people living downstream and on the river flood plain, particularly in a seismically active region. Some people may continue to experience this "dread" risk, emphasizing the importance of providing ongoing, quality, lay information on technical components of the project (Taylor Baines and Associates, 2013, p. 31).*

Interestingly, the SIA appears more concerned about 'dread' risk as a psychosocial effect rather than addressing the vulnerability of the community. Radio New Zealand, on 30 July 2013, quoted a community member from Waipawa, who referred to the dam break analysis and said: "[She is] angry that Central Hawke's Bay District Council and Hawke's Bay Regional Council are not actively informing the public about the potential damage" in a possible dam break. The news article has also quoted a water resource engineer saying, "The report is a worst-case scenario. … [and] a breach would be highly unlikely if the dam is built, and if a breach were to happen there would be enough time to evacuate the town". However, this controversy shows the public is yet to learn the project related risks of the Tukituki Catchment Proposal. Meanwhile, quoting a local leader, Gullery (2013, August 2) reported that the local community was prepared to oppose the project considering "…inadequate consultation, selective information release" and other aspects of the project.

Like the early stages of the EIA process, consultation or public participation is not legally required in latter stages of the EIA process. The first social scientist, in explaining the opportunities for the public to participate in the monitoring processes of the EIA process, stated:

> *It would depend on the conditions. I do not think there is anything mentioned in the legislation that says it should happen, but I have seen conditions …where there is a requirement for community inputs and the*

> *council or the judge might say in finalizing the conditions there should be community inputs. There are monitoring or community liaison committees …for community inputs to that management planning stage.*

Incorporation of public comments

The RMA has no provisions to guarantee that the views of the public obtained during a consultation process are integrated into the document or proposal concerned. However, most planners and experts interviewed argued that public submissions are considered in decision making and amending the project. According to the regional planner, genuine public interests are translated into conditions of the consent, making the relevant parties obliged to carry them out. The first EIA expert stated: "If there is an opportunity for formal public involvement and if the public actually point out these issues, and that leads to a requirement [condition in the consent]". Further, according to the first social scientist, "People can contest the process itself and say there was not adequate consultation undertaken".

The hearing commissioner stated that even though public participation is ensured in the consent granting process (for notified consents), its influence is very limited in most cases in the EIA process. The commissioner stated: "In short, the public can knock on the door but normally the door is shut to them in terms of these particular issues". Explaining his position the commissioner elaborated:

> *… even if you know there are significant effects and a lot of the public opposed to it, if it is in the plan and provided for in the plan, so virtually our hands are tied, as decision makers we have to grant it. But we could put lots of conditions on it. …the public cannot question what is in the plan; they can question only what the developers put forward. If the developers have got any inconsistency with the plan, the public can challenge those. They can introduce marginal changes.*

According to the commissioner:

> *The public do not pay lots of attention when the plan [regional and district] is being made. So, when a new development comes along, they may want to change the development, but actually the plan provides for it to go ahead. So they have got a very small chance of making an influence at all.*

Summary

The findings show criteria 14 and 15 are 'reasonably' and 'mostly' met, respectively, in New Zealand. Even though it is recommended in the guidance notes and case law to involve the public in early stages of the EIA process, evidence for public participation in early stages is lacking. However, public submissions during the EIA report review process are given due recognition and considered together with other relevant information in decision-making. Table 6.7 summarises the criteria findings of public participation and consultation in the EIA process.

Table 6.7 A summary of the criteria findings for consultation and public participation

Criterion	Evaluation	Justifications
(14) Consultation and participation are taking place before and following EIA report publication	Reasonably	Public participation in early stages (i.e. screening, scoping, ToR setting) of the EIA process is not legally required. However, the case law and guidance recommend the public participation in scoping. Similarly, public participation at monitoring stage is also not required under the RMA. There is clear guidance on public participation once an application is notified.
(15) Feedback from consultations is incorporated into project planning	Mostly	Public submissions are considered together with the EIA report and officer reports in decision-making processes at the hearing. However, public views cannot override provisions in the plans.

6.5.2 Policy context

As reported in Chapter 2, the RMA is considered an integrated legal framework for environmental planning and management. However, the RMA is also supported by several other statutes. It is important that disaster management related legislation is also considered to understand its role in the EIA process. This section is based on the legislative framework investigated in Chapter 4 and reports on criterion (16) the influence of disaster management policy context of the EIA process in addressing disaster risks.

Disaster management policy context

Other than the RMA, Chapter 4 identified four other pieces of legislation related to hazard and risk management in New Zealand. These are the Local Government Act 2002 (LGA), Civil Defence and Emergency Management Act 2002 (CDEMA), The Building Act (2004) and Local Government Official Information and Meetings Act 1987 (LGOIMA). As noted in Chapter 4, none of the above legislation has any direct provisions for the RMA's EIA process. However, all pay special attention to the natural hazard risk in development planning processes.

Moreover, as reported in Chapter 4, there is very limited linkage between these Acts on provisions related to natural hazards. For instance, the purpose of the CDEMA requires local authorities to co-ordinate planning, programmes, and activities for risk reduction, which is clearly linked to the subject of this research. However, the Act does not provide any further information on this except that it has been identified that cost effective risk reduction is a function of local Civil Defence Emergency Management Groups (CDEMG). According to the National CDEMA strategy, risk reduction is expected to be handled through local RMA plans and other instruments at a national level. However, there are no visible links between CDEMA and the RMA to perform the above requirements. Neither provisions nor guidance is available for local authorities to use CDEMG plans in resource management (Dormer

et al., 2012). The hazard planner described the lack of coherence between the RMA and the CDEMA as a clear drawback of the procedures.

Findings of this study concur with the findings of the Technical Advisory Group (TAG) report on RMA principles (Dormer et al., 2012) on the lack of inter-legislation linkages to address natural hazard risk. The TAG report provided several recommendations to improve such inter-linkages among the Acts. They include, among others: "…alignment of the definition [of natural hazard] across all relevant legislation, in particular to take account of the differing "return periods" for natural hazards" (Dormer et al., 2012, p. 26); requiring regional authorities to specifically refer to CDEMG management plans in preparing regional policy statements; and "…to give regional councils the lead function of managing all the effects of natural hazards (while retaining the usual ability to delegate to territorial authorities as and when appropriate)" (Dormer et al., 2012, p. 28).

Summary

Criterion 16 of the analytical framework is 'mostly' met in New Zealand. Four other Acts have direct provisions for natural hazard management. However, inter-linkages between these, especially between the RMA and CDEMA, are weak. Table 6.8 summarises the criterion findings for the disaster management policy context.

Table 6.8 A summary of the criterion findings for disaster management policy context

Criterion	Evaluation	Justifications
(16) Legal provisions given by other legislation to control development-induced disaster risks do influence the outcome of the EIA process.	Mostly	All four Acts (i.e., LGA, CDEMA, The Building Act, LGOIMA) reviewed have direct provisions to avoid and mitigate natural hazards. However, the inter-linkages between the above Acts is weak, especially between the CDEMA and the RMA.

6.5.3 Accountability and Transparency

This section reports on criteria (17) whether the EIA process and EIA report is subject to independent verification and (18) whether the decision making process is made clear to all interested parties.

Independent verification

Under section 92, in normal circumstances, a consent authority may assess the consent application and "…request the applicant for the consent to provide further information relating to the application". Even though this also requires the consent authority to assess the submitted information, the above cannot be considered as an independent verification. In addition, under the RMA, provisions are available to commission a report on an EIA if the consent authority is satisfied that "…the activity for which the resource consent is sought may, in the authority's opinion, have a

significant adverse environmental effect" and the applicant is notified and he or she agreed to the commissioning of a report (RMA, 1991, s. 92 (2)). According to the second EIA expert, commissioning a report "…might be particularly relevant where an initial request for further information has not yielded satisfactory results". The expert further added that, "The requirements for the applicant's approval reflects the reality that the applicant has to pay for the commissioned report. If the applicant refuses then the report is not obtained and the application proceeds to formal consultation and decisions". According to the regional planner, independent reports are commissioned for "…selected major projects, because most of the other times councils just rely on their own expertise". Most experts interviewed argued that the above process is an independent process to acquire further information and it can also lead to a review of the EIA report.

It is clear that at hearings of publicly notified applications the EIA report is subjected to some sort of verification through independent experts. The regional planner stated:

> *Council will use its own technical staff for small projects. In some instances …council hire consultants. They charge the developer for that. So there would be independent expertise used. If they thought they have a different point of view from the developer, then the council put those experts up at the hearing stage if actually they work on a different point of view. Based on what I experienced… it is a contested process.*

The second EIA expert disagreed with this line of argument and stated, "No cross-examination of submitters or experts is allowed at council hearings. Instead the commissioners take a more inquisitorial role, which means much depends on their expertise and the ability of submitters to identify issues for commissioners". The above, however, applies only for notified applications. Similarly, at the Environment Court, each party can challenge the information provided by the other and cross-examination of witnesses is allowed. As reported earlier, the status of the EIA report is quite low at this stage of the EIA process, leaving little opportunity for an independent verification of the report. According to the first EIA expert, in theory the Environment Court reads the previous reports then summarizes it in the Environment Court hearing process. Nevertheless, a contested process permits a better opportunity for verifying the effects of an activity on the environment. However, both the conservation planner and the second EIA expert argued that success of a contested process also depends on whether the parties involved in the processes are sufficiently resourced.

Making the approval clear to all

Provisions in the RMA, LGA and LGOIMA are together expected to ensure the information on resource consents, decision and conditions are made available to the public as of right. Sub-section 35(5) of the RMA provides a list of information that should be made available by local authorities.

This includes consent applications, decisions and records of all resource consents granted within the local authority area. As per sub section 10(1) of the LGOIMA, "Any person may request any local authority to make available to that person any specified official information" kept in the local authority. Furthermore, under section 39 of the LGA, "…a local authority should ensure that the governance structures and processes are effective, open, and transparent".

According to the EC judge "…after the decision is made it is a public document". Explaining the opportunities available for the public to access information on consent decisions and conditions, the regional planner stated:

> *The whole process is public. The public can ask for any information that was used to make any decision [including] not to notify. They can ask for copies of the EIA. Details of the application. Anything they want to know they can find out. Even the information, which the regulator does not want to see released, has to be released by the law unless it relates to someone's privacy.*

The hearing commissioner, explaining the transparency of the process, stated "Although it is not specifically required in the law or any formal procedure, commissioners can make the process more transparent by having an open and transparent decision making approach". However, the commissioner doubts whether every commissioner takes such an open and transparent decision-making approach. According to the MfE (2004), some hearing committees make their deliberations in public, which is less common. It is clear that the manual of the MfE training programme 'Making good decisions' has given more emphasis to private deliberations. According to the training manual, "Although the Local Government Official Information and Meetings Act 1987 promotes 'open government', the law has no presumption that deliberations on quasi-judicial matters will be held in public" (MfE, 2004, p. 153).

Summary

The findings show that criterion 17 is 'reasonably' met and criterion 18 is 'fully' met in New Zealand. There is no provision for independent review of the EIA report. However, the findings of the EIA report can be verified in the case of commissioning expert reports. Sufficient measures are required to be taken to ensure that all related information regarding a consent approval is available for the public. Table 6.9 summarises the criteria findings for accountability and transparency of the EIA process.

Table 6.9 A summary of the criteria findings for the accountability and transparency

Criterion	Evaluation	Justifications
(17) EIA assessment processes and EIA reports are subjected to independent checks and verification.	Reasonably	There are no clear provisions for an independent review of the EIA reports. In some cases, councils commission a report, which provides an independent verification of EIA findings. During public hearings and in the Environment Court proceedings, EIA report findings are often subjected to independent review through the submissions of different experts.
(18) Decision-making and approval stages are made clear to all.	Fully	Once the decision is made, it is considered a public document. The RMA requires local councils to make available consent decisions. The provisions of the LGA and the LGOIMA promote open government concepts, which require all information related to consent decisions and conditions be made publicly available.

6.5.4 Political will

Support from the political authority is a key influence for the success of any EIA process. This section covers criterion (19), whether such support is available in New Zealand.

Political will

Even though political pressure can be seen on some consent applications, it is clear that mostly such pressure does not affect decisions on resource consents. The experts and planners argued this is due to opportunities available in the EIA process to contest and appeal decisions. As reported earlier, most experts believe that having the Environment Court in the process is a major advantage to make the EIA a more transparent and accountable process. The first social scientist stated "…some environmentalists just say the Environment Court often does go [decide] in favour of development". According to the social scientist, experience shows this is not always the case. The social scientist further stated that there are examples where the Environment Court has turned down politically influenced projects.

Further, most experts and planners interviewed in this study were keen to see strong political support not only for the EIA process, but also largely for the RMA. It is clear most experts are disappointed and dissatisfied about current developments. Most believe that political support is not consistent and many raised their concerns over intensified political influence against existing RMA provisions. Most interviewed experts criticized the current government's attitude towards the RMA and its intention to amend the RMA to facilitate more economic development. The experts argued that the RMA is seen in some circles of the government as a barrier to economic development. The first EIA expert, explaining the political pressure on the EIA process, stated:

> *…it is not consistent. There is a strong political campaign or political agenda to say that RMA is blocking the development and …environmental*

> *assessment procedures are holding things up. They want to get rid of that or reduce it. That push back is probably stronger now than it has been for a long time because we [have] been in an economic downturn and therefore, development is seen as a solution to that economic downturn. So there is a quite lot of political pushback about EIA. That pushback is at national level. There is also regional and local level as well. So there can be pushback from local government politicians …also there is pressure on staff and so forth to allow consents. So there is definitely a political influence.*

According to the first social scientist, "Local councils might be [more] vulnerable to certain government pressure". Meanwhile, controversies around current amendments to the RMA have generated broad scale resistance from opposition parties, many non-state actors and environmental groups. During the second reading of the Bill in Parliament, an opposition Member of Parliament criticized the Bill saying:

> *… [this] bill in the context of a range of plans that the Government appears to have to, as it sees it, balance the environment against development agendas. …that is a wrong-footed way of approaching environmental protection (New Zealand Parliament, June 25, 2013).*

Many environmental groups raised concerns over the Bill saying the new reforms will "…weaken core environmental protections and reduce community input into decision making" (Forest and Bird, 2013, p. 1). Some activists argued that proposed reforms have not been subjected to adequate consultation. An environment lawyer stated: "Attempts to convince the government to extend the consultation period fell on deaf ears" (Thomsen, 2013). The Royal Forest and Bird Protection Society argued in its campaign against the Bill that reforms would also curtail provisions for the Environment Court. They argued:

> *Reducing the Environment Court's role in resource management, by limits on appeal rights in some cases and the scope of appeals. The Environment Court provides important independent expert oversight of consent and planning processes, and ensures high quality outcomes are achieved (Forest and Bird, 2013, p. 3).*

Meanwhile, one of the architects of the RMA 1991, constitutional lawyer Sir Geoffrey Palmer in raising his concerns over the reforms said: "Government's proposed changes will seriously undermine environmental protection" (Radio New Zealand, May 27, 2013). Regardless of these criticisms, the government went ahead and passed the Resource Management Amendment Act (RMAA) 2013 and is preparing for the next phase of reforms.

The RMAA 2013 does not have any specific provisions regarding natural hazards. However, the next phase of reforms has paid clear attention to natural hazards. According to the Resource Management Summary of Reform Proposals 2013 (MfE, 2013b, p. 12), "A requirement for decision-makers to consider natural hazards in their deliberations is proposed to be added to the principles in

the proposed new section 6 of the RMA". This would elevate natural hazards to being a matter of national importance and ensure they were not overlooked in decisions. The reforms also propose to look at both the likelihood and impact of hazards in planning for natural hazards. Even though the Bill is yet to be drafted, the reform proposal suggests that "This change will give greater weight to natural hazards in decision-making and mean natural hazards are considered early and up front in resource planning" (MfE, 2013b, p. 12). However, neither the Technical Advisory Group report for the Minister for the Environment on proposed reforms nor the reform proposals suggest any changes to the existing EIA process to better address disaster risk of development projects.

Summary

Criterion 19 of the analytical framework is 'reasonably' met in New Zealand. It has been shown that some development projects are supported politically, but such influences do not affect the approval decision. Support from the political authorities to the EIA process is weak at the moment. Table 6.10 summarises the criterion findings for political support for the EIA process.

Table 6.10 A summary of the criterion findings for political will

Criteria	Evaluation	Justifications
(19) Political support is available for the EIA process.	Reasonably	Political pressure is presents for some consents. However, such political interest does not affect the approval decision. The presence of the Environment Court in the process is crucial in reducing such influences. Political support is not consistent for the RMA and is currently weak.

6.5.5 Coordination

EIA is a multi-stakeholder process. Different agencies both at central and local government levels have to work together to achieve its objectives. Therefore, the success of any EIA process depends on the level of coordination existing among these agencies. This section covers criteria (20) the level of coordination among relevant agencies in New Zealand for effective implementation of the EIA processes and (21) involvement of the disaster management agency in the EIA process.

Coordination

In the EIA process, several agencies are often involved in a resource consent application of any significant scale. So, it is a normal circumstance where staff of a local authority or the EPA work together with their counterparts in other relevant agencies when such an application is lodged for resource consent. According to the planners and experts, matters get more complicated when there are differences in regional or district plans. Explaining cross border differences of regional policy statements and regional plans, the regional planner stated:

> *Maybe a region can put its own flavour on its regional policy statement. Because some say we want to go much tighter than the national policy statement ...for instance have a special area we want to keep cleaner. Another council may say we want to attract more industries to promote more jobs.*

The planner, nevertheless, denied any possibility of significant inconsistency among regional and district plans as "Both have to meet the national policy statement and the RMA". Moreover, the regional planner, in explaining the coordination among regional councils and territorial authorities, added:

> *We are all friends. So we just talk to each other and if there are cross boundary [projects] between regions, …the RMA provides for joint processes. So you simply have one hearing and both councils appoint the panel and both abide by the decision. More commonly it is territorial authority and us [regional council] once again there is a joint process in place.*

According to most interviewed experts, coordination among agencies is a complex relationship beyond a matter of friendship. The Technical Advisory Group report for the next phase of RMA reforms suggests that one of the reasons for ineffectiveness of local authorities to plan for natural hazards is "Shortcomings in governance and inter-governmental cooperation – including a lack of effective coordination between district and regional councils, and the activities of planners and emergency management staff…" (Dormer et al., 2012, p. 24).

