THE EVALUATION OF HEALTH ISSUES IN STRATEGIC ENVIRONMENTAL ASSESSMENT IN VIENAM

PHAN THI MAI HOA

MASTER OF SCIENCE

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ABSTRACT

The Vietnamese government has recognized the importance of an early assessment of the sustainability of its developmental frameworks. It institutionalized the Strategic Environmental Assessment (SEA) in the 2005 amendments to the Law on Environmental Protection. Vietnam has also endorsed the protection and the promotion of public health as one pillar of sustainable development. However, it remains a question to what extent these two interrelating themes are integrated in the assessment of policies, plans and programs. The purpose of this study is to identify and evaluate the current extent to which the consideration of health is incorporated into SEA process in Vietnam. Based on a criteria-based review and rating of 8 SEA reports and expert opinions, this study identifies common gaps and factors that can facilitate the health impact assessment (HIA) in SEA. The reasons for inadequate attention to HIA focus on (1) the common limitations of adequate resources including time, finance, and professional capacity; (2) the lack of legislation requiring incorporating of health issues in SEA; (3) insufficient SEA Management Plans (e.g.

lack of monitoring of health). Mostly, engaging health authorities in the initial step of SEA process is considered as a crucial starting point for effective health in SEA, whereas the adequate resource is an important implement for effective monitoring system and implementation of recommendations. Crucially, an effort must be made to build up legislation and technical standards about integrating health issues in the SEA process. These technical standards would include indicators and methods to implement a meaningful HIA within SEA.

Keywords: SEA/HIA/Vietnam

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ABBREVIATIONS

ADB	Asian Development Bank
DONRE	Department of Natural Resources and Environment
EIA	Environmental Impact Assessment
GTZ	German Technical Cooperation
ICEM	International Centre for Environmental Management
ICCM	International Council on Mining & Metals
MONRE	Ministry of Natural Resources and Environment
NEHAP	National Environmental Health Action Plan
NEPA	National Environmental Policy Act
SEA	Strategic Environmental Assessment
SEDP	Social Economic Development Plan
PPC	Provincial People's Committee
PPPs	Policies, Programs, and Plans
UNCED	United Nations Conference on Environment and Development
VEA	Vietnam Environment Administration
WHO	World Health Organization

CHAPTER 1

INTRODUCTION AND RESEARCH PROBLEMS

1.1 Introduction

Vietnam is undergoing rapid socio-economic changes leading to environment and health challenges such as a large increase in non-communicable diseases, the emergence and re-emergence of infectious diseases, new health risks associated with environmental pollutants and escalating health inequality. Furthermore, climate change is recognized as a pronounced threat to the development of Vietnam. It is expected to adversely affect not only the environment and the economy but also other social aspects, including public health. In other words, these health issues are affected by multiple determinants which can be influenced by planned policies, programs, and plans. The protection and promotion of public health and well-being is fundamental in creating a thriving, dynamic society and the sustainability of human development. One way this can be achieved is through the consideration of health issues in the strategic planning process, Vietnam is a typical example of a developing country which has experienced many environmental problems as a result of introducing environmental legislation and policy rather late in its history. The evaluation of strategic – level alternatives for policies, plans and programs is critical because it establishes a decision pathway that determines future PPP level alternatives (Steinmann, 2000). In fact, health considerations have become a mandatory part of Strategic Environmental Assessment (SEA) under legislations in developed countries (NEPA legislation in the United States of America; European Commission (EC) Directive 2001/42/EC, Protocol with the support of UNECE, 2003). Health inclusive SEA can help to identify opportunities and ultimately to adopt actions to prevent disease and to avert unnecessary health costs (WHO, 2008); it has been increasingly

recognized as important as Socio – Economic Development (SED) in decision making processing and in contributing towards sustainable development (Sadler & Verheem, 1996). Fischer, Matmuzzi and Nowacki (2009) indicate numerous procedural and methodological difficulties in health considerations in SEA practice such as (1) insufficient baseline data in impact assessment on Environmental hazards and health risks, (2) lack of appropriately addressing social and behavioral aspects, including the actual use of the baseline data in later impact assessment and (3) the qualification of impacts. The limited qualification and experience of health consultants is mentioned as a further hindrance in Asia and Pacific Regional Health Impact Assessment Conference in 2008 in Chiang Mai, Thailand.

Therefore, this study will focus on health impact assessment processes that can be used in strategic decision making, commonly referred to as Strategic Environmental Assessment (SEA). The content of this report reviews and examines how health issues are considered in SEA on a practical level in Vietnam and identifies the limitations and opportunities for achieving a better practice framework with the aim of more sustainable approaches.

1.2 Background to Research

Global concern over the impact to public health attributed to environmental pollution has increased over the last three decades. At the United Nations Conference on Environment and Development (UNEP, 1992, also known as the 1992 Rio Earth Summit), it was agreed that an expanding human population coupled with insufficient and inappropriate development has resulted in severe environmental health problems in both developing and developed Nations. According to the World Health Organization (WHO, 2000), some 3.5 billion people are exposed to high levels of air pollutants which the World Bank defines as one of the four critical Public Health problems worldwide. A report by the WHO on the global disease burden indicates that 24% of the disease burden is attributable to environmental factors.

According to the WHO, in 2006, Vietnam was among countries with the highest mortality rates due to ambient air pollution (200-230 cases per million people

per year); 2012 Environmental Performance Index released at this year's World Economic Forum in Davos, Switzerland, showed that Viet Nam is still one of the ten countries worldwide with the worst air pollution among 132 countries whose environments were surveyed in relation to effects on human health; Vietnam is also one of the most vulnerable countries to the projected impacts of climate change, which is expected to affect sustainable development, food security, public health and ultimately, social stability. Solving these problems requires integration of health considerations in environmental and economic planning.