However, various provisions of the RMA require consent applications to be referred to other relevant agencies where appropriate. For instance; under section 107f, a consent authority is required to provide a copy of any aquaculture related application to the Ministry of Fisheries[11]; applications affecting navigation should be referred to Maritime New Zealand under section 89A; and, as per section 117, a consent authority must promptly provide a copy of an application to carry out a restricted coastal activity to the Minister of Conservation. Therefore, interagency coordination is explicitly required among different agencies in the EIA process.

Commenting on the coordination in the EIA process, the first social scientist stated: "I would not say coordination is perfect by any means". The first EIA expert, in explaining the issues of coordination, added: "It is because these organizations are built in silos. [So,] they keep focused on their activities". According to the regional planners, a consent application is not referred to all relevant agencies unless the consent of such agency is required to grant the resource consent. In all other cases, other

[11] Now within the Ministry of Primary Industries

agencies would come to know about the application when it is notified. The regional planner further added:

> *We can [also] ask [the applicant] to go and consult …relevant authority and can ask them to get written approval if we think their [other agencies'] interests are affected. If publicly notified they can make submissions. If they are not happy with the decision they can also appeal.*

It is clear that there is no mechanism to make all agencies formally informed and get them involved in resource consent processes. The first social scientist argued that such mechanisms have been tried from time to time but expected results were not achieved. The social scientist stated:

> *There was a big push a few years ago under the sustainability agenda, to have more formal response between government agencies around sustainability. There was more push to get the agencies to work more closely together, like economic development, environment, Iwi development, social. Major ministries …to get them to work more closely together. That discussion has just quietly gone away.*

Most interviewed experts argued that the drive for a more coordinated effort in resource management and environmental planning has not been completely redundant. The first social scientist stated: "There is a bunch of things going around climate change". Some experts, including that social scientist, were optimistic of reviving a coordination mechanism for different development agencies around climate change adaptation and mitigation.

According to the first EIA expert, not only the agencies but also technical teams working on an EIA report do not engage in a coherent way. The expert stated:

> *We still tend to break it [EIA report] all up to lots of different technical areas. …I do not see lots of good cases where people work in a very highly integrated way. That because often there is so many different technical areas and expertise so they go and do their own things. I think that …integration should start at the beginning of the process not the end. We always argue that social assessment people have a key role to play in integration.*

Involvement of the disaster management agency in the EIA process

The projects reviewed in this study clearly show that disaster risk is significantly involved in all cases and even emergency management plans are required for the WIHS and the Ruataniwha Water Storage Scheme. According to the CDEMA, the Ministry of Civil Defence and Emergency Management (MCDEM) and its representatives in regional or district councils are responsible for managing such emergencies with relevant other stakeholders. Therefore, the above-mentioned emergency plans should be able to provide required information for the emergency management staff of the MCDEM.

However, the interviewed planners and experts in this study could not recall any cases where the MCDEM was involved in a consent application. The regional planner stated:

> *I guess they rely more on everybody else to do their job properly. I cannot recall ever them [MCDEM] being involved and make a submission to a project. They probably focus on consequences of these. …if it is a district council area and if those disasters are more local then the Ministry is not involved. If the district council will do it via the engineers, they would probably, if they have suspicions concerns or problems, they could have given an input to that.*

Nevertheless, the first EIA expert argued that local councils "…have got a very strong reputation of not talking to each other across the divisions". The development planner interviewed, pointed out, even though the MCDEM is not involved in the EIA process, it gets involved in emergency situations resulting from development projects. The development planner added, "Recently, there was a flood in one of our catchments. A big flood event and in order to manage it… [the MCDEM] ordered us to discharge more water than our consent allowed us to do". All the experts and most planners interviewed have just one statement to be made in terms of the role of the MCDEM in the EIA process. They said: "…the MCDEM could be more involved".

Summary

The findings show that criterion 20 is 'reasonably' met, but criterion 21 is 'not' met. Coordination among different agencies has been a challenge in the New Zealand EIA process while the MCDEM does not currently participate in the EIA process. Table 6.11 summarises the coordination of the EIA process.

Table 6.11 A summary of the criteria findings for coordination

Criterion	Evaluation	Justifications
(20) Inter-agency coordination and cooperation is available across sectors and different levels (national/local) of government departments at all stages of the EIA process	Reasonably	There is no mechanism to inform all relevant agencies on consent applications other than where consent of such agencies is required to make a decision. Therefore, coordination among different agencies is not assured in the process.
(21) Disaster management agency is involved (receive information and get coordination) in all stages of the EIA process	No	The MCDEM is not apparently involved in the EIA process. Most planners and experts believe it should be.

6.5.6 Funding conditions

This section covers criterion 22 of the analytical framework, the influence of funding agencies and funding conditions on the EIA process.

Disaster risk reduction as a part of funding conditions

New Zealand is a member country of major multilateral funding agencies such as the Asian Development Bank (ADB) and the World Bank. Both these agencies were established in order to support development programmes in developing countries. New Zealand, as a member country of these agencies, contributes capital by subscribing to shares in both the World Bank and the ADB (The Treasury, 2013d) and, therefore, New Zealand is not entitled to borrow from these Banks (The Treasury, 2013a). Consequently, unlike Sri Lanka, the funding policies of these agencies do not affect New Zealand development or environmental planning.

The regional planner, elaborating on the investment flow into development activities in New Zealand, stated: "… [New Zealand] do[es] not have any developments financed by the World Bank or the ADB. So it would then come back to either government funding or by some …private sector banks". For instance, in the government budget for 2013/2014 financial year, $3,627 million is estimated for the National Land Transport Programme and other roading projects (The Treasury, 2013c). The government expects to fund this investment principally (i.e., approximately 75 percent of total investment) by using road tax revenue collected by the Crown. "$970 million of the balance relates to loans from the Crown" (The Treasury, 2013c, p. 232). According to Note 24 to the financial statement of the Government's budget, these loans primarily are obtained from core crown[12], crown entities and other state-owned enterprises (The Treasury, 2013b). Therefore, the development activities carried out in New Zealand, despite which sector they belong to (e.g., infrastructure; energy; social development), are independent from policies of external agencies and can be executed under the existing domestic policy framework.

Summary

The findings show, criterion 22 is not relevant in New Zealand context. There is minimal or no influence from multi-lateral or bi-lateral funding agencies on environmental planning in New Zealand. Table 6.12 summarises the criterion findings for funding conditions in New Zealand.

Table 6.12 A summary of the criterion findings for funding conditions

Criteria	Evaluation	Justifications
(22) Funding agencies carry specific funding conditions to curtail the disaster risk of the project.	Not relevant	There is no visible influence from external funding agencies on the New Zealand EIA process. Development and environmental planning is fully controlled by the domestic legal framework.

[12] "Core Crown" means the Crown, departments, Offices of Parliament, the NZ Super Fund and the Reserve Bank of New Zealand. It does not include Crown entities, State-owned Enterprises, or local government (Treasury, 2013, p.2).

6.6 Chapter Summary

This chapter reports on the effectiveness of the New Zealand EIA process in addressing project-induced disaster risk. The findings show that the criteria relevant to procedural effectiveness and contextual effectiveness are generally 'fully' or 'mostly' met. Exceptions to the above two effectiveness dimensions can primarily be seen in the criteria relevant to legal requirements of including disaster risk in the EIA report, guidance on including disaster risk in the ToR, public participation before the EIA report preparation, independent verification of EIA reports, political will and coordination among agencies. However, the criteria in relation to policy integration and substantive effectiveness are generally 'reasonably' or met to a 'limited' extent in New Zealand, showing there are serious gaps in policy integration and achieving substantive effectiveness of the EIA process in terms of addressing disaster risk. It is important to note that most of the specific criteria relevant to disaster risk management in the New Zealand EIA process are either 'reasonably' met or met to a 'limited' extent. Table 6.13 summarises the findings of this empirical study under the evaluation criteria in the Methodology chapter. The next chapter will analyse the findings presented in Chapters 5 and 6.

Table 6.13 A summary of the findings for the New Zealand EIA process against the criteria in Table 3.1

Effectiveness Dimension	Criterion area	Criterion	Evaluation	Justifications
Integration	Purpose of EIA	(1) Disaster risk reduction is an integral part of environmental assessment.	Reasonably	The EIA process is required to address natural hazards risks. However, neither disaster risk nor vulnerability of affected people is required to be assessed.
Procedural	Legal Basis	(2) The EIA system is based on clear and specific legal provisions.	Mostly	The EIA process is based on specific provisions provided in Schedule 4 of the RMA. It is the general perception among most planners and experts that Schedule 4 is too broad and unspecific.
		(3) The impacts of all significant actions are assessed.	Fully	Five types of resource consents are listed in the RMA. These theoretically cover all possible development activities. Any activity, unless it is permitted or prohibited, should require an EIA report to accompany any resource consent application. In addition, effects arising from associated activities and cumulative effects are also included in the EIA process.
		(4) Alternative methods and locations are considered.	Reasonably	The RMA is clear about the requirement of alternative methods and locations. However, in practice, consideration of alternative methods is weak. The High Court ruled out the need for explicit and comprehensive cost benefit analysis on alternative options.
		(5) EIA reports contain a section on disaster risk.	Reasonably	Hazard (risk) assessments are being done in detail in most cases and presented in a separate section of the EIA report or as a separate report. However, neither vulnerability assessment nor disaster risk is estimated and included in the EIA report.
		(6) There is an opportunity for appeal or legally challenge the process or decision output.	Fully	Provisions are available for any aggrieved party to appeal against the decision or part of it to the Environment Court.

Effectiveness Dimension	Criteria area	Criteria	Evaluation	Justifications
Procedural	Guidance	(7) EIA reports are subjected to public review.	Fully	The public can review and make submission on notified applications. The public notification decision is taken by the consent authority, which can be challenged only in the High Court.
		(8) ToR for EIAs carries specific requirements regarding hazard assessment and vulnerability assessment.	Limited	Setting up the ToR for the EIA report is the responsibility of the applicant. There is no mechanism for public review or independent review of the ToR. Social issues, especially vulnerability assessments are not conducted in any of the reviewed projects, which suggests that such requirements are not included in the ToR.
		(9) Guidance is available to support compliance monitoring taking place and it is being implemented.	Mostly	The RMA explicitly requires local authorities to conduct compliance monitoring. In addition, Schedule 4 implicitly requires developers to conduct monitoring. In practice, both the interviewed developer and consent authorities conduct compliance monitoring.
Substantive	Level of Assessment	(10) Screening of actions for disaster risks is taking place.	Limited	Screening is based on the classes of activities (i.e., permitted, controlled, discretionary, restricted discretionary, non-complying, prohibited). The findings suggest that the above classes of activities are not based on systematic risk assessments.
		(11) Hazard and vulnerability assessments are conducted as a part of impact identification.	Limited	Hazard assessments are done in detail. Social impacts are left out in most cases. Therefore, vulnerability is not assessed in such cases. Social impact assessments are also disconnected from hazard assessments in the reviewed projects.
	Decision Making	(12) Findings of the EIA influence the final decision.	Mostly	The influence of the EIA report on final consent depends on the decision pathway that a consent application takes. Local councils primarily rely on the EIA report. When notified, public submissions and an officer's report are also considered in making final decision. At the Environmental Court, the EIA report has quite a low profile. In addition, when considering the full EIA process, decisions are based on the EIA process. However, provisions of the national environmental standards and plans are superior to the EIA findings.
		(13) Planners use the EIA report as a reference document in project planning.	Fully	The findings of the EIA process are translated into conditions of the resource consents. Many believe that the EIA process influences the shape of the development activity.

Effectiveness Dimension	Criteria area	Criteria	Evaluation	Justifications
Contextual	Consultation and Public participation	(14) Consultation and participation are taking place before and following EIA report publication.	Reasonably	Public participation in early stages (i.e. screening, scoping, ToR setting) of the EIA process is not legally required. However, the case law and guidance recommend the public participation in scoping. Similarly, public participation at monitoring stage is also not required under the RMA. There is clear guidance on public participation once an application is notified.
		(15) Feedback from consultations is incorporated into project planning.	Mostly	Public submissions are considered together with the EIA report and officer reports in decision-making processes at the hearing. However, public views cannot override provisions in the plans.
	Policy context	(16) Legal provisions given by other legislation to control development-induced disaster risks do influence the outcome of the EIA process.	Mostly	All four Acts (i.e., LGA, CDEMA, The Building Act, LGOIM) reviewed have direct provisions to avoid and mitigate natural hazards. However, the inter-linkages between the above Acts is weak, especially between the CDEMA and the RMA.
	Transparency and accountability	(17) EIA assessment processes and EIA reports are subjected to independent checks and verification.	Reasonably	There are no clear provisions for an independent review of the EIA reports. In some cases, councils commission a report, which provides an independent verification of EIA findings. During public hearings and in the Environment Court proceedings, EIA report findings are often subjected to independent review through the submissions of different experts.
		(18) Decision-making and approval stages, (setting out what is required of proponents and government agencies and when) are made clear to all.	Fully	Once the decision is made, it is considered a public document. The RMA requires local councils to make available consent decisions. The provisions of the LGA and the LGOIMA promote open government concepts, which require all information related to consent decisions and conditions be made publicly available.
	Political Will	(19) Political support is available for the EIA process.	Reasonably	Political pressure is presents for some consents. However, such political interest does not affect the approval decision. The presence of the Environment Court in the process is crucial in reducing such influences. Political support is not consistent for the RMA and is currently weak.

Effectiveness Dimension	Criteria area	Criteria	Evaluation	Justifications
Contextual	Coordination	(20) Inter-agency coordination and cooperation is available across sectors and different levels (national/local) of government departments at all stages of the EIA process.	Reasonably	There is no mechanism to inform all relevant agencies on consent applications other than where consent of such agencies is required to make a decision. Therefore, coordination among different agencies is not assured in the process.
		(21) Disaster management agency is involved (receive information and get coordination) in all stages of the EIA process.	No	The MCDEM is not apparently involved in the EIA process. Most planners and experts believe it should be.
	Funding conditions	(22) Funding agencies carry specific funding conditions to curtail the disaster risk of the project.	Not relevant	There is no visible influence from external funding agencies on the New Zealand EIA process. Development and environmental planning is fully controlled by the domestic legal framework.

Chapter 7

Discussion

7.1 Introduction

Chapter 2 concluded by presenting the disaster risk incubation model (Figure 2.5), which illustrates the relationships among mal-development, governance context and disaster risk. It was argued in Chapter 2 that both mal-development and poor governance incubate disaster risk through increased hazard risk and vulnerability until their convergence ultimately leads to the actual onset of disaster. Development controls, such as EIAs, should therefore be designed to assess and address the disaster risk of development projects. In this context, the effectiveness of EIAs in addressing development-induced disaster risk plays a crucial role in preventing risk incubation in a given location.

Chapter 3 provided the methodology adopted in this study and Chapter 4 outlined the environmental and disaster management contexts in Sri Lanka and New Zealand. Chapters 5 and 6 evaluated the effectiveness of the EIA processes of Sri Lanka and New Zealand. The performance evaluation of the two EIA processes shows that neither country's process is fully equipped to address the disaster risks of development projects (Table 7.1). The Sri Lankan EIA process is consistently weak in all effectiveness dimensions and most evaluation criteria either have not been met or met to only a limited extent. In contrast, in the New Zealand EIA process, most evaluation criteria relevant to contextual effectiveness and procedural effectiveness have either been fully or mostly met. However, the criteria most relevant to risk integration and substantive effectiveness have only been met either to a reasonable or limited performance level.

It is important, therefore, to critically evaluate the findings of the two countries in order to understand the reason behind the poor effectiveness and also to understand the wider theoretical and policy implications of the findings in terms of addressing development-induced disaster risks beyond the countries investigated in this study.

Table 7.1 Summary of Findings

Effectiveness Dimension	Evaluation Criteria (Operationalization of the research)	Extent criteria met[13]	
		Sri Lanka	New Zealand
Policy Integration	(1) Disaster risk reduction is an integral part of environmental assessment.	Limited	Reasonably
Procedural Effectiveness	(2) The EIA system is based on clear and specific legal provisions.	Mostly	Mostly
	(3) The impacts of all significant actions are assessed.	Limited	Fully
	(4) Alternative methods and locations are considered.	Limited	Reasonably
	(5) EIA reports contain a section on disaster risk.	Limited	Reasonably
	(6) There is an opportunity for appeal or to legally challenge the process or decision output.	Limited	Fully
	(7) EIA reports are subjected to public review.	Limited	Fully
	(8) The ToR for EIAs carries specific requirements regarding hazard assessment and vulnerability assessment.	No	Limited
	(9) Guidance is available to support compliance monitoring to take place and those are being implemented.	Limited	Mostly
Substantive effectiveness	(10) Screening of actions for disaster risk takes place.	Limited	Limited
	(11) Hazard and vulnerability assessments are conducted as a part of impact identification.	Limited	Limited
	(12) The findings of the EIA influence the final decision.	Limited	Mostly
	(13) Planners use the EIA report as a reference document in project planning.	Limited	Fully
Contextual effectiveness	(14) Consultation and participation are take place before and after EIA report publication.	Limited	Limited
	(15) Feedback from consultation is incorporated into the project planning.	Unclear	Mostly
	(16) Legal provisions given by other legislation to control development-induced disaster risks influence the outcome of the EIA process.	Limited	Mostly
	(17) EIA assessment processes and EIA reports are subjected to independent checks and verification.	Reasonably	Reasonably
	(18) Decision-making and approval stages are made clear to all.	Limited	Fully
	(19) Political support is available for the EIA process.	Limited	Mostly
	(20) Inter-agency coordination and cooperation is available across sectors and different levels (national/local) of government departments at all stages of the EIA process.	Limited	Reasonably
	(21) The disaster management agency is involved (receives information and gets coordination) in all stages of the EIA process	No	No
	(22) Funding agencies carry specific funding conditions to curtail the disaster risk of the project.	Reasonably	Not relevant

[13] Criteria findings were rated on a 1-5 scale, where 'fully' is highest level (5) and 'no' is the lowest (1). 'Mostly' is above average, 'reasonably' is average and 'limited' is below average.