Health is inextricably linked to the environment, which, in turn, is influenced by development PPPs (Policies, Plans, Process). These PPPs have substantial impacts (benefits and drawbacks) on the environment and the community. However, development projects are invariably accompanied by a range of unintended impacts on human health that can potentially amplify the pre-existing high prevalence of risky conditions in the countries of the Asia Region (Caussy, Kumar & Sein, 2003).

Demidova and Cherp (2005) stated that health concerns have been given little attention in the EIA practice of most countries including those practice is relatively advanced, and no exception with SEA practice. Besides, in a research carried out by Cave, Bond, Molyneux and Walls (2005), it was observed that local planning authorities lack the awareness and the understanding to carry out the assessment of health. This observation was seconded by Burns and Bond (2008). In addition, reviewing 39 Environmental Impact Assessment Reports by the British Medical Association (1998) indicated that the projects mentioned potentially significant hazards to human health, but did not provide the necessary information for analysis such as populations, the types of individuals, probable and exposure impacts to assess the implications of the proposed development on human health.

WHO Representative Office in Vietnam, 2009 stated that Vietnam recognized the importance of HIA in new development projects. However, to date only EIA/SEA were mandatory and the impact of the development on health is rarely considered. This means that positive and negative impacts to human health are not identified, evaluated or measured, while human health is seen as a focal point in successful planning and achieving sustainability. Likewise, Thanh and Hieu (2008) in the Conference on Health Impact Assessment (HIA) in Thailand (Asia and Pacific

Regional Health Impact Assessment Conference, 2008) stated that there was no guidance on the consideration of health in project development proposals in Vietnam so that health impact assessment was not implemented comprehensively. It mainly concentrated on assessing impacts on worker health.

1.3 Main Research Question

Having identified these knowledge gaps in the assessment of health in SEA, the main research question is "*How was the consideration of health incorporated in SEAs in Vietnam?*"

To answer this question, we need to consider the following four sub-questions outlined:

1.3.1 Which of the health related issues are considered in SEA practice in Vietnam?

1.3.2 What methods are used in identifying the impacts of a proposed development on human health?

1.3.3 What are the challenges and opportunities for a wider consideration of health aspects with SEA in Vietnam?

1.3.4 What are the best approaches to incorporate of health impacts in SEA?

1.4 Aims and Objectives of the Research

Based on the background work done on current trends in epidemiology and public health in Vietnam, and in evaluating the studies of the British Medical Association (1998); Demidova and Cherp (2005); Cave, Bond, Molyneux and Walls (2005); Burns and Bond (2008), the overall aims and objectives of this research are to identify and evaluate the current extent to which the consideration of health is incorporated into the SEA process in Vietnam. More specifically, these objectives are outlined as follows:

1.4.1 To determine how well sample documents defined health based on the WHO standards.

1.4.2 To identify the range of health determinants considered in the SEA.

1.4.3 To highlight the range of health outcomes considered.

1.4.4 To highlight the strengths and weaknesses of Strategic Environmental Assessment (SEA) reports in the health context in Vietnam.

1.5 Scope and Limitations

The study contributes to the understanding of the overview of SEA introduction and application in Vietnam and lessons learned with emphasis on the health consideration on SEA as a tool to aid decision – making and promote public health as an integral part of sustainable development. The scope of the study does not go into in-depth analysis of the health consideration issues in all ranges of difference sectors. However, the study concludes with suggestions for further research in specific health sensitive areas of development.

The time dimension of the SEA application in Vietnam is rather short. Even though SEA has been legislated since 2005, SEA commissioned with national capacity actually started in 2008 – 2009 when the planning for the next development period (2011 - 2020) started. Therefore, the findings of this study reflect the practices of SEA in its early stage.

Study of SEA adoption across various agencies with visible environmental impacts would lead to additional insights. However, due to data accessibility to SEA documents in several ministries, the study could only cover 8 SEA reports in Vietnam. These reports were undertaken between 2006 and 2011. Selection criteria included a range of different sectors and a range across the different levels. (For more details, see 3.2)

The legal documents of environmental protection and community health protection have yet to be connected and the monitoring system to determine the effectiveness of protection or mitigation measures is quite limited. There are also gaps between environmental monitoring data and medical indicators, so that it is difficult

to assess the effectiveness of the mitigation measures and monitoring mechanisms reviewed in this study.

1.6 Conceptual Framework

The proposal thesis research will be a study conducted within the conceptual framework as shown in Figure 1.1. The methodological approach applied was as follows:

1.6.1 A literature review was undertaken to provide better understanding of the issues of concern;

1.6.2 SEAs conducted in Vietnam were identified using a search strategy;

1.6.3 The identified SEAs were analyzed using technical review from WHO/Europe (2009), and Fischer, Matuzzi and Nowacki (2009);

1.6.4 Experts in terms of environmental management and health were interviewed using a specially designed interview protocol to assess the quality of SEA report;

1.6.5 Results of the analysis were collated and findings were made;

1.6.6 Suggestions were developed to improve HIA in SEA in Vietnam.

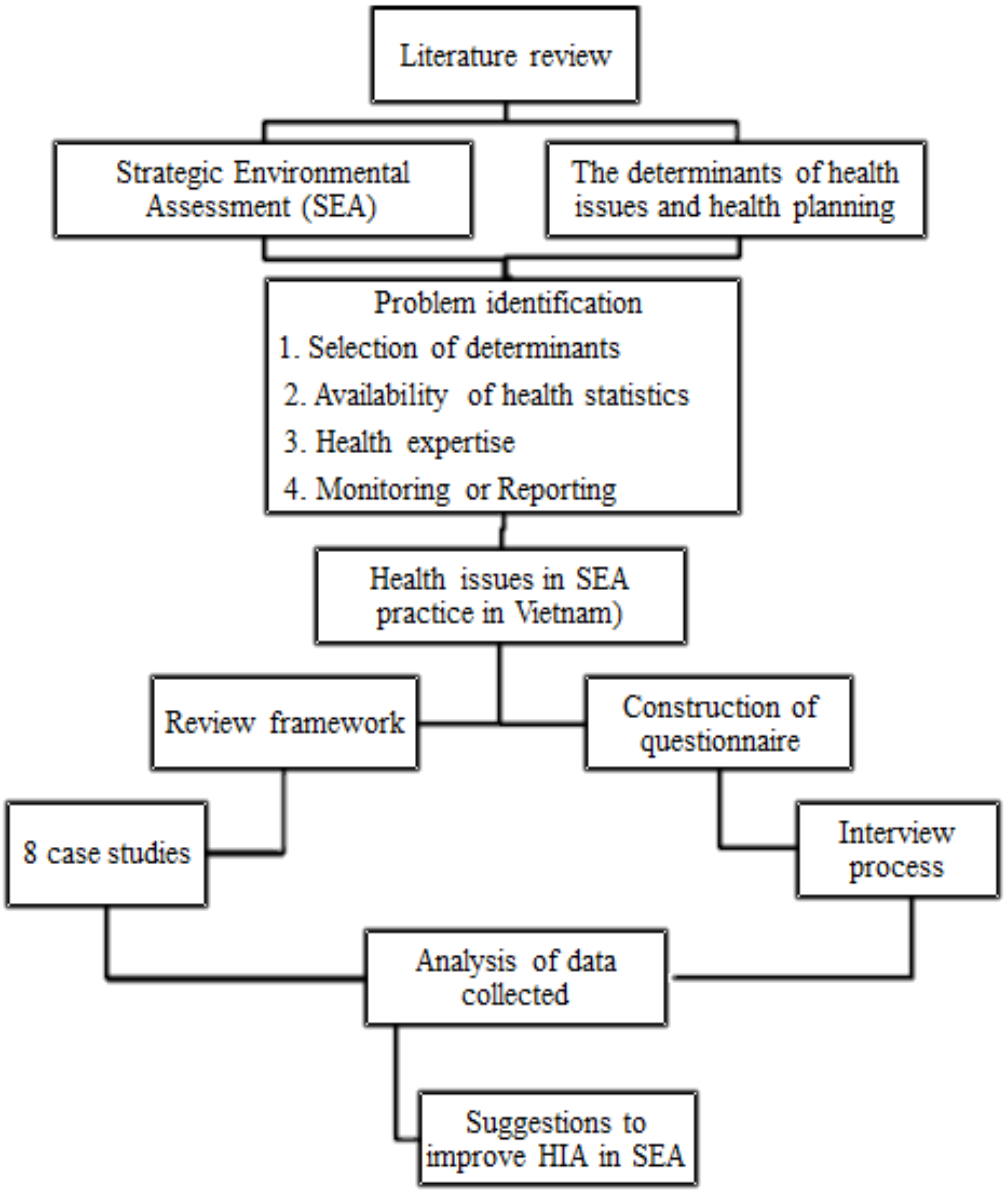


Figure 1.1 Conceptual Framework of Study

1.7 Structure of the Thesis

The thesis has five chapters.

Chapter (1) lays the basis for the topic and objectives of the study.

Chapter (2) discusses the consideration of health in the larger context of SEA. SEA evolved in EU; and the importance of including health issues in the SEA documents. It gives a broad insight to the health policies. This is to make a firm background on how issues are looked upon and the importance of covering health aspects in SEA. Next it also provides background of the consideration of health impacts in SEA requirements and a range of issues related to assessment of health impact practice in Vietnam.

Chapter (3) clarifies transparency and reliability of the research methodology in which primary method is to apply review checklist developed from many resources of literature into the obtained SEAs; and an interview outline was essentially comprised of open-ended short questions to highlight similarities between interview responses and the achieved findings in the technical review. It also shows how the data were analyzed.

Chapter (4) gives the results then discussed by referring to previous studies as compared to the analysis of the interview data; and the conclusions are then drawn up for the consideration of health in SEA so as to improve the effectiveness of SEA as a tool to aid decision-making and promote sustainable development in Vietnam and for further research alike.

Chapter (5) provides conclusions from the study and recommendations for improving the consideration of health issues inclusion in SEA in Vietnam.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

Based on previous research done and reviewed literature the researcher has identified determinants of health and health planning, and how these themes should be considered in Strategic Environmental Assessment (SEA). This chapter gives an insight into the type of literature that has reviewed.

2.2 Strategic Environmental Assessment (SEA)

2.2.1 Policy Background and Legal Framework

In the 1960s, Environmental Assessment was developed as a tool to systematically bring environmental issues into decision making, to enhance planning and evaluation of infrastructure and development projects. The consideration of environmental factors in project decision making was made in the law with the introduction of the National Environmental Policy Act (NEPA) in 1969 in the USA.
Later, in Europe EIA became legally established with the European Directive of 1985 on the assessment of the effects of certain public and private projects on the environment (85/337/EEC) (Fischer, 2008; Dalal-Clayton & Sadler, 2005, European Commission, 1985). Recently, the formulation of policies, plans and programmes (PPPs) gave rise to environmental assessments requiring more strategic decisions; these are categorised under the label of Strategic Environmental Assessment (SEA) (Partidario, 1999; Therivel & Partidario, 1996). These authors (Lee and Walsh, 1992; Therivel, 1992; Sadler & Verheem, 1996) illustrated that EIA

has been unable to respond to this increasing complexity and provide for global sustainability. Sound decision-making in a systematic way was the strongest argument that determined the need for SEA in its early days. SEA adds particular value by analyzing PPPs at an early preparatory stage in their formulation, setting the context and framework for EIAs of subsequent projects (IAIA, 2002). SEA thus complements the application of EIA, leaving this process to focus on issues of how rather than whether or where a development proposal should go ahead.