7.2 EIA effectiveness: A comparative analysis of the EIA processes of Sri Lanka and New Zealand

In this section, a comparative analysis of EIA processes of Sri Lanka and New Zealand is undertaken based on the respective individual country findings presented in Chapters 5 and 6. In Chapter 2, Sadler's (1996) effectiveness triangle was discussed in the context of identifying effectiveness dimensions. Using the effectiveness triangle, Sadler (1996) describes procedural and substantive effectiveness. However, there is much literature describing the contextual influence on procedural and substantive effectiveness (Bina, 2008; Bina et al., 2011; Boyle, 1998; Fuller, 1999; Hilding-Rydevik & Bjarnadóttir, 2007; Nykvist & Nilsson, 2009; Runhaar & Driessen, 2007; Wang et al., 2012). In addition, it was argued in Chapter 2 that disaster risk should be integrated into EIA policies and procedures in order to ensure that disaster risk is addressed in the EIA process (i.e., policy integration). Therefore, Sadler's effectiveness triangle can be redrawn incorporating policy integration and contextual effectiveness (see Figure 7.1).

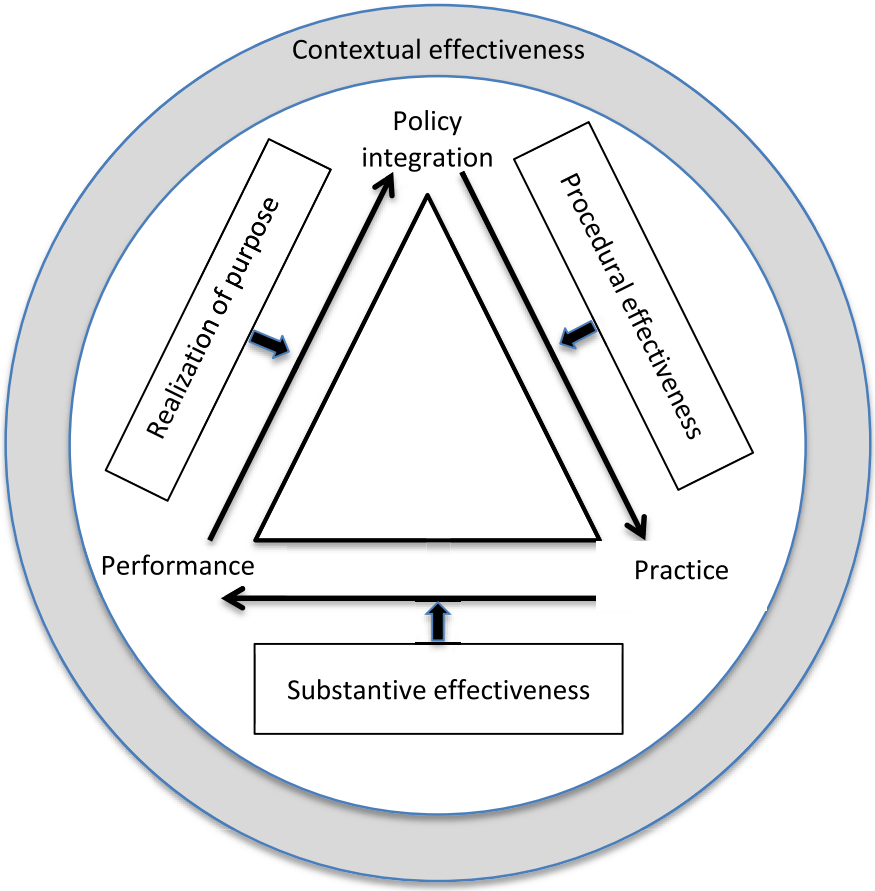

Figure 7.1 Modified effectiveness triangle (based on Sadler (1996, p. 40))

Figure 7.1 is consistent with the four research questions addressed in this study. Policy integration of disaster risk reduction into EIA policies and procedures is central in the modified effectiveness triangle. However, policy integration has little effect on overall effectiveness if such policies and

procedures are not effectively applied in the field, which is measured by procedural effectiveness. Even though substantive effectiveness is defined as the extent to which EIA meets the purpose for which it is designed (Sadler, 1996; Wang et al., 2012), in practice, it is measured in terms of the EIA's contribution to decision making (e.g., Heinma & Põder, 2010; Runhaar & Driessen, 2007; Sadler, 1996; van Doren et al., 2013). Consistent with the above, it is argued here that informed decision-making results in increased performance, which ultimately leads to realization of the objectives of EIA, in this case, reduced disaster risk. Therefore, the extent to which the EIA process contributes to informed decision-making in order to address disaster risk is considered here as substantive effectiveness. Finally, the influence of context on procedural and substantive effectiveness is consistent with contextual effectiveness. The following sections compare the findings against the four effectiveness dimensions and discuss the theoretical and policy implications of the findings.

7.3 Policy integration

Poor emphasis given to disaster risk and a lack of clear, explicit guidance on assessing disaster risk in the EIA process in turn reduces the ability of the EIA to be an effective risk management tool. Therefore, integration of disaster risk into the EIA process is at the centre of the discussion on reducing development-induced disaster risks. However, a plausible definition for disaster risk integration is currently non-existent. Using Bührs' (2009, p. 10) definition of environmental integration as a basis for developing a definition, DRR integration can be described as incorporating DRR knowledge, values, and interests in policies and actions (policy dimension), rules and organizations (institutional dimension), and human thinking (cognitive dimension) and as well as promoting consistency and coherence among disaster risk management efforts. This section discusses the level of DRR integration into EIA processes, while investigating the applicability of the above definition.

As stated in Chapter 2, scholarly work on DRR integration and into the EIA processes is extremely rare in environmental and disaster management literature. However, addressing disaster risk in environmental assessment has been recognized and given significant emphasis in various agency reports, especially from development agencies (e.g., Benson & Twigg, 2004, 2007; Caribbean Development Bank (CDB), 2004; Mitchell, Van Aalst, & Silva Villanueva, 2010; UNDP, 2004; UNISDR, 2011). Many scholars have explicitly discussed the integration of DRR into development planning (Blaikie et al., 1994; Schipper & Pelling, 2006; Wamsler, 2004, 2006). Wamsler (2006) emphasises the importance of compliance with EIA legislation in order to address disaster risks. However, the findings of this study show that Wamsler's argument applies only when disaster risk is already integrated in the EIA process. The findings also show that explicit reference to disaster risk is absent in environmental management policies in both researched countries.

In Sri Lanka, neither disaster risk nor hazard risk is explicitly included within the NEA 1980. Moreover, the Act does not include people as a part of the environment (NEA, 1980, s.33). There are ambiguities among interviewed planners and experts on the provisions of the Act. For instance, the CEA planner argued that disaster risk is implicitly mentioned under "…avoidable and unavoidable adverse environmental effect" (NEA, 1980, s.33(b)), but the experts disagreed and demanded explicit reference to disaster risk in the legislation. Both case studies and interviews revealed that disaster risk is not addressed in practice.

In contrast, the term 'environment' has been given a broad definition in the RMA and people and communities are explicitly referred to as being a part of the environment. Therefore, when the Act under its purpose requires avoiding, remedying and mitigating any adverse effects of activities on the environment, it also refers to the people and communities as well. This is an important dimension of DRR. In addition, the term 'effect' is also broadly defined in the RMA, but "…in a non-exhaustive way…" (Dye v Auckland RC (2001) 7 ELRNZ 209). Under s.3 of the RMA 1991, "any potential effect of high probability" and "any potential effect of low probability which has a high potential impact" are also included as aspects of effects. These aspects are partially in line with the UNISDR's definitions of 'extensive' and 'intensive' disasters (see Chapter 1). However, interviews with planners and experts clearly showed ambiguities in the use of such provisions of the Act. For instance, according to the regional planner, disaster risk is explicit in Schedule 4, but most experts argued that disaster risks are only implicitly referred to in Schedule 4. A social scientist described Schedule 4 provisions and stated, "…those are on physical hazards, not on disaster risk". It is clear such vagueness in the legislation leads to poor attention to disaster risk in the EIA process. However, everyone agreed that hazard risk is explicit in Schedule 4. As a result, hazard risk is explicitly addressed in all EIA reports studied.

There is clear evidence from the Acts and EIA reports reviewed and interviews undertaken that legislative structure and guidelines in New Zealand are more inclined towards a hazard management approach than disaster management. As discussed in Chapter 2, this approach belongs to the 'behavioural paradigm' of disaster management, which is generally characterised by over reliance on land-use planning and other engineering solutions to reduce disaster risk (Smith, 2013). As it will be argued in following sections, the implications of such an approach can be seen in various stages of the EIA process, including screening and impact identification.

In addition, it is clear that integration of DRR concerns into organizations that oversee the project appraisal processes is also crucial in addressing disaster risks. Clear guidance and assigned responsibilities to such organizations are required to achieve this. However, it is evident that, because of poor policy integration, clear and explicit guidance on DRR for environmental management agencies is absent in both countries. The lack of such guidance has led to increased

tensions between environmental management and disaster management agencies, adding more challenges to already problematic EIA procedures. In New Zealand, having both DRR functions and environmental management functions at the local authority level provides local authorities with a better chance to handle DRR associated with development projects. However, it was also revealed by the interviews with planners and experts that, as a consequence of lack of national guidance and inconsistency between legislation, neither the Ministry of Civil Defence and Emergency Management nor CDEM Groups play an active role in the EIA process. This concurs with Becken & Hugheys' (2013) conclusion in relation to tourism that disaster risk management is currently poorly integrated in the existing land-use planning, civil defence and emergency management structure. Therefore, the level of disaster risk reduction inputs in the EIA process depends on the capacity of the consent authority and its understanding of DRR.

Finally, it is clear from the interviews with the experts in both countries that incorporating disaster risk concerns into the knowledge [cognitive framework] of everyone, including council officers, developers, EIA practitioners/consultants, and community members in a way that inspires their thinking, behaviour and actions will make the most impact on the reduction of development-induced-disaster risks. As they argued, this will influence how they approach the pre-assessment, appraisal, evaluation and risk management stages of the EIA process and also engage in risk communication and participation. Bührs (2009) argues that integration efforts are limited and ineffective if not undertaken consistently across all three dimensions (i.e., policy, institutional and cognitive). The findings of this study support the above argument but give more emphasis to policy integration as a starting point. A more detailed analysis of the factors that influence the cognitive dimension of decision makers, developers, practitioners and affected groups is beyond the scope of this research (see Schijf (2003)).

7.4 Procedural effectiveness

The effectiveness of the EIA process in addressing disaster risk is directly related to how well the different phases of the EIA process are designed and implemented. As reported in Chapter 2, it is clear that procedural effectiveness is the most commonly addressed dimension of effectiveness and many scholars have included one or more indicators related to procedural effectiveness in their research (e.g., Ahmad & Wood, 2002; Baker & McLelland, 2003; Boyle, 1998; Gallardo & Bond, 2011; Marara et al., 2011; Noble, 2009; Pölönen et al., 2011; Sadler, 1996; Wang et al., 2012; C. Wood, 1995). However, Morgan (2012, p. 9) argues that problems with procedural effectiveness persist and "…there is every reason to expect this [practice issue] to continue and grow as new challenges come from new areas of application and new forms of impact assessment". Recent literature identified a number of issues related to procedural effectiveness including screening, scoping, consideration of

alternatives, public review and monitoring (IEMA (Institute of Environmental Management & Assessment) 2011; Morgan, 2012; Panigrahi & Amirapu, 2012; Pölönen et al., 2011; Rajaram & Das, 2011).

Even though the above scholars paid limited attention to gaps in legal provisions, the findings of this study suggest that a lack of clarity and gaps in legislation play a fundamental role in practice. For instance, even though most interviewed experts and planners described the EIA processes of both countries as sufficiently backed with clear and well-defined legislation, others identified gaps. In New Zealand, lack of clarity in Schedule 4 is the only major weakness in the legislation highlighted in the interviews with both planners and experts. One expert argued that the implementation of the EIA process therefore, depends on how the diverse practitioner community understands and interprets provisions. In Sri Lanka, the lack of provision for public participation in the early stages of the EIA process and the lack of provision for the public to legally challenge approval decisions are emphasised as major weaknesses. The next sections discuss screening, scoping, consideration of alternatives, public review and monitoring of the two EIA processes.

Screening

Screening is central to the effectiveness of the EIA process because it determines whether the proposed development activity is subjected to environmental scrutiny (Morgan, 1998; G. Wood & Becker, 2005). G. Wood & Becker (2005) argue that the screening decision requires a discretionary judgement of the potential effects of the proposed activity and Weston (2000) argues such decisions are more political than 'rational' or 'non-political'. According to G. Wood & Becker (2005), the significance of environmental effects is highly context-specific and therefore an approach that reflects the political dimension of land-use planning decision-making, as well as being influenced by the values of local people, is both practical and effective in screening. The screening process of the New Zealand EIA process corresponds to such criteria.

New Zealand has a dual approach in resource management where policy statements and plans dictate the resource use conditions and the EIA process provides a check against the set standards and rules. The policies and plans are developed with significant public involvement and participation (Perkins & Thorns, 2001), thus the public's views and values are often included. Such an approach enables local authorities to dictate the terms of resource use limitation in a particular area. Under the RMA 1991, all development activities other than prohibited and permitted require an EIA before approval is given. Thus, local differences can be easily incorporated into project screening and any significant development activity is subjected to environmental scrutiny. However, the experts interviewed argued that classification of activities into different classes in relevant district and regional plans (i.e., permitted, controlled, restricted discretionary, discretionary, non-complying and

prohibited) is often not based on a full and explicit risk assessment. A recent study by GNS Science showed the overwhelming majority of regional policy statements and district plans are not explicitly based on systematic risk assessments and vulnerability is often not assessed in such policies and plans (Saunders et al., 2014). According to the study, currently only 2.0% of district plans and 12.5% of regional policy statements refer to a risk-based approach (Saunders et al., 2014, p. 55).

There are isolated initiatives in New Zealand to introduce a more risk-based approach to planning (Saunders, Beban, & Kilvington, 2013). Both the Ministry for the Environment in its 'Preparing for Future Flooding: A Guide for Local Governments in New Zealand' (MfE, 2010) and GNS Science's 'Risk-based Land Use Planning for Natural Hazard Risk Reduction' (Saunders et al., 2013) propose similar approaches for risk-based planning. These initiatives provide a hazard centred approach, in which development actions are categorised into different consent classes of activities based on the existing hazard risk of the environment. The above guidelines, however, are different from effects (risks) based planning, where development actions are categorised into different consent classes based on the level of effects, especially the risks they pose to the environment. Currently, guidance for the latter is absent in New Zealand. Experts suggested that such guidance should ideally come from higher-level planning including national standards or national policy statements with enough room for both local adoption and adaptation. A national policy statement on disaster risk management would seem essential for this to occur.

In Sri Lanka, screening of proposals takes place at two different stages. First, project proposals are screened based on the prescribed project list provided in the Gazette. This is similar to Annex I and II projects listed in European Council Directives 97/11/EC (European Council, 1997). Three different aspects are considered in this process. These are the scale of the proposed activity, nature of the activity and nature of the receiving environment; for instance, any flood area declared under the Flood Protection Ordinance No 4 of 1924. In addition, some highly fragile receiving environments are not included in Part III of the Gazette. This means development projects in such environments can proceed without environmental scrutiny if their scale is deemed to be lower than the permitted scale in the Gazette. For example, the National Building Research Organization has published landslide risk maps for six highly vulnerable districts in the country (National Building Research Organization, 2013). Use of those in the screening process is not mandatory because they do not have any legal status in environmental legislation. Deciding whether an IEE or EIA is required is left to the discretion of the appointed Project Approval Agency (PAA) and is done during the scoping process. Therefore, choosing between an EIA and IEE is an opaque process without any guidance and, as reported in Chapter 5, this is a clear limitation of the procedures. It is also clear that the Sri Lankan approach does not concur with the approach proposed by G. Wood & Becker (2005). Of the three aspects that should be considered in screening, the scale of the project can easily be manipulated and experts

argued that developers commonly downplay the scale of projects to bypass in-depth environmental scrutiny. This conclusion is consistent with Zubair's (2001) finding that developers downplay the scale of projects to bypass environmental scrutiny.

Consideration of alternatives

Consideration of alternative locations and technologies (methods) is the first step in the EIA process (Steinemann, 2001; C. Wood, 1995). Steinemann (2001, p. 3) argues that "The quality of a decision depends on the quality of alternatives from which to choose". According to C. Wood & Dejeddour (1992), genuine consideration of certain types of alternatives, especially alternative methods, is difficult in the EIA process. They argue that such alternatives should be considered at policy or plan level using strategic environmental assessment. Steinemann (2001) supports this argument saying that, at the strategic level, agencies could consider more alternative approaches (e.g., hydro energy v wind energy) rather than just evaluating alternative designs (e.g., dam v run-of-the-river) for an action. The findings of this study support Steinemann's (2001) argument on consideration of alternative approaches at a strategic level and also show that when alternative approaches are evaluated at the project EIA level, they are superficially assessed and merely used to promote the pre-selected project approach (e.g., hydro-power) rather than genuinely investigating more appropriate alternative designs. Therefore, the study's findings lend support to the implementation of SEA at policy and plan levels. According to Steinemann (2001), at the strategic level, detailed assessments are not required, but an examination of different alternative approaches provides a basis for further assessments in project EIAs.