Many different definitions for "Strategic Environmental Assessment" can be found in the literature (Therivel, 1992; Sadler & Verheem, 1996; Partidário, 1999). SEA has been defined as "a systematic process for evaluating the environmental consequences of proposed policy, plan or programme initiatives in order to ensure they are fully included and addressed at the earliest appropriate stage of decision making on par with economic and social considerations" (Sadler & Verheem, 1996). The latest and most comprehensive definition is provided by Partidário (2000): "SEA is an instrument that must be adapted to existing decision-making processes. It is more political than technical, and is related to concepts, rather than to activities with geographic and technological specifications". The definition expresses how important it is to combine SEA with decision making. The authors further explained that the ability of SEA to integrate social, environmental and economic concerns aids the decision making process. Thus, SEA is undertaken in the early stages of the decision making process and is therefore seen as a tool for sustainable development. Burns & Bond (2008) have explained that SEA adds value to planning and monitoring process of a proposed development. The general objectives of SEA that have been quoted in relevant literature are to contribute to an environmental and sustainable decision – making process; improving policy, plan and programme quality; strengthening and facilitating project's EA; and to foster new means of making decisions.

Strategic environmental assessment (SEA) allows the identification and prevention of possible environmental effects from the start and enables environmental objectives to be considered on a par with socioeconomic ones. Moreover, SEA is undertaken much earlier in the decision-making process than EIA, and is therefore a key tool to prevent ill health and tackle health inequalities (WHO/Europe, 2009).

Within the European Region of WHO, the legal provisions of the European Union and the UNECE have a major impact on the practice of SEA throughout the region: Directive 2001/42/EC (EU SEA Directive) provides for a high level of protection of the environment and to contribute to the integration of environmental considerations into the preparation and adoption of plans and programmes with a view to promoting sustainable development; and the UNECE SEA Protocol recognizes the work led by WHO by this respect: " the benefits to the health and well-being of present and future generations will follow if the need to protect and improve people's health is taken into account as an integral part of SEA". The SEA Protocol in short, is to ensure a high level of protection of the environment including health; and should have consultation with Environmental and Health Authorities (UNECE, 2003). As can be seen, SEA in the European Region is supported by two key legal frameworks, which requires the application of SEA in those countries and prescribes full consideration of human health aspects.

These authors further explained that an active and reversible relationship exists between human beings and the environment (Sadler & Verheem, 1996; Jain, Urban, Stacey & Balbach, 2002; Bhatia & Wernham, 2008) noted that health considerations became part of environmental assessments since the inception of NEPA - recognizes the interdependence of environmental quality and the human health. Burns and Bond (2008) pointed out that view since the inception of the EU. Based on this, it can be said that health is one of the required considerations when evaluating the significance of impacts. From a historical perspective, health related issues have been a vital element in planning. This sector has been an indicator to tackle problems in the physical environment such as noise, air pollution and sanitation (Corburn, 2007). In other words, human health is an overarching goal of sustainability, lying at the intersect of environmental, economic and social areas (Davies & Sadler, 1997)

2.2.2 SEA and Consultation

The EU 2001 SEA Directive requires responsible authorities to be consulted at the four stages during SEA process. (1) During the screening stage, responding to determine whether an SEA is needed or not and requests for information of the

baseline Environment; (2) during the scoping stage, the level of detail of the information required in the Environmental reporting; and (3) during the preparation of the plan and programmes, and (4) during the Reporting stage when decisions are made to adopt mitigation measures to offset, reduce, or prevent any adverse effects on human health. Under the current legislation, no consultation body has been made solely responsible for health related issues.

The Protocol provides for the consideration of health as an integral part of SEA of plans and programmes (UNECE, 2003). And the text of the Protocol makes reference to environment and health. Thus, the Protocol places a special emphasis on health and provides for the mandatory consultation of health authorities. Accordingly, it is envisaged that health authorities engage more and more in SEA and decision-making process in order to draw on the potential for health protection and promotion in environment and public health decisions (Fischer, Matuzzi & Nowacki, 2009).

2.3 Strategic Environmental Assessment in Vietnam

The importance of SEA worldwide has grown in recent years, and now is a required practice in many countries. Several developing and transitional countries such as China, Vietnam, Philippines and Malaysia have pilot tested SEA or similar assessment processes since the early 1990s. SEA then has been institutionalized in East and Southeast Asia as a flexible application of EIA principles during elaboration of plans or programs (The World Bank, 2006).

In Vietnam, SEA is defined as the "*analysis and prediction of potential environmental impacts of strategic [planning] projects and development planning and plans prior to approval, in order to ensure the achievement of sustainable development*" in Law on Environment Protection (LEP), 2005, Article 3, point 19 (Vietnam National Assembly, 2005).

The overall aim of the SEA is to integrate consideration of environmental impacts in the planning process and to facilitate transparent and participatory decision-making (MONRE, 2008).

2.3.1 Policy Background

The momentum for developing a SEA framework in Vietnam has been growing for a number of years, namely through the Comprehensive Poverty Reduction and Growth Strategy (2002), the National Strategy for Environmental Protection to 2010 and Vision to 2020 and Strategic Orientation for Sustainable Development in Vietnam (2004) (Vietnam Agenda 21 Strategic). These called for strategic- level evaluation and integration of environmental considerations in policies, programs, and plans (ICEM, 2006). Support for the introduction and application of SEA to power development planning in Vietnam has been obtained from Sida (SEMLA), GTZ, SDC, ADB and the World Bank since 2008 (The World Bank, 2009).