In Sri Lanka, the National Environmental Act 1980 is vague regarding the consideration of alternatives and does not specify what types of alternatives should be considered (i.e., location or method). The experts argued that consideration of alternatives is weak in practice because of ambiguities in the legislation. For example, the EIA of the Southern Transport Development Project (STDP) investigated alternative locations and also an alternative approach to the planned expressway (i.e., improvement of the railroad). However, even though 40% of the expressway lies on a flood plain (University of Moratuwa, 1999a), alternative designs for constructing the expressway in order to reduce flood risk have not been considered. Interviews with community members and experts revealed that most flood and drainage issues caused by the expressway would have been avoided if the expressway had been constructed on piers instead of on an embankment. It is clear that though the EIA failed to investigate the best alternative design for the proposed action, it attempted to investigate an alternative approach. Even though Zubair (2001) does not differentiate between alternative approaches and designs, his argument on consideration of alternatives in Sri Lanka is supported by this study's findings. Zubair (2001, p. 474) argues that the UKHP EIA report avoided more viable options in analysing project alternatives (i.e., run-of-the-river); instead, other non-viable alternatives

(i.e., coal power and diesel energy) were "cursorily" examined. It is clear that such alternative approaches should have been assessed at higher planning levels. Even though the Sri Lankan Cabinet of Ministers issued a directive in May 2006 requiring all new policies, plans or programmes to be subjected to SEA (Central Environmental Authority, n.d.), it is clear from the interviews that SEAs are yet to be fully implemented.

New Zealand's legislation is explicit on the need to investigate alternative locations and methods. Under Schedule 4 of the RMA 1991, an EIA report should include a description of possible locations and methods for undertaking the proposed activity if the activity is likely to have any significant adverse effects on the environment. Again, though, Schedule 4 is vague about requiring alternative approaches and designs. Examination of the EIA processes of both the Transmission Gully Project (TGP) and the Waitohi Irrigation and Hydro Scheme (WIHS) suggest that consideration of alternatives in the EIA process is still weak and incomplete in practice. For example, the focus of the WIHS's EIA is largely on alternative locations for different dam types; there is no consideration of alternative designs for undertaking the activity. Although exploring its effectiveness was not a part of this research, it is clear that s.32 of the RMA has provisions for conducting SEAs in developing plans and policies. These provisions, however, do not explicitly include hazard or disaster risk assessment and, currently, only a fraction of district plans and regional policy statements are based on risk-based assessments (Saunders et al., 2014).

Public review

The importance of public participation in environmental decision-making is widely accepted (Beierle & Cayford, 2002; González, Gilmer, Foley, Sweeney, & Fry, 2008; Hartley & Wood, 2005; Jay et al., 2007; Morgan, 2012; Sheate, 1992). According to C. Wood (1995), consultation and public participation are an integral part of the EIA process; Jay et al. (2007, p. 288) argue that EIA is "…an anticipatory, participatory environmental management tool". Most scholars who have investigated the procedural effectiveness of the EIA process have included indicators of public participation (Ahmad & Wood, 2002; Fischer, 2003; Sadler, 1996; C. Wood, 1995). In most relevant literature, public participation in EIA is defined as "…the process by which proposed developments and plans are subject to public review and comment in order to improve the integration of socio-economic and environmental concerns" (e.g., González et al., 2008, p. 304). However, this study's findings support the need for a broader concept of public participation both at the early and post-approval stages of the EIA process in order to address disaster risks effectively (see Section 7.2.4). This section discusses public review of the EIA report.

Both Sri Lanka and New Zealand have provisions for public review of EIA reports. However, in Sri Lanka, despite legislative requirements for public participation in all EIAs (but not IEEs) the practice is

considered weak, because sufficient measures are not taken to make it effective. According to one expert, public review of EIA reports is a "…very quiet" process. On the other hand, community members interviewed argued that project teams and authorities attempted to educate affected groups on the benefits of the project rather than listening to their concerns. A community member expressed his frustration saying, "It is like playing the Veena to deaf elephants". It is clear that public review is often ineffective because EIA reports are too technical for the general public and the CEA does not take adequate measures to get the public actively involved in reviewing EIA reports (e.g., providing a summary of the EIA in simple language for the general public). This corresponds with Hartley & Woods' (2005) argument that technical complexity of the project proposal is a barrier to effective participation. Therefore, current practice does not qualify as public participation defined in the EIA literature (i.e. González et al., 2008). The 2000 amendment of the NEA 1980 to allow IEEs to be approved without being subjected to a public review was seen by many as a drawback in the system. It is clear that developers downplay the scale of projects to avoid public scrutiny and this is a danger to the effectiveness of the EIA process.

In New Zealand, public notification of EIA reports is clear and explicit in legislation. As per the provisions, only publicly notified applications are required to be made available for public review and comment (see Figure 4.6). The decision on public notification is usually made by local authority staff and can be challenged in the High Court only on points of law, which, according to an interviewed expert, is a drawback of the legislation. The Local Government Official Information and Meetings Act (LGOIMA) 1987 also has provisions for the public to request information related to proposed development activities, which provides opportunities for public scrutiny of the processes followed and information used. It is also clear that public submissions are considered in decision-making and project design is amended where required. Therefore, in the New Zealand EIA process, public participation meets the requirements in the literature definition (i.e. González et al., 2008). However, since consent approval is based on plans and policies, some experts argued that there is a limited opportunity for the public to influence the consent decision if such activities with given effects are already allowed in the relevant plans. Even though plans and policies are subjected to public review, it appears that the public do not pay enough attention when the plan [regional and district] is being made.

Scoping

Scoping provides an initial assessment to identify significant issues related to proposed development activity (Morgan, 1998) and to determine the range of issues to be addressed in the EIA process (C. Wood, 1995). Therefore, scoping also influences the type of assessments carried out as impact/effect assessments (i.e., social impact assessment, cultural assessment and risk assessment) during impact identification. If a particular impact or effect is not identified at this stage, then it may not be further

assessed or treated at later stages of effect assessments (Standards Australia Limited/Standards New Zealand, 2012). Therefore, scholars argue that scoping is fundamentally important for the effectiveness of the EIA process to be properly achieved (Morgan, 1998; Mulvihill, 2003). However, it is clear that scoping received limited attention in both countries.

In Sri Lanka, according to the National Environmental Regulations 1993, Terms of Reference (ToR) for EIA should be developed by respective PAAs in consultation with the Central Environmental Authority (CEA). As per CEA (2006), ToR is the final product of the formal scoping process and it recommends having informal scoping activities with affected groups and the public, in line with the formal process. However, the experts argued that the current mechanism has been ineffective, because the scoping committee has to rely on only preliminary information given by the developer, which is often weak at this stage of proposal development. As a result, a general ToR is issued to developers irrespective of the type and nature of their proposed development activity. The lack of public participation in the process has generally limited the opportunity to improve the quality of the ToR, resulting in a weak and non-comprehensive ToR for EIA reports.

In contrast, scoping in New Zealand is the responsibility of the developer. Clauses 1 and 2 of Schedule 4 of the RMA 1991 provide a general structure and also the matters that should be considered in the EIA report. Even though this can be considered as a general ToR for an EIA report, planners and experts are concerned about the poor clarity of Schedule 4 and the lack of clear guidance on scoping. It is clear that such weak guidance mixed with the influence of developers in the scoping process often leads to neglecting socially and environmentally vital aspects in EIA reports.

This study's findings demonstrate that even though the two countries have completely different approaches to scoping (i.e., an agency driven approach in Sri Lanka compared with a developer driven approach in New Zealand), neither has proven effective in terms of its ability to provide a sound scope for the EIA. The findings also support the conclusions of Snell & Cowell (2006, p. 373) who say "…scoping is conducted in ways which meet the needs of the project, less tangible and secondary environmental effects are usually ignored, and opportunities for public involvement are minimal".

Monitoring

Monitoring plays a key role in the effectiveness of the EIA process (Ahammed & Nixon, 2006; Morgan, 2012; Sadler, 1996; C. Wood, 1995). Post approval monitoring involves two important components. First, monitoring checks that the developer is meeting the conditions specified in the approval. Secondly, monitoring checks whether the environmental effects of the activity are as initially predicted in the EIA report (MfE, 1996).

In Sri Lanka, experts, planners (including the CEA planner) and community members all agreed that the current mechanism for compliance monitoring is weak and ineffective. Even though the prime responsibility for compliance monitoring lies with the CEA, a lack of guidance on compliance monitoring and a lack of tolerance standards have affected compliance monitoring efforts. The NEA 1980 (s.10 (1)) gives the responsibility of project monitoring to the CEA. As per s.32 of the NEA 1980, the Minister may make regulations with respect to levying fees to carry out necessary monitoring duties and a "…requirement of specific environmental monitoring duties by the developer" (NEA 1981, s.32(2)(r)). However, such regulations have not been issued. Zubair (2001) points out a lack of staff and financial and technical resources as the major reasons for weak monitoring in the Sri Lankan EIA process. This study's findings contradict Zubair's and argue that a lack of interest by and motivation of the CEA are the major reasons for weak monitoring. Moreover, the lack of provisions for public participation in project monitoring, including unavailability of approval conditions, also hinder compliance monitoring efforts.

In New Zealand, as per s.35 of the RMA, the responsibility for monitoring lies with local authorities. However, Schedule 4 of the RMA is not clear and explicit about the responsibility for monitoring between the consent authority and the applicant. According to the local council planners interviewed, in practice, both the local authority and the developers take responsibility. The provisions of the RMA enable any member of the public to apply to the Environment Court for an order to enforce a consent condition or to abate an adverse effect that is not covered by conditions. It is also clear that having project approval, including conditions readily available in the public domain, makes the developers obliged to implement conditions, monitor and take action on project impacts to safeguard their long-term financial interests.

7.5 Substantive effectiveness

As discussed in Chapter 2, substantive effectiveness is the least researched area in effectiveness research (Cashmore et al., 2004; Jay et al., 2007; Theophilou et al., 2010). This is primarily because of the difficulties in empirically exploring substantive effectiveness (Jay et al., 2007) and the plurality in interpretation of the objectives of EIAs (Cashmore et al., 2004). Cashmore et al. (2004) argue that such plurality is problematic in evaluation research and suggest evaluation of effectiveness should be based on a researcher's clear interpretation of the objectives and the meaning of effectiveness. This study defined substantive effectiveness as "Whether the EIA process results in DRR?". In order to address this question, the study investigated the level of disaster risk assessment in the EIA process and the influence of the EIA on decision-making and its influence on project planning.

7.5.1 Level of assessment

It was argued in Chapter 2 that both hazard risk and vulnerability should be equally considered to understand the disaster risk of development projects (Birkmann, 2006; Blaikie et al., 1994; Tobin & Montz, 2009; UNISDR, 2005; Wisner et al., 2004). Accordingly, Chapter 2 listed three steps for risk assessment:

1) Identification and, if possible, quantification of hazard;
2) Assessment of exposure and vulnerability; and
3) Estimation of risk based on hazard risk, exposure, and vulnerability.

The term 'hazard' is commonly used, often interchangeably, with disasters in both Sri Lanka and New Zealand, but neither the term 'vulnerability' nor vulnerability assessment has the same level of recognition. Here, it is argued that this lack of understanding and weak attention to the condition of vulnerability, in turn, affects how disaster risk is treated in both countries. This section thus discusses hazard and vulnerability assessments in the EIA process.

Hazard assessment

As discussed in Chapter 2, hazard assessments should cover the frequency, intensity and severity of hazards (Alcántara-Ayala, 2002; Alexander, 1993; Wisner et al., 2004). This should occur in the early stages and for each component of the project. Chapter 2 also emphasized that hazard assessments in the EIA process should examine both the existing hazardscape and any potential changes in the post-project hazardscape of the environment.

As reported in Chapter 5, detailed hazard assessments are not conducted as a part of the EIA process in Sri Lanka. However, the EIA processes of the STDP and the UKHP did examine easily observable hazards such as flood and landslide risks. Close scrutiny of the two EIA reports of the above projects further revealed that such assessments are not sufficiently detailed to provide a clear picture of project-induced hazard risks. For example, the EIA report of the STDP identified the increased potential flood risk in upstream areas because of the earth embankment of the expressway but limited its analysis to a statement, which says "The choking of flood openings would cause delays in the passage through the proposed road embankment thus creating increased duration of the inundation period" (University of Moratuwa, 1999a, pp. 6-18) without giving any further analysis on increased flood risk. In the two case studies, hazard assessments are largely based on qualitative assessments, but an estimation of potential changes in the hazardscape (i.e., new hazards and frequency, intensity and severity of existing hazards) is not provided in the studied EIA reports, thus they do not meet the basic requirements of hazard assessments cited in the literature (e.g., Alcántara-Ayala, 2002; Alexander, 1993; Wisner et al., 2004). Some project components were also

neglected in the EIA reports of the above projects, including resettlement sites, soil mining, and dumping sites. All these aspects made hazard assessment in the two case studies critically incomplete and weak.

In contrast, in New Zealand, detailed hazard assessments have been carried out in all seven studied projects. Hazard assessments are often based on quantitative analysis and have been conducted for all components of the project, including those arising from associated activities. It is clear that explicit reference to hazard risk in Schedule 4 strongly influences how local council planners and practitioners approach hazard risk in development projects. Both the WIHS and the TGP have separate sections in their EIA reports dedicated to hazard assessments. Considering the potential disaster risk of the WIHS, a separate dam break analysis has been conducted (Rivett et al., 2012). Even though the assessment is not comprehensive, substantial detail is included in the report. This information was further supplemented by the project consultants in response to a request for further information under s.92 of the RMA. However, given the fact that the WIHS is located on an active fault line (Rivett & Morgan, 2012), the dam break assessment has not gone into sufficient detail about the likelihood or magnitude of the potential hazard. This was raised by an independent expert report commissioned by the Canterbury Regional Council (Shaw, 2012).

Vulnerability assessment

The condition of vulnerability has two dimensions: biophysical (place) vulnerability, characterized by exposure or proximity to hazard source; and social vulnerability, characterized by susceptibility of the community and its assets to the hazard because of their capacity, resources and other social, political and economic conditions (Cutter et al., 2008; Cutter, Boruff, & Shirley, 2003). However, vulnerability assessments are not conducted even in their simplest forms in the process of impact identification in both countries.

Most literature reviewed does not explicitly report the influence of development on increased vulnerability. An exception is seen in UNDP (2004) (see Table 2.2). Findings from the two case studies and community interviews in Sri Lanka provide overwhelming evidence that hazards and the vulnerability of the people are reshaped as a result of implementing development projects. However, neither project EIA report reviewed in Sri Lanka identified such changes. For example, the EIA report of the STDP identified that 20,834 houses are located in the project-affected area and the report further estimated that the population in the district in which the proposed project is located is growing faster than the rest of the country. This means there will be more pressure for productive land in the project area and more people, often the poor, are likely to be pushed to unproductive and flood affected areas. However, no analysis has been done on what percentage of the above

houses are in the current flood zone and what percentage of houses will be added to the flood zone as a result of increased flood levels.

It was also revealed from the two Sri Lankan case studies that changed exposure of affected groups can make them more vulnerable to the altered hazardscapes of the project area. For instance, the EIA report of the UKHP identified that the banks of the reservoir will be unstable and landslides will be induced by fluctuations of the water table in the reservoir altering the existing hazardscape. However, as reported in Chapter 5, people have been resettled in those unstable areas by the project, increasing the place vulnerability of a number of people. It is widely accepted that internally displaced or relocated people are highly vulnerable to shocks in their new environment (Ayata & Yükseker, 2005; Mooney, 2005). However, the EIA reports of both projects failed to capture either the existing vulnerability or the changed vulnerability of the affected group. The above two EIA reports are dominated by biophysical impacts. The socio-economic impacts in the EIA reports are limited to impacts on employment, property values, education, and health and nutrition. Social impacts have not been analysed against the hazards identified in the project area. Therefore, the Sri Lankan EIA process is not designed to assess the vulnerability of affected groups.

Like Sri Lanka, none of the seven cases studied in New Zealand has had vulnerability assessments conducted for the EIA reports, despite the fact that all projects are considered to have substantial hazard risks for affected groups. It was revealed from the expert interviews that the vulnerability of affected groups could be assessed if Social Impact Assessments (SIAs) were conducted. However, it is clear that conducting an SIA for every development project is very unlikely even though social effects are identified in the scoping process. In only four of the seven projects reviewed (including the TGP) have specifically stand-alone SIAs been conducted. However, there is no visible link between the hazard assessment and social impact assessment in any of the four projects for which SIAs are available. For instance, the SIA of the TGP is limited to noise and vibration, air quality, traffic and access, amenity, recreation, and other socioeconomic issues (Rae & Crack, 2011).

Conversely, local council planners argued that current checks in the EIA process are sufficient to address issues such as vulnerability (i.e., public hearings and s.92 provisions). However, in the WIHS EIA process, it is clear that vulnerability-related information has not surfaced except via the expert report commissioned by the consent authority on dam break analysis, which states that critical information relevant to 'consequences' of a dam failure is not available in the dam break analysis. The expert report also failed to emphasize the details of the critical information required to assess the consequences of a dam failure. Similarly, according to an expert, the use of s.92 provisions depends on the technical expertise and commitment of the staff of the consent authority. Most experts believed that councils are more inclined towards biophysical issues rather than social

aspects. Experts believed that better provision in the regional and district plans and national guidance are required to take care of social effects, including the vulnerability of affected groups. It was revealed from the interview with the hearing commissioner that the public often does not pay enough attention to local plans when those are notified, thus the role of regional and district plans in dictating the terms for vulnerability assessment in EIA reports is limited.

Interview findings showed also that the term 'consequences' is often used to describe the condition of vulnerability in New Zealand. For instance, different guidance notes reviewed under section 7.2.2 include a consequences table (i.e. MfE, 2010; Saunders et al., 2013; The Department of Building and Housing, 2008). Close scrutiny of the consequences tables provided in all three guidance notes suggest that the approach is more appropriate for a homogenous community and does not provide a clear picture on interpersonal differences in vulnerability. However, as argued in Chapter 2, hazards have differential impacts on different people and groups (Tobin & Montz, 1997). Therefore, consequences tables provided in the above documents are more about the potential severity of a hazard not the disaster risk. This issue has been recognized in Saunders et al. (2014, p. 21); they argue that the "…vulnerability of a community is just starting to be considered in relation to natural hazards" in current planning practice in New Zealand. This study's findings show that low consideration of vulnerability in planning practice is a result of the type of disaster management approach that has been adopted in New Zealand (i.e., the behavioural paradigm). This hazard based approach recognizes the behaviour of humans as the primary cause in exacerbating hazards, thus leading to over reliance on land-use planning and other engineering solutions to reduce disaster risk (Smith, 2013).

Assessing vulnerability in EIA is not a novel discourse. Several authors have worked on integrating vulnerability assessment into the EIA process (Kværner et al., 2006; Toro et al., 2011). These attempts are more concerned with the ecological vulnerability[14] of the receiving environment but vulnerability of people to development-induced hazards is rarely discussed in the literature. However, it is clear in this study that the disaster vulnerability of people should also be incorporated in to the EIA process to assess a development project's disaster risks. A number of scholars have discussed the factors influencing the social vulnerability of people (Aysan, 1993; Bankoff, 2004; Cutter et al., 2003; Kværner et al., 2006; Mustafa, Ahmed, Saroch, & Bell, 2011; Wisner, 2004; Wisner et al., 2004). Saunders et al. (2013) suggest seeking opinions from experts and the community in the process of vulnerability assessment, but this study suggests that it requires a detailed assessment against the hazard and its likelihood and severity. Wisner (2004) proposes four approaches to

[14] Vulnerability of an ecosystem to stresses over time (Woods, 2008).

assessing vulnerability. He used Aysan's nine types of vulnerability under a 'taxonomic approach'. However, further investigation is required to assess the best approach for vulnerability assessment under existing EIA practice. It is, however, clear that low consideration of vulnerability leads to several implications including over or under estimation of the disaster risk of development projects, and missed opportunities of vulnerability reduction as a risk management option. As discussed earlier, the findings reported in Chapter 5 and 6 show that the vulnerability assessments are ignored and, therefore, the above implications apply to both studied countries.

7.5.2 Decision making

The question about the substantive purpose of the EIA has attracted considerable research attention (Bartlett & Kurian, 1999; Cashmore et al., 2004; Cashmore et al., 2010; Morgan, 2012; van Doren et al., 2013). In the literature, two distinct perspectives on the substantive purposes of the EIA are identified: one is described as using an information processing (rationalist) model and the other is a political/behavioural model (Heinma & Põder, 2010; Morgan, 2012). According to Heinma & Põder (2010, p. 272), the former emphasizes the direct influence of EIA on decision making, while the latter stresses "…indirect consequences, such as environmental education bringing out changes in the values of decision-making authorities, institutional changes, and building consensus". Heinma & Põder (2010) further argue that even though more emphasis has recently been on the political model, the influence of an EIA on project approval decision-making is still a valid question to probe in effectiveness research (see Figure 7.1). Several scholars have investigated this question in order to assess substantive effectiveness (e.g., Heinma & Põder, 2010; Runhaar & Driessen, 2007; Sadler, 1996; van Doren et al., 2013; C. Wood, 1995). This section discusses the influence of an EIA on project approval and the influence of the EIA process on project planning.

Project approval

In Sri Lanka, Technical Evaluation Committees (TECs) are appointed by relevant Project Approval Agencies (PAA) to support them in project evaluation. It was the common perception among the interviewed experts and planners that having a multi-stakeholder mechanism in place for project evaluation is a positive point of the Sri Lankan EIA process. However, the absence of the Disaster Management Centre (DMC) in the process and the lack of transparency of the TEC process have reduced the effectiveness. According to the CEA planner, the TEC process is an internal decision support mechanism, but most experts want to see the TEC as an open and transparent mechanism for project evaluation.

It is also clear from all interviews that most government-sponsored projects are not subjected to environmental scrutiny. According to the planners interviewed, government projects are increasingly not being subjected to EIAs or the decisions have been taken beforehand. However, project EIAs

have some influence, especially in projects proposed by non-state actors. Given that the government is a major investor in the country (U.S. Department of State, 2013), all experts interviewed believed that the influence of EIA on project approval is low and argued the influence on project approval has been diminishing over the years.

The interview with the CEA planner indicated that the CEA is also unclear and unhappy about the project approval process under the NEA 1980. According to the planner there is an over reliance on CEA's decisions from other agencies concerned in making project approval decisions. A close analysis of development planning in Sri Lanka (see Chapter 4) and the findings from this thesis reveal that the reason for the above concern of the planner lies not on over reliance on environmental scrutiny, but on the overall decision-making process. First, there are no tolerance standards except for discharge and emissions. Sri Lanka does not have an active development-planning framework, either at the national or local level, that controls certain developments while allowing others. According to the National Environmental Regulations 1993, PAA shall have regard to the EIA report, submissions made by the public, and any other relevant details in determining whether to grant approval and the approval should be given with the concurrence of the CEA. Therefore, the approval should be solely based on the merits of the EIA and the CEA has a key role to play in each and every decision. However, it is clear that the findings in the EIA are often suppressed by many other factors, including political influence in decision-making, resulting in increased pressure on CEA planners from outside critics based on 'rational' or 'non-political' arguments. Jay et al. (2007) identify these issues as common critiques of the techno-rational approach in decision making.

In contrast, in New Zealand, the EIA is more closely integrated into the development planning framework and most experts and planners interviewed described the influence of EIA as 'very high' in decision-making. However, the value and importance of the EIA report in decision-making depends on the decision pathway that the consent application takes in the decision-making process and on the amount of information decision-makers received from the EIA report. As per the RMA 1991, there are three possible routes for a resource consent application to follow (i.e., public notification, limited notification and non-notification) (see Figure 4.6). If an application is not notified, then the decision is usually based on the council officer's report and the EIA report. Therefore, the influence of the EIA report is often very large in the decision. However, when an application is notified more evidence starts to build into the process, through submissions and public hearings. Moreover, planners can obtain additional information by commissioning expert reports and further information requests in both the above scenarios. Therefore, the importance of the EIA report shrinks in the decision-making process under the notified route. Schijf (2003, p. 305) concludes that "…the effectiveness of EIA [EIA report] as an environmental management tool depends on the degree to which it is able to provide decision-makers with the information they need, in a format that they

understand". This study's findings suggest that the above statement is true only in non-notified applications. It is clear that decisions are based not only on the findings of the EIA report, but on various information sources generated in the EIA process.

One limitation identified in the Sri Lankan EIA process is the lack of national and local tolerance standards. As argued earlier, in contrast to Sri Lanka, New Zealand has a dual approach to resource management, where policy statements and plans dictate the resource use conditions through standards and rules and the EIA process provides a check against the set standards and rules. These are considered highly effective for project screening as local differences can easily be considered in the development planning process. Section 104 of the RMA requires that the consent authority 'must' have regard to the provisions of these policies and plans. According to the EC judge, decision makers are required to give weight to objectives of relevant policy statements and plans and "…those are actually the determining factors". Section 104 of the RMA 1991 clearly specifies that national environmental standards or plans are superior to any actual and potential effects on the environment of allowing the activity. Section 104(2) reads: "When forming an opinion for the purposes of subsection (1)(a), a consent authority may disregard an adverse effect of the activity on the environment if a national environmental standard or the plan permits an activity with that effect". It is clear that this provision is valid only for a permitted activity thus s. 104(2) provides a permitted baseline. In Tairua Marine Ltd v Waikato RC (CIV-2005-485-1490), the High Court ruled that section 104 provides a broad discretion to the consent authority. However, as revealed in this study, regional and district plans are not based on explicit risk assessments, therefore actual and potential risks due to different development activities might not be captured in these policies or plans. This research has not gone into an in-depth investigation of regional and district plans in New Zealand to assess the impact of permitted baselines on DRR. However, the study's findings support Saunders et al. (2014) and suggest that provisions in s. 104 (2) give more weight to regional and district plans in decision-making compared with EIA findings and should be investigated further to assess their implications on overall risk reduction.

Influence of EIA process on project planning

There is a clear difference between Sri Lanka and New Zealand on how the EIA processes influence project planning. In Sri Lanka, the EIA findings are often not considered in project planning, whereas, in New Zealand, there is a high likelihood of EIA findings being used in project planning. In Sri Lanka, the two case studies revealed that adequate attention is not given during project planning to the findings of the EIA reports and the implementation of approval conditions. In the STDP, mitigation measures recommended in the EIA report have not been taken into account in the project design (e.g., flood mitigation). Even though the EIA report clearly identified that the road is passing over "Kalu Ganga" flood plain and also emphasized community concerns about aggravated flood risk due

to the road, and according to a RDA planner, the project-design team failed to recognize that the project actually passes over a flood plain. This means the project-design overlooked the findings of the EIA report. Similarly, in the UKHP, landslide risk was emphasized in the EIA report, but that risk was not considered in the resettlement of affected people.

In contrast, most planners and experts interviewed in New Zealand suggested that the conditions attached to resource consents are usually implemented and the EIA process is articulated in a way that the EIA influences the shape of development activity. According to the regional planner, even though the conditions are not in place in the approval, developers are still required to take measures to curtail negative effects of the project. Nevertheless, it is also clear that the conditions placed on a resource consent are often dominated by biophysical effects management; attention to social effects management is weak. Consistent with the Disaster Risk Incubation Model (see Figure 2.5), having strong conditions to manage social impacts is crucial in vulnerability reduction and reducing disaster risk incubation. Therefore, lack of attention to social issues in the early stages of the EIA process (i.e., scoping and impact identification) can impede the effectiveness of EIA as a risk management tool.

7.6 Contextual effectiveness

The influence of context or governance quality on substantive effectiveness is an important question in effectiveness research. Alshuwaikhat (2005), Marara et al. (2011) and Wang et al. (2012) conclude that governance quality is a key aspect in why some EIA systems deliver better results than others. Therefore, it is important to understand the influence of contextual factors on the EIA process and essentially, how robust is the EIA system to its context and the variable governance quality. As reported in Chapter 2, different scholars have considered different contextual dimensions in building their argument about the importance of context on EIA effectiveness. It is practically impossible to consider all those different dimensions in a single research project of this type. It is however, important to carefully select the most relevant contextual dimensions to a particular research context (Hilding-Rydevik & Bjarnadóttir, 2007). Therefore, in this study, public participation, institutional capacity, policy and political context, good governance and conditions of international funding agencies are considered relevant and important.

7.6.1 Public participation

Public review of the EIA report is a legal requirement in many countries including Sri Lanka and New Zealand. Most EIA effectiveness literature overwhelmingly focuses on the public review phase of the EIA process, but several scholars have argued for public participation in the early stages especially in scoping (e.g., Gallardo & Bond, 2011; Hartley & Wood, 2005; Nadeem & Fischer, 2011; Pölönen et al., 2011). These researchers argued that public participation in the early and later stages of the EIA

process is not legally required, but encouraged. However, genuine opportunities for full public participation throughout the process manifests the level of governance quality and democracy existing in a particular country (Shepherd & Bowler, 1997). This study's findings correspond with Shepherd and Bowlers' (1997) conclusion that public participation beyond legislative requirements can benefit both the public and even the project. The findings also suggest that public participation in the early stages of the EIA process as well as in post approval stages is fundamental to ensure that disaster risks are adequately addressed and identified measures are effectively implemented. This section discusses public participation in the early stages and post approval stage of the EIA process.

It is clear from the interviews in both countries that public participation in the early stages of the EIA process, especially in scoping, is very important to broaden the scope of the EIA report and prioritize the important impact areas on which the EIA should be developed. This corresponds with the findings of Gallardo & Bond (2011), Nadeem & Fischer (2011) and Pölönen et al. (2011). In Sri Lanka, the National Environmental Regulations (1993) state that the PAA may consult the public in developing ToR for an EIA report. This requires the PAA to get the affected groups involved in scoping, but interviews with the legal expert revealed that this requirement is ignored in practice and the affected groups are not invited into scoping meetings.

In New Zealand, there is no statutory requirement for an applicant to consult the public or affected parties before an application is lodged for resource consent. According to the RMA, the nature and type, if any, of public participation is at the discretion of the applicant. However, the Environment Court has commented that it is "…foolish for a party not to consult with those with a known interest in a proposal..." (Watercare Services Ltd v Auckland Council [2011] NZ EnvC 155 p. 33). It is clear from the interviews with the regional planner and the experts that there is no formal mechanism to get the public involved in scoping and there is no requirement for the scope of an EIA report to be subjected to a public review before the full assessment is started and therefore public consultation is often absent during scoping.

Public participation during impact identification is not legally mandated in either of the two countries. This has not been explicitly discussed in the literature. In Sri Lanka, interviews with community members suggested that affected groups should not be considered as passive receivers of information by authorities and developers, but should be engaged actively in impact identification. Interviewed experts also believed that the community has a key role to play in impact identification. However, the two case studies revealed that public participation in impact appraisal is completely ignored. It was also evident from the two case studies that the public possess a great deal of knowledge on the existing hazardscape of the environment and the public's knowledge can be used to identify potential changes of existing hazards by the proposed development projects. However,

the EIA processes in both cases had little regard for local knowledge. The lack of public consultation and participation has also led to poor understanding of the social issues, including the vulnerability of the community.

In New Zealand, impact identification is an expert driven process and the level of public participation in impact identification is not clear in the two case studies. As per Schedule 4 (1)(h) of the RMA 1991, an EIA should include details of the persons affected by the proposal and, if they were consulted, any response to the views of the consulted parties. However, according to the first social scientist, the affected groups are often not consulted in impact identification and poor representation of social issues in the scope of the EIA report also leads to weaker incorporation of public views in impact identification.

Finally, and like the early stages of the EIA process, consultation and public participation is not legally required in later stages of the EIA process in both countries. Therefore, the public has little input to risk management, especially in compliance monitoring in both countries. Public participation in post-approval monitoring does not occur in Sri Lanka. Community members interviewed were ready and willing to take part in compliance monitoring, since such involvement enables them to get first-hand experience of the implementation of risk management initiatives by the project. Even though most planners and some experts were sceptical about the technical know-how and commitment of the community for project monitoring, the disaster management expert argued that public participation in monitoring should be promoted. Under the community-based disaster preparedness strategy of the DMC, the public has a distinct role to play in vigilance groups (Weerasinghe, 2013), which requires them to monitor new risks in their environment. This study's findings support the need for such public involvement in compliance monitoring. However, lack of transparency in project approval and the unavailability of approval conditions in the public domain restrict affected groups from participating in impact monitoring. A lack of interest among authorities, especially in the CEA, in public involvement in impact monitoring, is a major constraint if such initiatives are to be promoted.

In contrast, New Zealand, through its open, transparent governance policy, supported by the LGOIMA 1987, ensures that the public has ready access to full information on project approvals and conditions. Even though local authorities are required to monitor the exercise of resource consents in their regions or districts (RMA, 1991, s.35), they are not required to get the public involved in project monitoring. However, the public can submit their complaints on the effects of projects to the local authority and can even take action in the Environment Court to have conditions enforced and adverse effects (not covered in conditions) to be abated. The consent authority can review the conditions of an approval at any time under s. 128 of the RMA. It was revealed that, in some cases,

approval decisions require public consultation to finalize conditions and establish monitoring committees with the participation of the affected groups.

7.6.2 Institutional capacity

Lim (1985) and Ebisemiju (1993) discuss two main categories in relation to cooperation and coordination between different agencies in EIA: centralized and decentralized institutional arrangements. In decentralized arrangements, the roles of EIA are shared among various tiers of government (i.e., hierarchical) or among various lead agencies (i.e., functional) (Ebisemiju, 1993). Both Sri Lankan and New Zealand EIA processes are consistent with the decentralized model. Therefore, genuine decentralization of environmental management functions to the local level and the resources and technical expertise available at such levels are important for the effectiveness of the EIA to be achieved. As reported in Chapter 6, the findings from New Zealand also suggest that decentralization of environmental management functions to local levels facilitates the process of managing a broad spectrum of development activities. Moreover, the ability of the agency that oversees the EIA process to coordinate all relevant parties is also an important aspect of capacity. Under this section, decentralization and coordination among agencies are discussed.

Decentralization

In Sri Lanka, the lack of capacity of the CEA to deal with disaster risk and post approval monitoring were mentioned and discussed earlier in this chapter. In Sri Lanka, both functional (i.e., project approval agencies) and hierarchical (i.e., provincial level) decentralization prevail. It is clear that some functions, especially proposals that require IEEs, are now being handled by the provincial offices of the CEA to address capacity gaps. According to the CEA planner, this development is not for devolution of powers but to delegate some responsibilities to provincial level. It was revealed that even though functional decentralization is well integrated into the system, hierarchical decentralization has made little progress. The Thirteenth Amendment to the Constitution of Sri Lanka listed environmental management as a concurrent subject, which means both central government and provincial governments hold the responsibilities for environmental management, including project approval. However, only the North Western Provincial Council has used these provisions and has established a provincial environmental authority (i.e., North-Western Environmental Agency]. Some experts and planners showed their concern about having a separate provincial environmental authority. According to the legal experts, this is a failure of the legislation since the provincial agency has added to the existing coordination challenges of the project approval process.