2.3.2 Legal and Regulatory Framework

Vietnam has legislated EIA in its Law on Environmental Protection (LEP) in 1993. Since 1997, the Government of Vietnam has expressed interest in SEA as shown through a project commissioned by the Center for Environment of Towns and Industrial Areas of the Hanoi Construction University and the study commissioned by the Vietnam Environmental Administration of MONRE to establish the scientific rational for SEA (Ngoc, 2011). The revision of LEP 1993 opened a window of opportunity for the introduction of SEA as an environmental assessment tool to address policies, plans and programs. SEA hence became legislated in the revised LEP in 2005. In addition, there was a new supporting Decree No.29/2011/ND-CP that outlines health impact assessment as part of environmental assessment including SEA. The provisions of the LEP, 2005 and supporting Decree, 2011 mention that the practice of SEA and EIA are generally consistent with current approach to SEA adopted in Europe and those promoted by the OECD (OECD, 2006).

Responsibility for conducting SEAs of these planning documents falls on the state agency responsible for the strategy or plan development. SEA reports will be appraised by an “Appraisal Council”, which will be established by the agency

with legal authority to approve the subject plan. The institutional structure for managing SEA in Vietnam is explained in Section 2.2.3.

In 2008, the key government agencies that must undertake SEAs began to establish basic institutional mechanisms to implement and appraise SEAs, e.g Ministry of Industry, Ministry of Construction, Ministry of Investment and Planning, Ministry of Agriculture and Rural Development, and General Department of Tourism (Nam, 2008). The Decree No.29/2011/ND-CP outlines PPPs that require SEA: these are (1) national socio-economic development strategies, planning and plans; (2) strategies and plans for development of sectors on a national scale; (3) socio-economic development strategies and plans of provinces or regions; (4) plans for land use, forest protection and development; exploitation and utilization plans of other natural resources in inter-provincial or inter-regional areas; (5) plans for development of key economic regions; and (6) planning documents for inter-provincial river watersheds.

2.3.3 Implementation of SEA in Vietnam

A larger number of SEA pilot studies were started in 2006-2007 for socio-economic development plans, land-use plans and hydropower planning. Most of these projects were supported by major donors ADB, WB, Sida and GTZ. Donor support, SEA training, awareness raising and pilot projects have all been instrumental in reinforcing this approach. In 2008, SEA started to be undertaken by the key government agencies such as Ministry of Industry and Trade (MOIT), where SEA is used to evaluate each new Power Development Plan (PDP). However, since 2008 significant improvements have been made to facilitate inter-institutional coordination under various SEA capacity building projects launched by MONRE and key line ministries with support from major donors. According to MONRE (2009), 49 SEAs have been commissioned by these agencies as summarized in Table (1) (Trang, 2011), and most of these projects were supported by ADB, GTZ and Sida (SEMLA, 2008). This number of SEA is small compared to 159 PPPs which have been approved by the Government if Vietnam (GOV) for the period until 2020 (Trang, 2011). Among 49 SEAs, DEIA&A has appraised 31 SEA including 26 SEAs for provincial Social Economic Development Plan-SEDP (2011-2015) and 5 SEAs for sector strategies while

Ministry of Agriculture and Rural Development (MARD) has apprised 7 of its SEAs and Ministry of Defense (MOD) appraised 1 SEA.

Table 2.1 SEAs Commissioned by Vietnamese Agencies until 2009

Vietnamese Agency	Type of SEA	No. of SEA
Ministry of Industry and Trade	For sector strategy	6
Ministry of Agriculture and Rural Development (MARD)	For sector strategy	7
Ministry of Transportation	For sector strategy	3
Ministry of Defense (MOD)	For sector strategy	1
Ministry of Planning and Investment	For regional socio economic development plan	6
Provinces	For regional socio economic development plan	26
Total		**49**

From Trang, Tr. (2011). **Strategic Environmental Assessment in Vietnam: Challenges to the Integration of Environmental Considerations in the Policy Process.** Master thesis in Environmental Management and Economics. Sweden: School of Business, Economics and Law, University of Gothenburg.

Furthermore, considering the definition and aim of SEA given above, SEA can also be seen as a tool for integrating sustainable development within planning. In Vietnam, the sustainable development approach is identified as *"Fast, effective and sustainable development, [through] economic growth in parallel with the implementation of social development, equality and environment protection"*. To do this, the consideration of health in SEA as well as the link between environment and health should be well established, including the need to develop strategies to manage

the environment to protect health (Powis, Nga & Ireland, 2002). This is shown in the Draft "Guidelines for Strategic Environmental Assessment (SEA) of Socio-Economic Development Strategies, Master Plans and Plans in Vietnam (Vietnam – Denmark Development Cooperation in Environment, 2011). The Draft Guidelines are intended to provide practical advice and methods for undertaking SEAs of socio-economic SPPs.

2.3.4 Institutional Structure for SEA

Currently MONRE of which its establishment was approved by the Vietnamese National Assembly in 2002, takes responsibility for environmental and natural resources management at the national level. This body is the leading authority in environmental strategy, legislation and policy formulation, environmental institution building, environmental impact assessment, environmental research, environmental quality standards, data collection and management. MONRE also includes an executive body Vietnam Environment Administration (VEA) and 61 Departments of Natural Resources and Environment (DONRE) which are responsible for environmental management at the provincial level. In addition to this, MONRE works with at least ten other line ministries that have related issues in environment.

With the Law on Environmental Protection in 2005, more responsibilities for environmental management have been transferred to provinces. The SEA reports are appraised at levels with the Vietnamese decentralized framework in Decree No. 29/2011/ND-CP (GOV, 2011). Firstly, The Ministry of Natural Resources and Environment shall appraise strategic environmental assessment reports of strategies, master plans and plans approved by the National Assembly, the Government or the Prime Minister, except those of security and defense secrets.