In contrast, New Zealand has a decentralized environmental management system that enables coverage of a wider spectrum of development activities. It was evident from the interview with the first social scientist that despite having a stronger local governance system, New Zealand's risk

governance process is constrained by a lack of technical expertise at local levels especially for dealing with social effects. According to the regional planner, local governments often rely on external experts through commissioning expert reports to deal with the shortages of technical expertise. However, according to many experts, it is also important to have an appropriate internal capacity to understand resource consents and their implementation effects on society; this is essential in order to access the right expertise from external sources for risk management. However, it is clear from the interviews with the first EIA expert and the district planner that maintaining skilled personnel is a key challenge for most rural district authorities.

Coordination

In Sri Lanka, scoping committees and TECs comprise multi-layered and multi-agency participation. Moreover, functions are decentralized among project approving agencies. Therefore, appropriate coordination among these agencies is vital to make those mechanisms effective. Better coordination among decision-makers and planning and development authorities can play a decisive role in the consideration of concerns early in the EIA process (Panigrahi & Amirapu, 2012). Like other countries in the region (Nadeem & Hameed, 2008; Panigrahi & Amirapu, 2012), the lack of coordination and cooperation among development planning agencies in Sri Lanka was well evident during the interviews with different agencies' planners. According to the DMC planner, lack of support from the CEA has compelled them to look for other strategies to tackle development-induced disaster risks. On the other hand, the CEA planner blamed the DMC and claimed that the support of the DMC is not available for the EIA process. According to the second EIA expert, poor coordination is a common issue in Sri Lankan public administration. The expert claimed that the current coordination issue between the DMC and the CEA is a good example of the above.

In New Zealand, several regional and district councils are often required to get involved in any significant resource consent application. According to the planners and experts, matters get more complicated when there are differences in regional or district plans. It was also revealed from the interviews with the regional planner and the hearing commissioner that the inconsistencies among regional plans and regional and district plans make coordination difficult at the local level. The Technical Advisory Group report for the next phase of RMA reforms also claims that one of the reasons for ineffectiveness of local authorities to plan for natural hazards is "Shortcomings in governance and inter-governmental cooperation – including a lack of effective coordination between district and regional councils, and the activities of planners and emergency management staff…" (Dormer et al., 2012, p. 24). The provisions of the RMA require consent applications to be referred to other relevant agencies, where appropriate (e.g., Ministry of Primary Industries, Maritime New Zealand, and Department of Conservation). Therefore, inter-agency coordination is explicitly required among these agencies under such provisions. However, according to one expert,

coordination is weak because of the compartmentalized nature of these organizations. For example, all experts and planners argued that the MCDEM is currently not involved in the resource consent process and the MCDEM should be more involved in the EIA process. Irrespective of the social and economic development status of New Zealand, these findings correspond with the experience of other developing countries of poor coordination and communication among different agencies (Ahmad & Wood, 2002; El-Fadl & El-Fadel, 2004; Nadeem & Hameed, 2008; Panigrahi & Amirapu, 2012).

7.6.3 Policy and political context

As argued in Chapter 2, political support and policy context shape the environmental management mechanisms and influence the approaches pursued by different agencies for dealing with risk. This section discusses the political support for the EIA processes and the policy context in which the EIA is implemented in Sri Lanka and New Zealand.

Political will

Marara et al. (2008) emphasizes the importance of political will in achieving effectiveness in EIA. Even though the political influence of the government agenda towards development is not uncommon in both studied countries, how such influences materialize within the established legal framework of the country make the difference between good and bad governance. New Zealand shows high respect for the rule of law, but Sri Lanka has a very poor record on the same (The World Bank Group, 2013). As reported in Chapter 5 (see pages 128-129), the Sri Lankan EIA process is often subjected to political interference putting its effectiveness at risk. According to most interviewed experts, the EIA process usually lacks the blessing of the political authority. The second EIA expert rated political support for the EIA process as “zero”. Such a lack of political support, according to C. Wood (1995), is the biggest constraint to effective EIA in developing countries. Experts further argued that the feasibility of some projects is not being studied because the decisions have already been taken to implement those projects. However, according to the CEA planner, a more adversarial approach is taken for some private investment proposals. Government agency planners refrained from answering any questions related to the political will in the EIA process.

In New Zealand, according to the experts, even though political pressure can be seen on some development activities, political influence does not affect decisions on resource consents. The experts and planners claimed this is because of open governance, respect for the rule of the law and opportunities available in the EIA process to contest and appeal decisions. Experts further believed that having the Environment Court in the process is a major advantage to make the EIA a more transparent and accountable process.

Policy context

Even though it is not explicitly required under the NEA 1980, it is clear from the interview with the CEA planner and the interviewed experts that provisions of other legislation (i.e., the Urban Development Authority Act No 41 of 1978, the Soil Conservation Act, No. 24 of 1996, the Mines & Minerals Act No. 33 of 1992, etc.) are also considered in decision-making. According to the CEA planner, the approval of relevant agencies is required with the EIA report, if such approval is mandatory under the provisions of the above Acts. However, there is no legal requirement to obtain the approval of the DMC in the EIA process. As reported in Chapters 4 and 5, the DM Act No. 13 of 2005 is emergency management legislation, but the Act does not have provisions on risk reduction. On the other hand, the National Strategy of Disaster Management (MDM&HR (Ministry of Disaster Management and Human Rights), 2006) recommends assessing the disaster risk of development projects through a disaster impact assessment process. Nevertheless, the national strategy is not yet legally enforced. In addition to the NEA 1980, both the Coast Conservation Act No. 57 of 1981 (CCA) and the Fauna and Flora Protection (Amendment) Act No. 49 of 1993 (FFPA) also have provisions for separate EIA processes. A comparison of the three EIA processes was given in Chapter 4 (see Table 4.2). Even though these three (i.e. The NEA 1980, CCA 1981, FFPA 1993) do not overlap, none of the three Acts has explicit provisions to assess disaster risk of development projects.

In New Zealand, in addition to the RMA 1991, the Local Government Act 2002 (LGA), the Civil Defence and Emergency Management Act 2002 (CDEMA), The Building Act (2004), and the Local Government Official Information and Meetings Act 1987 (LGOIMA) all have provisions related to natural hazard management. Except for the RMA, none of the above has any direct or explicit provisions related to the EIA process, and all but the CDEMA pay attention to natural hazard risk in development planning. The Building Act has provisions to enforce a dam safety assurance programme for medium and high potential dams, which includes, among other things, safety reviews of the dam, a monitoring plan and an emergency action plan. The lack of consistency between the above Acts was discussed earlier in this chapter; such inconsistencies have also been raised in the Technical Advisory Group report (Dormer et al., 2012), which recommends improving linkages among relevant legislation.

Private property rights

There is a considerable debate among experts and planners in New Zealand about private property rights. This is mostly attached to the neoliberal policies promoted in the country. According to consent authority planners, local governments' ability to dictate terms on resource use is generally constrained by the private property rights of the owners. It is generally accepted that an owner of property rights possesses the consent of the community to exercise his/her rights without interference, provided that his/her actions are in keeping with the rule of Law (Demsetz, 1967, p.

347). This study did not attempt to go into the detail of private property rights and their implications for land use planning, however, it is important to look at the context in which such limitations emerge for local authorities. Neo-liberalism and private property rights has been a subject of international discourse over the last few decades as physical property rights of owners make traditional matters of land use planning much more difficult for governments in contexts where neo-liberal policies are promoted (Hatcher, 2010).

The RMA 1991 is clear and explicit on the use of land and property rights. According to section 85(2) of the RMA, any person can challenge a plan or proposed plan in the Environment Court if he/she believes that the provision or proposed provision would limit reasonable use of land. This protects the owners' rights of use of the property. However, reasonable use is defined in section 85 (6) as "…the use or potential use of the land for any activity whose actual or potential effects on any aspect of the environment or on any person other than the applicant would not be significant". Therefore, according to the RMA, the owner can enjoy private property rights as long as the use of the land does not make any significant negative effect on the environment. The High Court in Coleman vs. Kingston (AP103-SW00) ruled that property rights and other provisions of the Property Law Act 1952 do not conflict with the RMA. The Court further stated that the exercise of property rights needs to fall into line with the RMA. This is consistent with the arguments presented in the literature (Demsetz, 1967; Friedman, 2002). The property rights issue in New Zealand can be explained using an example of owning a car. You can drive the car as long as you obey the rules and do not harm others. In order to protect the general public and other road users from any misbehaving act of drivers, specific standards and rules are in place. Ownership rights do not supersede the rights of others to live without being subjected to any harm. Therefore, the findings in Chapter 6 suggest that the private property rights issue among planners is more a politically constructed obstacle than a real issue.

Good governance principles

As argued in Chapter 2, well-conceived EIAs should reflect many of the elements of good governance principles (Kakonge, 1998). This chapter has already discussed various good governance principles, including openness, participation and accountability, and will not repeat that discussion here. It is, however, important to reemphasize the importance of access to information. Like other research (e.g., Baker & McLelland, 2003; Hartley & Wood, 2005; Transparency International, 2003), access to information is identified in this research as the key influence on accountability, transparency and effective participation in risk governance and in the battle against corruption.

According to the UNISDR (2011), access to information is effective only when governments actively support the right to information through established legislation and when citizens are aware of their legal rights and are willing to claim them. Hartley & Wood (2005) argue that the public should have

access to a wider range of information if effective participation is to occur. In this context, New Zealand's LGOIMA 1987 plays an important role in promoting open and participative governance by local authorities. Therefore, provisions in the RMA and LGOIMA are together expected to ensure all information about resource consents, decisions and conditions are made available for the public, as of right. It is clear from the interviews that planners respect the rights of the public to access relevant information. According to an environmental commissioner, once the decision is made "It is a public document". New Zealand's open government policy is clearly evident in two case studies and in the interviews with planners and experts. It is also clear that such openness has facilitated public participation and has influenced accountability and regulatory quality of consent authorities.

In contrast, the right to information is heavily compromised in Sri Lanka through a lack of such legislation (Transparency International Sri Lanka, 2011). It is clear from the two case studies and interviews that neither the public nor the experts have access to project related information, in most instances. Even though the NEA is clear and explicit about the disclosure of approval decisions, the conditions attached to the approval are not legally required to be made public. Therefore, lack of access to information has affected every step of the EIA process in Sri Lanka and has eventually reduced the overall effectiveness of the EIA process in addressing disaster risk.

7.6.4 International governance context

Dependency theorists have for many years been arguing about the influence of multi-lateral aid on economic, social and environmental management policies in developing countries (Bornschier et al., 1978; Maizels & Nissanke, 1984; Shandra et al., 2004; Shandra et al., 2011). Some scholars argue multi-lateral and bilateral should not be considered equally because their motives and policies would be different (Alesina & Weder, 1999; Maizels & Nissanke, 1984). Maizels & Nissanke (1984) conclude that bilateral aid allocations for developing countries largely depend on donors' foreign economic, political and security interests, whereas multi-lateral aid is allocated chiefly on a recipient's need criteria. Since 2009, Sri Lanka has increasingly sought bi-lateral funding especially from China and, therefore, the influence of Chinese economic and political interests can be seen in all spheres of domestic governance (see Chapter 4). However, it is the influence of Chinese funding on environmental management, especially on the EIA process of Sri Lanka that is the subject for discussion here.

Examining the influence of bi-lateral and multi-lateral aid on the EIA process is not novel. A number of scholars, over many years, have pointed out the influence of aid agencies on environmental management practices of recipient countries (Maizels & Nissanke, 1984; Ortolano & Shepherd, 1995). Like other international examples, the influence of multi-lateral and bi-lateral aid policies on the Sri Lankan EIA process is obvious. According to the CEA planner, they are more comfortable

handling projects funded by such agencies because the foreign expertise and technical support is also attached to those development programmes, which reduces the burden on the officials. However, the legal expert disagreed with the planners and argued that such influences show the ineffectiveness of the domestic EIA process.

As reported in Chapter 4, China, through its increased role as a bi-lateral funder in Sri Lanka, has gained the largest share of total Sri Lankan foreign aid contributions. Besides the international suspicion that China is increasingly funding rogue nations (Woods, 2008), increased Chinese loans, mostly of a purely commercial nature, have created a substantial impact on the Sri Lankan EIA process. It is evident from the interviews with the planners and the experts that this influence is two pronged. First, it has taken away the positive influence traditionally exerted on the EIA process by other multi-lateral and bi-lateral agencies. Secondly, the projects funded by Chinese loans are politically influenced, thus are not usually subjected to environmental and public scrutiny. Therefore, it is clear that the increased role played by bi-lateral aid from China could have substantial negative effects on the EIA process of Sri Lanka both in the short and long term.

Compared with Sri Lanka, New Zealand does not depend on foreign aid. Moreover, the funding sought to implement projects that are planned and implemented under the domestic development-planning framework is largely through private investors with risk borne by insurers and international re-insurance agencies. Therefore, the conditions of bi-lateral funding have little or no influence on New Zealand's environmental management efforts and any influence that might be exerted by international re-insurers was not assessed as part of this research.

7.7 Chapter Summary

This chapter presented a comparative analysis of the effectiveness of the EIA processes of Sri Lanka and New Zealand in addressing disaster risk using the modified effectiveness triangle presented in Figure 7.1. The comparative analysis of the findings shows that DRR is not explicitly integrated into either country's EIA processes. However, general provisions and guidance are better provided for in the New Zealand EIA process than in Sri Lanka. Even though the legal provisions of the Sri Lankan EIA process are considered clear and explicit, except for a few gaps, the practice is weak in many aspects. This shortcoming results in limited procedural effectiveness in Sri Lanka compared with New Zealand. Explicit integration of hazard risk leads to including a detailed assessment of natural hazard risks in the New Zealand EIA process, which is, in many aspects, weaker in the Sri Lankan process. However, in both countries, vulnerability assessments are not conducted and, therefore, the potential disaster risk of development activity is not properly estimated. Even though the approval decisions in New Zealand are often based on the EIA process, the lack of disaster risk assessment in the EIA process does not provide sufficient information for decision makers, reducing the substantive effectiveness

of the EIA process. In the Sri Lankan context, neither is disaster risk estimated nor is project approval consistently based on the EIA process.

In addition, the domestic governance context of Sri Lanka does not provide a conducive environment to ensure the current legislative provisions are implemented effectively and efficiently. Poor institutional capacity, weaker policy and political context and weaker adherence of governance principles all lead to poor contextual effectiveness and, in turn, poor procedural effectiveness. In contrast in New Zealand, even though some provisions of the legislation are vague and implicit, many potential malpractices are avoided because of the high level of accountability and transparency of the process. The lack of disaster risk integration into the EIA legislation is common in both countries. This is further aggravated by inconsistency and lack of coherence between disaster management legislation and EIA legislation. As a result, institutional and cognitive integration suffers. Even though both environmental management and disaster management functions at local level are assigned to local authorities in New Zealand, lack of guidance (i.e., national environmental standards on disaster risk) on addressing disaster risk of development programmes limits the potential of such institutions to address the disaster risk of development projects. Funding conditions play a significant role in the Sri Lankan EIA process to ensure that EIAs are conducted and the provisions of the Acts are implemented adequately, at least in the projects funded by some multi-lateral and bi-lateral agencies. This leads to increased procedural effectiveness. However, recent changes in the external funding flow have reduced such positive influences on the EIA process. The conclusions derived from this discussion are presented in the next chapter, together with policy and theoretical implications and limitations of the research.

Chapter 8

Conclusions

8.1 Introduction

As shown in Chapter 1, there has been an exponential increase in extensive disaster risks over the past 20 years, especially in the low and middle-income countries (UNISDR, 2011). Previous research suggests that extensive disaster risk is a direct result of mal-development and poor governance (see Chapter 2). Even though Environmental Impact Assessment (EIA) is conducted as a development control to address the environmental effects of development projects, the effectiveness of EIA processes in addressing disaster risk has not previously been evaluated. This study set out to explore the effectiveness of EIA processes in addressing development-induced disaster risk. In order to achieve this, the research focussed on four questions:

1. Policy Integration: how well, if at all, is disaster risk reduction integrated into EIA processes?
2. Procedural Effectiveness: assuming it is integrated then how well is it practised?
3. Substantive effectiveness: does the EIA process achieve the objectives set and result in disaster risk reduction? and
4. Contextual effectiveness: what influence does the risk governance have on substantive effectiveness?

Consistent with the above four research questions, the study conducted a comparative analysis of the effectiveness of EIA processes in Sri Lanka and New Zealand. This chapter draws the key conclusions from the above research questions based on the overall analysis carried out in Chapter 7. The chapter also revisits the disaster risk incubation model and discusses how this study contributes to disaster risk management theory as well as policy development in the context of Sri Lanka and New Zealand, and potentially also globally. Finally, the chapter highlights the limitations of the study and points out key recommendations for future research.

8.2 Evaluation against the research questions

Details of the empirical findings were presented in Chapters 5 and 6. In this section the main empirical findings are evaluated against the four research questions.

8.2.1 Policy integration: how well, if at all, is disaster risk reduction integrated into EIA processes?

The empirical findings show that explicit reference to disaster risk is absent in environmental management legislation in both Sri Lanka and New Zealand. In Sri Lanka, the National Environmental Act (NEA) 1980 does not cover impacts on people; so technically, disaster risk does not come under its purview. However, in practice, effects on people are assessed and disaster risk is implicit under "…the avoidable and unavoidable adverse environmental effect" in the NEA 1980. In New Zealand, according to the regional planner interviewed, disaster risk is implicitly mentioned under "…any potential effect of low probability which has a high potential impact" (RMA, 1991, s.3(f)). Despite these views, most planners and experts interviewed argued for more explicit reference to disaster risk in the EIA process in both countries. The vagueness of such provisions has led to ambiguous and inconsistent or sometimes even conflicting practices (see section 8.2.2).

Lack of consistency and coherence between environmental legislation and disaster management legislation is common in both countries. In New Zealand, the Civil Defence and Emergency Management (CDEM) strategy (Department of Internal Affairs, 2008b) expects risk reduction to be carried out under the Resource Management Act 1991 (RMA) provisions, but the RMA does not have any explicit reference to the CDEM strategy nor DRR requirements. Similarly, the National Disaster Management Policy of Sri Lanka (Ministry of Disaster Management, 2013a) requires assessing the disaster risk of development projects but the role of disaster management authorities in the project approval process is not recognized in its environmental legislation.

Lack of guidance and poor coordination among environmental management and disaster risk management agencies of both countries have led to insufficient attention to disaster risk in the EIA process.

8.2.2 Procedural effectiveness: assuming it is integrated, then how well is it practised?

As argued in Chapter 7, sensitivity to disaster risk should be present in all steps of the EIA process in order to ensure that the disaster risk of development projects is assessed and treated effectively. Therefore, the effectiveness of EIA in addressing disaster risk is directly related to how well these steps are designed and implemented. However, it has been revealed that there are many gaps in how those steps are implemented in both countries. For instance, even though provision for consideration of alternative locations and technologies (methods) is clear and explicit in the RMA 1991 in New Zealand, both the interviews and case studies revealed that consideration of alternatives for a proposed development activity appears weak in practice. In Sri Lanka, both the policy and practice is weak in the consideration of alternatives.

Project screening in both Sri Lanka and New Zealand is not effective in terms of considering development-induced disaster risk. Providing a list of prescribed projects at the national level has proven ineffective in Sri Lanka because of its inability to take local differences into account during screening. In New Zealand, screening is done against the different classes of activities listed in relevant district and regional plans (i.e., permitted, controlled, restricted discretionary, discretionary, non-complying and prohibited), but the experts argued that the above classification is often not based on a full and explicit risk assessment. Recent studies also show that neither regional policy statements nor district plans are explicitly based on systematic risk assessments and vulnerability is often not assessed in such policies and plans (Saunders et al., 2014). In addition, even though the two countries have different approaches to scoping (i.e., an agency driven approach in Sri Lanka compared with a developer driven approach in New Zealand), neither has proven effective in terms of its ability to provide a sound scope for the EIA to address disaster risk effectively.

Compliance monitoring is weak and ineffective in Sri Lanka because of a lack of clear, explicit guidance and the legal requirements on post approval monitoring. This has been aggravated by the lack of transparency of the process, insufficient resources and poor motivation of the authorities. In contrast, in New Zealand, both developers and local authorities are legally required to do compliance monitoring and both local authorities and developers usually meet the requirements of compliance monitoring. It is clear that transparency of decision-making and availability of all relevant information on approval decisions, including conditions of the approval, in the public domain play a significant role in increased monitoring effectiveness.

8.2.3 Substantive effectiveness: does the EIA process achieve the objectives set and result in disaster risk reduction?

In explicit reference to disaster risk in the EIA process, procedural deficiencies of the EIA process have led to a low level of substantive effectiveness in both countries. Neither EIA system effectively addresses the disaster risk of development projects. The case studies researched show that there is inconsistency in how disaster risk is assessed and treated in the EIA processes. Hazard assessments are conducted in both countries to a varying degree, but vulnerability has either been minimally or narrowly (as a part of social impact assessment or as a separate assessment), or not assessed in any of the studied cases. Hazard assessment in Sri Lanka is weak and falls short in terms of its depth and width; in New Zealand, it is more detailed and extensive. However, neither country has vulnerability assessments conducted even in their simplest forms. Moreover, social impacts are given weaker attention in both countries and such assessments are independent of hazard assessment, leaving little opportunity for assessing the disaster risk of development projects. In New Zealand, the execution of social impact assessments is not consistent in practice. For instance, even though a Social Impact Assessment (SIA) has been done for four of the studied projects, including the

Transmission Gully Project (TGP), a SIA has not been done for another three including the Waitohi Irrigation and Hydro Scheme (WIHS), which is considered a project that potentially increases the vulnerability of many downstream communities.

In Sri Lanka, the EIA process is often not a decisive tool in approving most government-sponsored projects. However, decisions on development activities proposed by non-state developers usually are subjected to environmental scrutiny and decisions are based on the evidence from the EIA process. In New Zealand, the level of influence of the EIA report (called an AEE) on project approval varies depending on the decision pathway taken for the consent application and the quality of information provided by the report. However, when the full EIA process is considered, approval decisions are based on the EIA process and are also based on whether the effects identified in the EIA process fit with the provisions of relevant standards or plans. Therefore, effects, including disaster risks of an activity, may be disregarded if relevant standards or the plans permit an activity with that effect. As argued earlier in this section, the New Zealand EIA process is not often based on systematic disaster risk assessments. Therefore, even though the EIA process provides the most up-to-date information compared with plans, disaster risks identified and assessed in the EIA might show lower risks than the actual disaster risk of the activity. Since plans may not be based on current information and generally are not based on systematic risk assessment, the above provisions and procedures in decision-making reduce the substantive effectiveness of the entire process.

There is a clear difference between Sri Lanka and New Zealand in how the findings of EIA reports are used in project planning. In Sri Lanka, EIA reports are often not considered in project planning, especially in government-sponsored projects, whereas, in New Zealand, there is a high tendency that EIA findings are used in project planning. There is clear empirical evidence that the two projects studied from Sri Lanka have increased disaster risk in the environment, proving that the EIA processes in these two projects had been ineffective in reducing disaster risk. Similarly, in New Zealand, the disaster risk of the studied projects has not been assessed adequately. In the WIHS, community members have already raised their concerns about increased disaster risk in their submissions to the regional council. Even though the real implications of such inadequate assessments will only be realized in the future when the project impacts are actually felt, experience from other poorly planned infrastructure projects in New Zealand such as Opuha Dam[15] in Canterbury and around the world (see Chapter 2) suggests that such impacts are imminent.

[15] The Opuha Dam in South Canterbury, New Zealand, had collapsed during a flood in 1997. The dam was under construction when the breach happened.

8.2.4 Contextual effectiveness: what influence does risk governance have on substantive effectiveness?

The influence of governance on substantive effectiveness is an important question in effectiveness research. Several scholars have concluded that the governance context is a key aspect in why some EIA systems deliver better results than others (Alshuwaikhat, 2005; Marara et al., 2011; Wang et al., 2012). In this study, a number of good governance principles including public participation, political will, transparency, accountability and access to information were considered as factors that directly influence EIA processes.

There is a clear difference between Sri Lanka and New Zealand in the level of the quality of their governance and this has implications for the respective EIA processes. Based on interviews with experts, planners and community members, public participation in Sri Lanka appears as "manipulation" or pursuing public education on project benefits. Any attempt to gain public participation is seen only in reviewing EIA reports; public participation during other steps of the EIA process is absent. Even though the NEA 1980 is clear and explicit about public participation in the EIA report review, it is weak in practice. In contrast, public participation in reviewing EIA report is encouraged in the New Zealand EIA process, but it is again weak in other stages. In New Zealand, public participation usually takes place in terms of public consultation. From the High Court definition of consultation, "…the party obliged to consult, while quite entitled to have a working plan already in mind, must keep its mind open and be ready to change and even start afresh" (Wellington International Airport Ltd v Air New Zealand [1993] 1 NZLR 671). Therefore, the public is given greater negotiation power in the process of public consultation. However, it is still possible to have poor consultation in practice and there are cases where a public outcry emerges because of a lack of adequate consultation.

Even though political influence on development planning is common in both countries, political influence in the Sri Lankan EIA process affects even the project approval decision. This is uncommon in New Zealand. Lack of transparency and lack of access to information has made public participation weaker in the Sri Lankan EIA process than in New Zealand. On the other hand, in New Zealand, respect for the rule of law and accountability of the authorities encourages them to follow the legislative provisions and therefore increases procedural effectiveness. However, the findings of this research have revealed that such contextual factors do not have a significant influence on the level of substantive effectiveness in New Zealand. Therefore, the level of quality governance affects only procedural effectiveness, but does not have a direct influence on substantive effectiveness.

8.3 Theoretical and methodological implications

This section explains how the findings of this research contribute to existing knowledge on disaster risk management and effectiveness research at both theoretical and methodological levels. Based on the findings of this study, this section first revisits the disaster risk incubation model presented in Chapter 2 and then evaluates the modified EIA process of the Caribbean Development Bank (CDB). Finally, the section also evaluates previous research findings on the influence of the governance context on the effectiveness of the EIA process.

Chapter 2 concluded by presenting the disaster risk incubation model. The model represents the relationship among mal-development, governance context and disaster risk. The model was constructed based on the disaster incubation theory developed by Turner (1976). Turner (1976, p. 381), after investigating a sequence of events associated with a major disaster, described an 'incubation period', which he explained as the time period in which "…accumulation of an unnoticed set of events" leads to the actual onset of disaster. Later, a number of scholars have applied the disaster incubation theory in different contexts. For instance, Mulvihill and Ali (2007) apply this concept to explain the damage caused by Hurricane Katrina in 2005 and argue that the higher casualties among vulnerable groups can be traced back to years-long risk incubation in Greater New Orleans region because of poor land use planning and bad political decisions that put such groups in harm's way. Therefore, in Chapter 2, it was argued that both mal-development and poor governance incubate disaster risks in contemporary society. The scholars who promoted the disaster incubation theory have also argued that a wide-ranging assessment, which covers both social and biophysical dimensions, is required to capture the complex set of factors and processes that lead to disaster risk incubation (Ali, 2004, 2009; Mulvihill & Ali, 2007; Rydin, 2006; Seager, 2006). Mulvihill and Ali (2007) emphasize that the objective of employing environmental assessments in development planning is to assess such factors and processes. Therefore, the ability of EIA to assess both biophysical and social factors that lead to disaster should be a critical feature of any EIA system to address disaster risk (Ali, 2009; Mulvihill & Ali, 2007).

Turner (1976) and the above scholars, however, applied disaster incubation theory in post-disaster contexts to understand the causal factors and processes behind a particular disaster. Environmental impact assessment is a predictive tool, which is employed to evaluate potential effects of a development project. Therefore, this study argues for a more systematically designed EIA process to investigate potential biophysical and social factors and processes that incubate disaster risk in order to avoid any such risk incubation. It is in this context that the research evaluated the effectiveness of EIA processes of Sri Lanka and New Zealand. The research also investigated the domestic governance context in which EIA is implemented and the influence of funding conditions, which is a part of the

international governance context. Figures 8.1a and b show the influence of the domestic governance context and the funding conditions of multi-lateral and bi-lateral agencies.

It is clear that, though the conditions of funding agencies play a major role in determining the development planning process in Sri Lanka, they are of little or no importance in New Zealand (Shown in a . On the other hand, the domestic governance context in New Zealand has a higher perceived governance quality and more elaborate environmental policy framework than Sri Lanka. However, the lack of DRR integration into EIA legislation leads to insufficient attention to disaster risk in both Sri Lanka and New Zealand. The New Zealand EIA process is skewed towards biophysical assessment; substantial assessments are conducted to identify hazard risk. However, little attention is given to social effects and the absence of vulnerability assessments make the New Zealand EIA system fall short of assessing and treating disaster risks adequately (Figure 8.1a). In contrast, even though there is some attention on more obvious hazards, the Sri Lankan EIA process is, in general, weak in assessing both hazard risk and the vulnerability of development projects. Based on the findings of this study, the generic disaster risk incubation model presented in Chapter 2 can be redrawn as presented in Figures 8.1a and b. Figure 2.5 in Chapter 2, depicts the relationships between the different concepts discussed in Chapter 2 in relation to disaster risk incubation in contemporary societies. Figures 8.1a and b present the strength of such relationships in the two studied countries based on empirical findings.

In both Sri Lanka and New Zealand, poor substantive effectiveness means the two EIA processes are not systematically designed to address disaster risks incubated in the environment due to mal-development. In New Zealand, higher contextual effectiveness due to a stronger domestic governance context and higher procedural effectiveness through stronger EIA legislation proved ineffective in addressing disaster risk incubation because of a lack of disaster risk integration into the EIA legislation and poor substantive effectiveness. In Sri Lanka, even though there are some promising provisions in the legislation (e.g., having technical evaluation committees for independent verification of information), lower contextual effectiveness because of weaker domestic governance has led to poor procedural effectiveness. Moreover, inadequate disaster risk integration into EIA legislation and poor substantive effectiveness makes the EIA process fall well short of addressing disaster risk incubation due to mal-development. Therefore, ineffectiveness in both countries in addressing disaster risk leads to risk incubation in the societies. The results of such processes have already been witnessed in both countries. Therefore, the findings of this study demand disaster risk integration and improved procedural, substantive and contextual effectiveness of the EIA process to address the disaster risk of development projects and to avoid risk incubation.

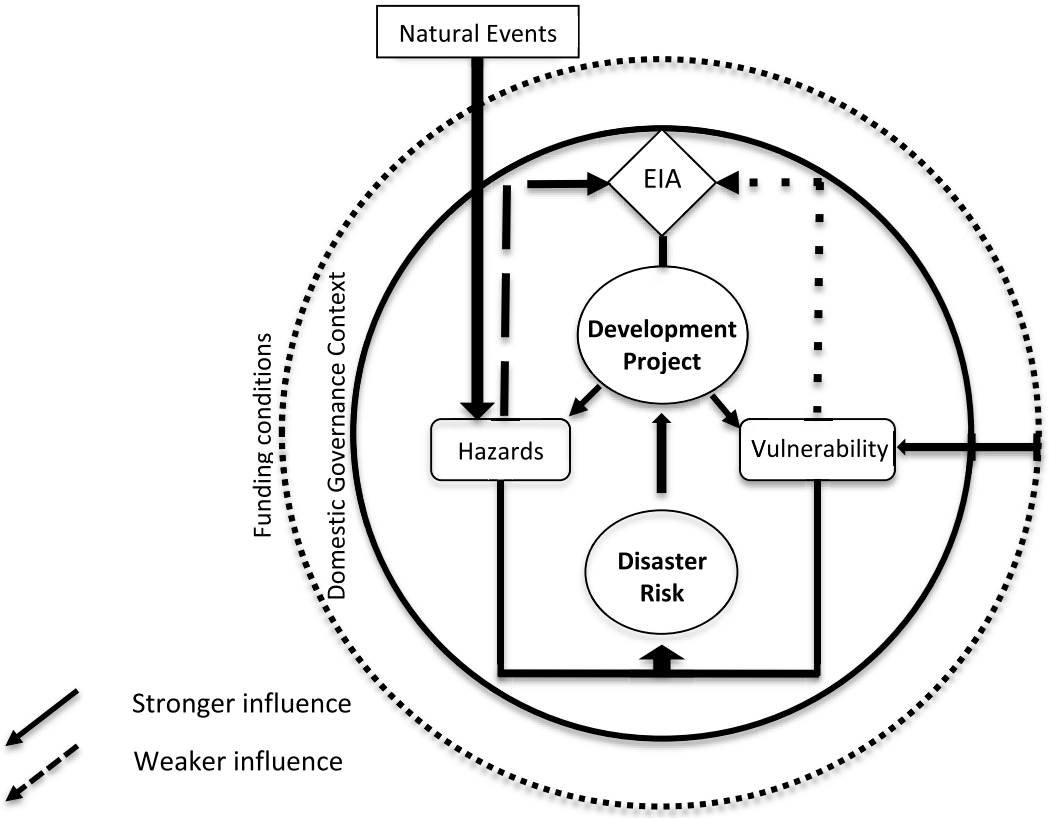

Figure 8.1a **Disaster incubation model for an approved development in New Zealand**

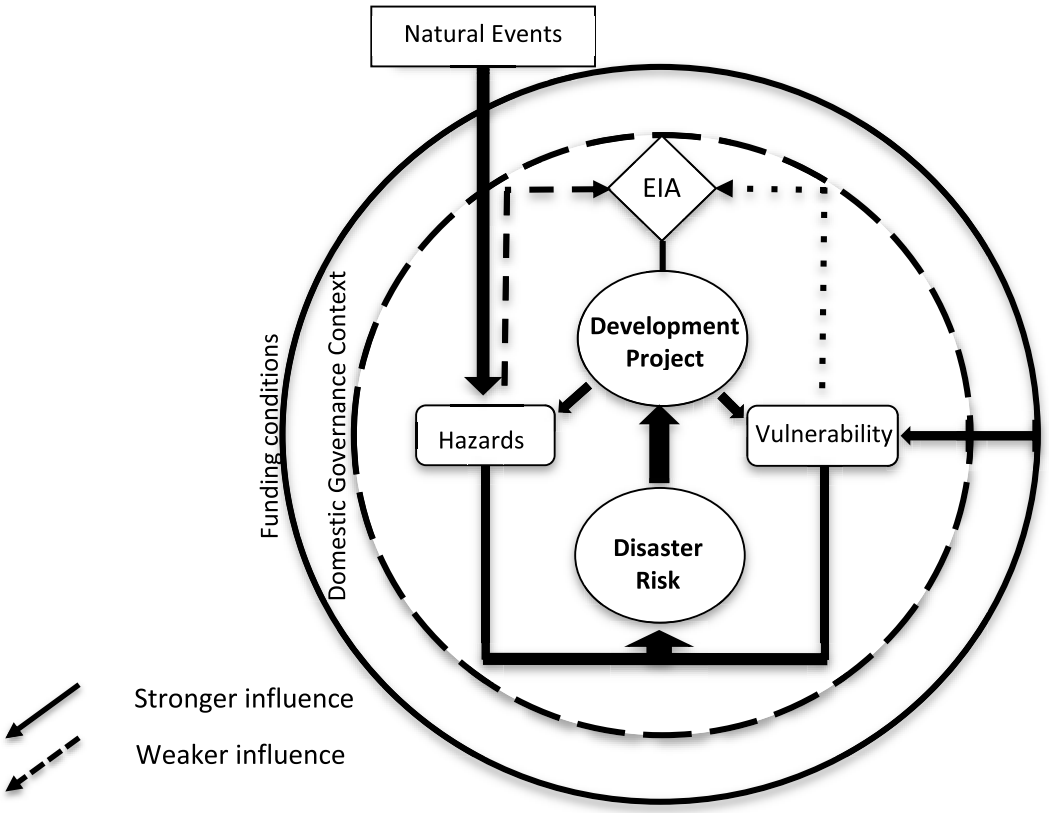

Figure 8.1b **Disaster risk incubation model for an approved development in Sri Lanka**[16]

[16] Thickness and length of lines, dots and dashes indicate relative strength of process or relationship. Strong contextual influences of donor funding conditions in Sri Lanka compared with domestic governance in New Zealand are represented by the solid circles.