Secondly, The Ministry of Public Security or the Ministry of National Defense shall assume the prime responsibility for, and coordinate with the Ministry of Natural Resources and Environment in, appraising strategic environmental assessment reports of strategies, master plans and plans involving security or defense secrets approved by the National Assembly, the Government or the Prime Minister.

Thirdly, Ministries, ministerial-level agencies and government-attached agencies shall appraise strategic environmental assessment reports of strategies, master plans and plans falling under their respective approving competence.

And Provincial-level People's Committees shall appraise strategic environmental assessment reports of strategies, master plans or plans falling under their approving competence and provincial-level People's Councils.

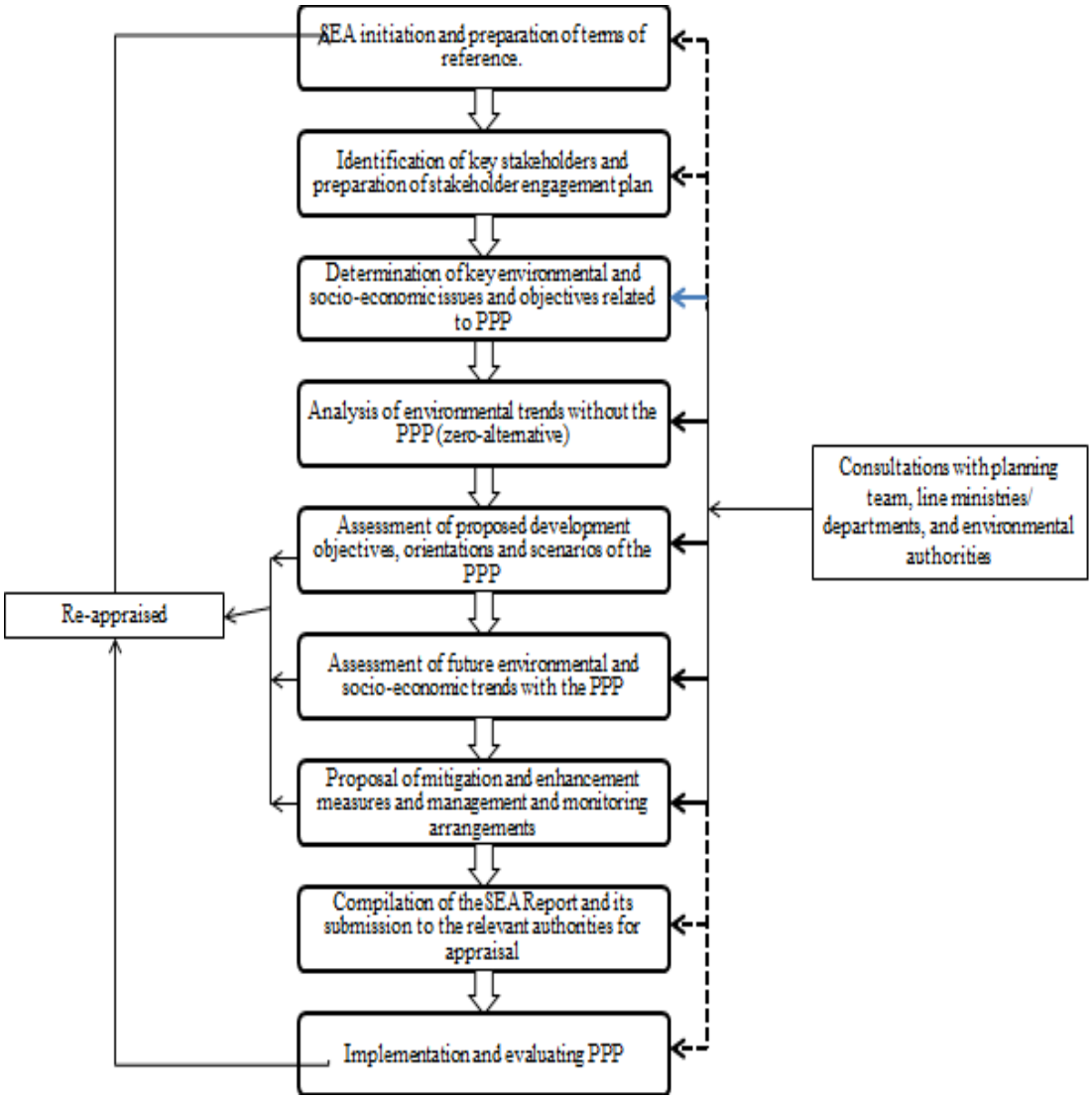
2.3.5 General SEA Process in Vietnam

The SEA process in Vietnam is based on various models of international organisations such as the World Bank, European Committee and other countries (The World Bank, 2006). To implement an SEA, the *Vietnam General Technical Guidance on SEA* (MONRE, 2008) recommends an "8 step process" illustrated in Figure 3.2. The logic of this process follows a "trend analysis" approach, which forecasts and interprets trends in key issues (environmental, social and economic) over time; and the influence that a development strategy, master plan or plan will have on them. Several crucial considerations in some steps can be summarized as follows:

2.3.5.1 Identifying key issues

2.3.5.2 Analysing the past trends and their drivers; and the current situation for each issue; and

2.3.5.3 Forecasting the likely evolution of reasonably foreseeable future trends for each issue; and comparing the future situation both without and with the implementation of the proposed PPPs



From MONRE. (2008). **Hanoi Initiative on Strategic Environmental Assessment**, Strategic Environmental Assessment in East Asia Pacific Region. Hanoi, Vietnam: The World Bank Institute and GMS Core Environment Program.