In general, the findings of this research highlight the importance of conducting hazard and vulnerability assessment as a part of impact identification in the EIA process. This agrees with the modified EIA process promoted by the Caribbean Development Bank (CDB), which requires vulnerability and hazard assessments to be carried out as a part of impact identification (see Figure 2.3). However, the findings also emphasize that conducting hazard and vulnerability assessment does not alone guarantee that the disaster risk of development projects is effectively addressed by the EIA process. That requires a comprehensive EIA process with more explicit provisions on disaster risk and also a higher level of substantive and contextual effectiveness.

As discussed in Chapters 2 and 7, it is the established premise in the literature that the effectiveness of impact assessment systems depends on the context within which environmental assessment legislation and guidelines are understood and implemented (Alshuwaikhat, 2005; Bina, 2008; El-Fadl & El-Fadel, 2004; Marara et al., 2011; Wang et al., 2012). This study suggests that such general conclusions need to be more nuanced. The quality of governance affects the procedural effectiveness of the EIA in both Sri Lanka and New Zealand. However, the findings also show that governance quality has little influence over the substantive effectiveness of EIA in addressing disaster risk. The latter requires more explicit disaster risk integration into the EIA legislation as well as the institutional and cognitive integration of disaster risk.

As argued in Chapter 2, there is a substantial literature on effectiveness research. However, a set of evaluation criteria to assess the effectiveness of EIA in addressing disaster risk was not available. As a methodological contribution, this study developed a set of evaluation criteria that proved useful in investigating EIA processes in two quite different countries. This set of evaluation criteria may be used in evaluating the effectiveness of the EIA process in other countries and should be tested more widely.

Further to the above, a modified effectiveness triangle was developed based on Sadler's effectiveness triangle and used in this study (see Figure 7.1). Sadler's effectiveness triangle (Figure 2.4) has been used to explain general performance of an EIA system. However, it does not provide an analytical framework to investigate the performance of a specific aspect of the EIA process (e.g. disaster risk reduction). The modified effectiveness triangle used in this study showed its applicability to explain the performance of an EIA system in addressing specific aspect in two different countries. However, its wider use for other aspects (i.e. gender integration, social and cultural integration) would require further testing on different aspects in different contexts.

In summary, the findings of this study concur with the disaster incubation theory and argue that the EIA processes of both Sri Lanka and New Zealand are not systematically designed to address disaster risk of development projects. Therefore, they are unable to avoid disaster risk incubation due to mal-

development. Even though the findings of the research concur with the modified EIA process of the CDB, the study findings clearly show that assessment of hazard and vulnerability alone does not reduce disaster risk of development projects. The findings support the need for a more comprehensive approach of looking at policy integration, procedural, substantive and contextual effectiveness of the EIA process. Despite the established knowledge on the influence of governance on EIA outcomes, the study's findings show that the governance context has little influence on the substantive effectiveness of the EIA process. However, it does have significant influence on procedural effectiveness.

8.4 Policy implications

There are several policy and practice changes that are implied by the study if the potential for disasters is to be further reduced.

It is evident from the UNISDR's HFA progress reporting that disaster management authorities around the world consider an EIA as an effective tool to address the disaster risk of development projects (PreventionWeb, 2014). Under the HFA, the progress reporting framework of the UNISDR, core indicator 6, under priority for action 4 of the HFA, requires member countries to report whether "Impacts of disaster risk taken account in [sic] Environment Impact Assessment (EIA)" (UNISDR, 2014, p. 30). Over 87 countries, including New Zealand and Sri Lanka reported in the 2009-2011 reporting cycle that EIAs are in place to address the disaster risk of development projects (PreventionWeb, 2014). However, this study's findings revealed that EIA is not effective in addressing the disaster risk of development projects in either country. Since the general steps in carrying out an EIA are more or less similar throughout the world (Saengsupavanich, 2012; Toro et al., 2010), it is logical to infer that the above experience from Sri Lanka and New Zealand may apply to most countries that employ EIA to address disaster risk. Therefore, the results generated from the current HFA progress reporting framework of the UNISDR may be misleading; it is important to take into account the effectiveness of such EIA processes in addressing disaster risk in the HFA progress reporting framework.

Despite the fact that at least 87 countries, especially low and middle income ones, rely on EIA to address the disaster risk of development projects (UNISDR, 2011), there is little research on disaster risk integration and EIA processes. This study shows the importance of policy integration into environmental legislation and EIA procedures. The findings also show the importance of institutional integration and creating DRR thinking among all parties involved in the EIA process to ensure that disaster risk is assessed and treated effectively. It is clear that the EIA processes in Sri Lanka and New Zealand require deliberate and consistent actions to integrate disaster risk reduction concerns into policy, institutions and human knowledge, supported by good governance principles to achieve better risk governance.

Both Sri Lanka and New Zealand should undertake a number of policy adjustments in the EIA guidelines and environmental management legislation to ensure disaster risk is explicitly integrated into the legislation and EIA procedures. This study reveals that vague phrases in legislation, such as "…the avoidable and unavoidable adverse environmental effect" (NEAA, 1988, 12(b) or "…any potential effect of low probability which has a high potential impact" (RMA, 1991, s.3(f)), do not compel planners and practitioners to address the disaster risks of development projects. Therefore, such phrases should be clear and more explicit about what is intended and leave little room for ambiguities.

8.5 Limitations of the study

The findings and analysis of this research were constrained by three key limitations. First, the study was based on four case studies, two from each country, which limited the empirical data for the final analysis. The number of case studies was determined for financial reasons and time constraints. However, data from multiple sources and wide geographical locations were collected and the results appear robust.

Secondly, the set of evaluation criteria developed for the study is not exhaustive. It could be argued that the evaluation criteria regarding the governance context are too simplistic for more complex contextual factors that affect the operationalization of an EIA. As argued in Chapter 2, many contextual factors affect the implementation of an EIA system ranging from public participation to government corruption. However, it was clear from the literature that investigating the effectiveness of an EIA system against all such contextual factors was not practical, within the resources available for this study.

Thirdly, the linkages between disaster risk and anthropogenic climate change are increasingly recognized (IPCC, 2012). Therefore, the disaster risk of development projects should include the influence of climate change in disaster risk and its implications on the effects of development projects. This research deliberately avoided discussions of the effects of anthropogenic climate change on project-induced disaster risk to keep the objectives manageable under the given time frame and financial resources. However, the approach adopted in this research can be used in assessing the effectiveness of EIA in addressing climate change induced risks in future research. For current purposes, it is sufficient to note that the existing weaknesses in the EIA processes are likely to be exacerbated by inclusion of climate change considerations.

8.6 Recommendations for future research

This research suggests two key areas for further investigation. One is on the effectiveness of the modified EIA process used in the Caribbean region by the Caribbean Development Bank (CDB) to address disaster risk. As discussed in Chapter 2, the modified EIA process of the CDB is designed to address disaster risk of development projects by deliberately investigating hazard risk and vulnerability assessment. Currently, no evaluation of this process is available and it was difficult to include one of the Caribbean countries in this study for financial reasons and time constraints. However, as argued earlier, the findings of this study partly support the modified EIA process of the CDB.

Secondly, the current discourse on climate change and EIA is increasingly recognized in a number of countries and among multilateral agencies (Agrawala, Kramer, Prudent-Richard, Sainsbury, & Schreitter, 2012). Agrawala et al. (2012) investigated the feasibility of incorporating climate change considerations into the EIA process. However, knowledge on the effectiveness of the EIA process in addressing climate-induced risk is yet to be thoroughly explored and such knowledge will be increasingly demanded because of increased interest in climate change impacts. The knowledge generated from the research suggests that further research on the effectiveness of EIA in addressing climate risk will need to consider both procedural and substantive effectiveness.

8.7 Conclusion

This study found that the EIA processes in Sri Lanka and New Zealand are not effective in addressing the disaster risk of development projects. The research further shows that the inadequacy of DRR practices, procedures and knowledge across environmental and disaster management policies, institutions and actors and weak procedural and contextual effectiveness contribute to the poor substantive effectiveness of an EIA. Thus, the study's findings contest the established practice of using EIAs to address disaster risk and demands evaluations of EIA systems elsewhere to assess their effectiveness in disaster risk reduction.

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Appendix A

Hyogo Framework for Action (based on UNISDR (2005, p. 23))

<table>
<tr><td colspan="5">Expected Outcome</td><td rowspan="6">Contributing to the achievement of internationally agreed development goals (including the MDGs).</td></tr>
<tr><td colspan="5">The substantial reduction of disaster losses, in lives and in the social, economic and environmental assets of communities and countries.</td></tr>
<tr><td colspan="5">Strategic Goals</td></tr>
<tr><td colspan="2">The integration of disaster risk reduction into sustainable development policies and planning.</td><td colspan="2">The development and strengthening of institutions, mechanisms and capacities to build resilience to hazards.</td><td>The systematic incorporation of risk reduction approaches into implementation of emergency preparedness, response and recovery programme.</td></tr>
<tr><td colspan="5">Priorities for Action</td></tr>
<tr><td>1. Ensure that DRR is a national and local priority with a strong institutional basis for implementation.</td><td>2. Identify, assess and monitor disaster risks and enhance early warning.</td><td>3. Use knowledge, innovation and education to build a culture of safety and resilience at all levels</td><td>4. Reduce the underlying risk factors.</td><td>5. Strengthen disaster preparedness for effective response at all levels.</td></tr>
<tr><td colspan="5">Cross-cutting issues</td></tr>
<tr><td>Multi-hazard approach</td><td>Gender perspective and cultural diversity</td><td>Community and volunteers' participation</td><td>Capacity building & technology transfer</td><td></td></tr>
</table>

Appendix B

Human Ethics Committee Approval Letter

Research and Commercialisation Office

T 64 3 325 3838
F 64 3 325 3630
PO Box 84, Lincoln University
Lincoln 7647, Christchurch
New Zealand

www.lincoln.ac.nz

Application No: 2012-42 7 December 2012

Title: Effectiveness of Environmental Impact Assessment (EIA) in mitigating development induced disasters: A comparison of the EIA processes of Sri Lanka, Jamaica and New Zealand

Applicant: Arosh Buddika Hapuarachchi

The Lincoln University Human Ethics Committee has reviewed the above noted application.

Thank you for your detailed response to the questions which were forwarded to you on the Committee's behalf.

I am satisfied on the Committee's behalf that the issues of concern have been satisfactorily addressed.

I am pleased to give final approval to your project. Please advise Alison Hind when you have completed your research and confirming that you have complied with the terms of the ethical approval.

May I, on behalf of the Committee, wish you success in your research.

Yours sincerely

Professor Grant Cushman
Chair, Human Ethics Committee

cc Prof Ken Hughey
Dr Hamish Rennie

PLEASE NOTE: The Human Ethics Committee has an audit process in place for applications. Please see 7.3 of the Human Ethics Committee Operating Procedures (ACHE) in the Lincoln University Policies and Procedures Manual for more information.

Appendix C

Questionnaire – Planners and EIA Experts

C.1 Name of the project:

Effectiveness of Environmental Impact Assessment (EIA) in mitigating development-induced disasters: A comparison of the EIA processes of Sri Lanka and New Zealand.

C.2 The aim of the project

EIA is a development control mechanism practiced in many countries including many low and middle-income countries. But, the extent to which country-specific EIA processes include disaster risk considerations and how effective they are in addressing development-induced disaster risk has not been researched yet. Contextual factors such as legal and administrative arrangements as well as the quality of governance also have a direct bearing on the EIA process. It is generally accepted that such contextual and governance factors influence the involvement of participants, transparency and nature of EIA processes, and very importantly EIA outcomes. This research aims to investigate the effectiveness of the EIA system in different risk governance contexts, taking Sri Lanka and New Zealand as case exemplars.

You may at any time withdraw your participation in the interview, including withdrawal of any information you have provided until 31st of May 2013. If you complete the questionnaire, however, it will be understood that you have consented to participate in the project and consent to publication of the results of the project with the understanding that anonymity will be preserved.

C.3 Questionnaire

In your country:

1) Do the project proponents / funding agencies carry specific guidelines or funding conditions around minimising disaster risk of the project?
2) Is disaster risk reduction an integral part of environmental assessment?
3) Is disaster risk explicitly mentioned in the EIA legislation?
4) Is the EIA system based on clear and specific legal provisions?
5) Are the disaster impacts of all significant actions assessed?
6) Does EIA report/ statement contain a section on disaster risk?
7) Is there an opportunity for appeal or to legally challenge the process or decision output?

8) Do EIA reports get publicly reviewed and does the proponent respond to the points raised?
9) Does the ToR for the EIA carry specific requirements regarding hazard assessment and vulnerability assessment?
10) Is monitoring taking place as a part of the EIA process? To what extent is monitoring carried out?
11) Does the screening of project activities for disaster risk take place?
12) Are hazard and vulnerability assessments conducted as a part of scoping of the environmental impacts?
13) Do decision makers refer to the EIA during the planning process?
14) If yes, to what extent, and does the EIA function as a reference point during the decision-making process?
15) Do the findings of the EIA influence the final decision?
16) If yes, how do you rate the causal relationship between the EIA and the alterations in the project plan?
17) Does public participation take place prior to, and following EIA report publication?
18) Opportunities for public involvement - throughout the process? Or at specified stages only?
19) How do you describe stakeholder participation in the EIA process?
20) Are the Environmental Impact Statement (EIS) and decisions amended to incorporate feedback from consultations?
21) Do legal provisions given by other legislation to control development induced disaster risks influence the outcome of the EIA process?
22) Are EIA process and EIS subject to independent checks and verifications? Is there an independent body to assess the quality of the EIA and EIS?
23) Are decision-making and approval stages, (where what is required of proponents and government agencies) made clear to all?
24) EIA reports/ EIS readily available to be viewed
25) Is there political support available for the EIA process?
26) Is there inter agency coordination and cooperation available across sectors and different levels (national/local) of government departments at all stages of the EIA process?
27) Does the disaster management agency receive information and get involved in all stages of the EIA process?
28) Are there any other agencies/departments that should be in the EIA process?

Appendix D

Questionnaire – Community Representatives

D.1 Name of the project:

Effectiveness of Environmental Impact Assessment (EIA) in mitigating development-induced disasters: A comparison of the EIA processes of Sri Lanka and New Zealand.

D.2 The aim of the project

EIA is a development control mechanism practiced in many countries including many low and middle-income countries. But, the extent to which country-specific EIA processes include disaster risk considerations and how effective they are in addressing development-induced disaster risk has not been researched yet. Contextual factors such as legal and administrative arrangements as well as the quality of governance also have a direct bearing on the EIA process. It is generally accepted that such contextual and governance factors influence the involvement of participants, transparency and nature of EIA processes, and very importantly EIA outcomes. This research aims to investigate the effectiveness of the EIA system in different risk governance contexts, taking Sri Lanka and New Zealand as case exemplars.

You may at any time withdraw your participation, including withdrawal of any information you have provided until 31st May 2013. If you complete the questionnaire, however, it will be understood that you have given the consent to participate in the project and consent to publication of the results of the project with the understanding that anonymity will be preserved.

D.3 Questionnaire

1) Opening question - How do you best describe your village?
2) Have you experienced any disasters in the past (before the project A was implemented) and what was the nature of those? Damages to infrastructure, assets and livelihoods? Human casualties?
3) To your understanding, what reasons were behind development of this project A in your area? And why your area was selected for the project? Who are the beneficiaries?
4) What are the positive and negative impacts of the project to the village and communities?
5) What are the potential disasters you face now and how do you describe the nature and cause of those?
6) Have you felt an increase or decrease in the frequency /severity of disasters since project A was implemented?
7) Was an Environmental Impact assessment carried out for the project?

8) Was a hazard and vulnerability assessment carried out as a part of the project EIA? How?
9) Did the community get involved in the EIA process? How did the community get involved in the EIA process?
10) Did everyone get an equal opportunity to participate in the EIA process?
11) Were the EIA reports made available for the community to view, or was information about their contents otherwise made known to you (if the latter explain how)?
12) Did the community comment on the EIA report?
13) Are you satisfied with the information provided to you about the impacts on the environment due to the project?
14) Did you or your community foresee any other impacts that were not mentioned in the EIA report?
15) Were you satisfied with the mitigation measures proposed by the project?
16) Did you recommend any other mitigation measures to reduce the impacts?
17) Did the project proponent respond to the points raised by the EIA report and by the community and how do you describe the changes made to the project design and implementation based on the comments made by the community?
18) When did the community consultation take place? Pre-project? Or post-project? Where did the community consultation take place?
19) At what stages did the community get involved in the EIA process?
20) To what level did the community get involved in the project EIA?
21) Was the community informed about the project and its positive impacts?
22) Did you have an opportunity to express your views?
23) Did you have an opportunity to plan the mitigation measures? Were those are accepted and implemented?
24) Did you have easy access to project information, EIA report, approval letters and conditions on the project?
25) What else should have been done to reduce the impacts to the environment and village?
26) If you face any negative impacts (disasters) because of the project now, what actions did the community take during and after project implementation?
27) Is the community involved in the post-project impact monitoring system of the project A?