Figure 2.1 SEA Procedure in Vietnam

2.3.6 SEA and Consultation

In Vietnam, planning authorities may undertake SEA with their own resources, or may contract national or foreign consultants to undertake the assessment. If consultants are hired, they must have appropriate qualifications and meet other requirements stipulated in *Article 8 of Decree 80/2006/ND-CP*. The number and types of SEA experts needed for a particular SEA will depend on: the level and complexity of the planning (strategies, master plans, plans); the content of the planning (types of development activities that will be considered); the issues to be considered (environmental, social, economic etc); and the available budget (MONRE, 2008).

Based on consideration of these factors, the planning authority, in consultation with the relevant environmental authority and line ministries (department) should make a decision regarding a source of information for the assessment.

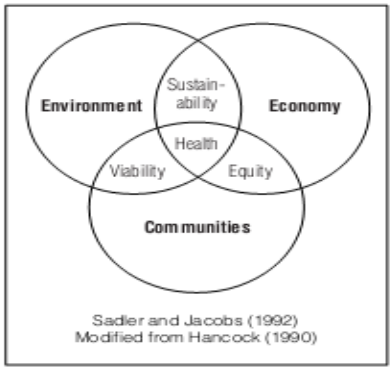
2.4 The Determinants of Health in SEA

2.4.1 Health Considerations

According to the World Health Organization (WHO, 1946), health can be defined as a state of physical, mental and social well-being, and not merely the absence of disease. Sadler (2001) explains that the definition given by WHO overlaps with the associated concepts of human welfare, for example, education and quality of life. Besides, in 2008, Department of the Environment and the Department of Health from the UK government showed the definition of human health as "those aspects of human health, including quality of life, that are determined by physical, biological, social and psychological factors in the Environment". In dealing with ill health, the focus has often been on the curing and caring for those affected. Although this is an important part of ensuring good public health, the need for methods of prevention should not be underestimated.

Davies and Sadler (1997) explained that human health is an overarching goal of sustainability, lying at the intersect of its environmental, economic and social pillars. Their inter relationships are elaborated schematically in the accompanying Figure 2.3: Interrelationship between social, cultural, and environmental factors

known to affect health. Economic development, a key concern for industrial and developing countries, is a central focus for analyzing health benefits and costs. For example, it can benefit health by improving standards of living, providing jobs, or social services, but also cause adverse effects on health and well-being including physical health, psychological well-being, and social and community health such as a breakdown of community and family support networks.



From Davies, K. & Sadler, B. (1997). **Environmental assessment and human health: perspectives, approaches and future directions. A background report for the international study of the effectiveness of environmental assessment**. Ottawa: Health Canada. Retrieved 2012, 17 June, from http://www.hc-sc.gc.ca/hecs-sesc/ehas/pdf/human_health_perspective.pdf

Figure 2.2 Interrelationship between Social, Cultural, and Environmental Factors Known to Affect Health

The environmental factors will tend to affect the health inequality rates in the geographical location of the proposed plan. Wilkinson and Marmot (2003) have buttressed the fact that the common causes of ill health that affects populations are mostly environmental pollutions. The effects that may evolve as a result of a plan may tend to increase the rate of inequality in its geographical location, e.g. increase in mental health and reduce life expectancy. An important point in the above definition is the relationship

that the environment has with the physical and biological determinants of human health; and in order to approach Sustainable Development, human health cannot been separated from Environment as stated by Steinemann (2000).

Furthermore, the social factors can affect health directly and indirectly as their effects accumulate across individuals' lifetimes and generations (Feinstein, 1993). Miller, Simon and Maleque (2009) examined many social factors that influence health such as early life experience; education making an individual more aware of healthy and unhealthy choices; income as well as the link between poverty and ill health; work through links both with health care insurance and with physically hazardous exposures in the workplace; poor or good quality housing posing a risk of exposure; characteristics of communities being physically hazardous because of pollution, traffic, or crime; racial and ethnic background.

Similarly, it has long been recognized that specific behaviors are associated with increased risk of specific diseases and ill health. For example, tobacco use, alcohol consumption, inadequate physical activity, some sexual practices, and high-fat or low-fiber diets have all been recognized as unhealthful (National Institutes of Health, US, 2001).

Most of the organizations, governments, and public in general encourage the consideration of human health in the Environmental Statement and human heath has to be considered as an important element in SEA.

Assessment of health in environmental assessments such as the SEA and EIA was triggered by the early foundations laid down by the WHO. They focused on the assessment of the health hazards associated with specific substances used or produced by industrial and agricultural activities. According to Morgan (2010), projects that assessed health related issues in the 1990s focused on the impacts the physical and ecological environment had on health. As time perspectives on and knowledge about health have improved dramatically, it is now generally accepted that health is much more than the absence of disease and includes social and psychological well-being, as well as the capacity to respond to the changing circumstances and conditions of life (Advisory Committee on Population Health, 1994).

The evaluation of effects arising from development action on human being and their society seems to be recognized as important as those of environmental

impacts (Burdge & Vanclay, 1996). To a certain extent, this has been reflected through requirements for description of potential impacts on human beings like human health. This is stipulated in a number of SEA related regulations, such as the SEA European Directive 42/EC/2001; European Commission (2003) guidance on implementation of the Directive; SEA Protocol (UNECE, 2003); draft guidance on health in SEA (DOH of the UK, 2008); and Agenda 21. These regulations explicitly state that human health be considered in the process alongside biodiversity, fauna, flora, water, air, soil, climatic changes, heritage aspects, landscape and population. Moreover it is obvious that social, economic and biophysical, health impacts frequently build up interactive links in any case of development action.

However, it is not clear how health should be defined within SEA. The SEA Toolkit (Scottish Executive, 2006) says the definition of health in the context of environmental assessment generally, and SEA in particular should be considered in the context of the other issues including (i) biodiversity; (ii) population; (iii) human health; (iv) fauna; (v) flora; (vi) soil; (vii) water; (viii) air; (ix) climatic factors; (x) material assets; (xi) cultural heritage, including architectural and archaeological heritage; (xii) landscape; and (xiii) the interrelationship between the issues referred to in heads (i) to (xii); and is an evolving concept and changes with experience.

Many health determinants are interrelated. Starfield (2002) mentioned that *Determinants of health is* the wide variety of interacting proximate and distal influences on the health of individuals and populations, including but not limited to political contexts, policies, distribution of power and wealth, economic and physical and social environments, health systems and services, as well as genetic, biological, and historical-cultural characteristics. These are shown in Figure 2.4 Categories of Health Determinants modified from Starfield (2002) and Department of Health (2008). The categories encompass a series of intermediate factors that are determinants of health, through which changes due to a policy or project can impact on people's health. The precise categories used and their component parts may vary according the nature of the proposed policy, programme or other development thus providing sufficient flexibility in the application of the health impact assessment concept in different circumstances. The extent of the nature and type of categories

shows why it is difficult to design a proper and adequate monitoring program to evaluate health impacts.

The quality of the biophysical environment, supportive communities and economic development all have a vital role in maintaining and improving human health (Advisory Committee on Population health, 1994). On the other hand, the scope of health impacts including identification of the type, duration, spatial extent and distribution of impacts, depends on the types and context of development actions.

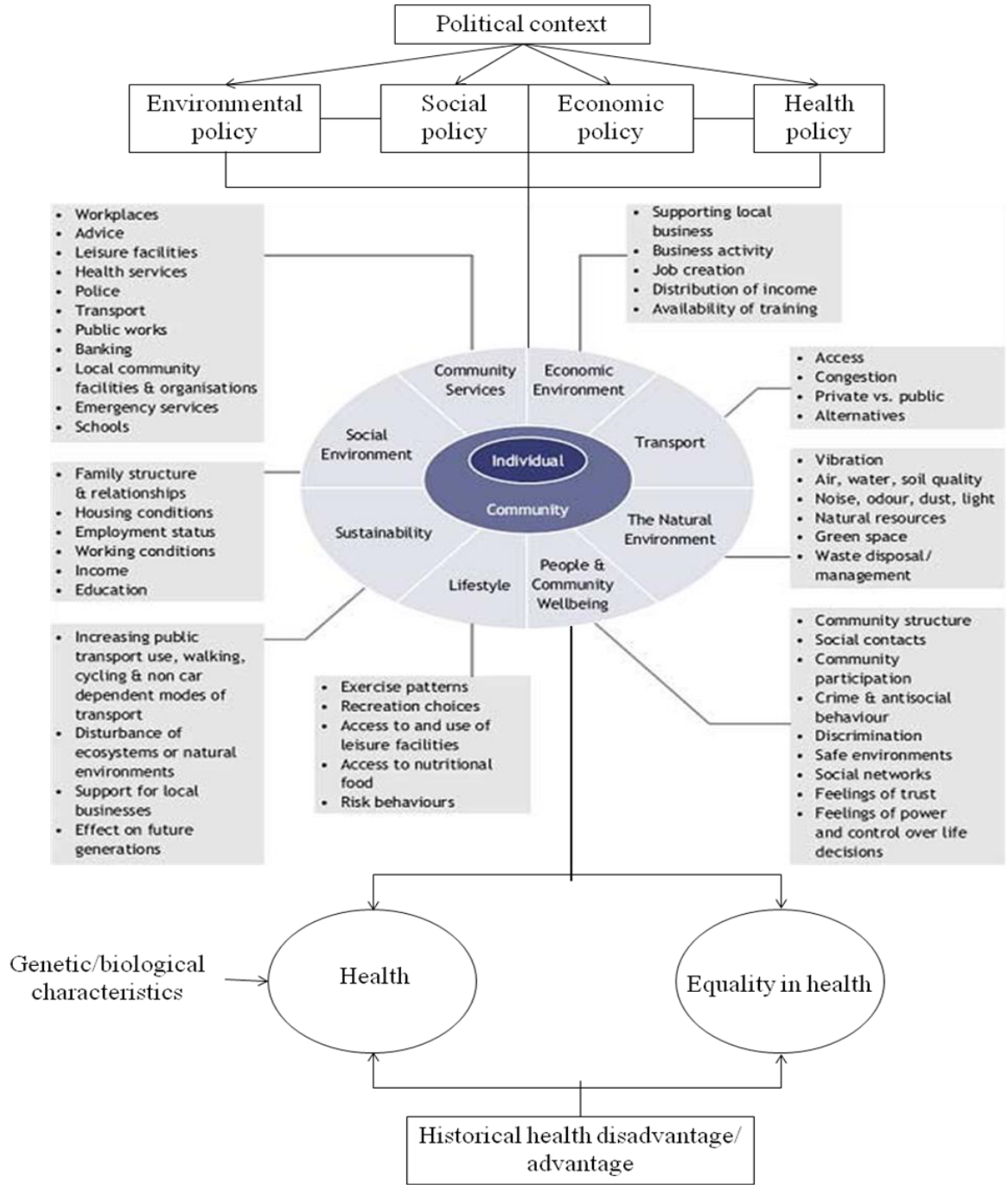


Figure 2.3 Categories of Health Determinants

2.4.2 Health in Planning

Fischer (1999) explained the need for planning principles to consider health. He investigated the various measures used from the mid-1800s that have resulted in improved general health and a lower mortality rate. Therefore, planners have a major responsibility to contribute to the development of primary prevention intended to thwart the spread of ill health and the related human and economic losses. Authors like Frumkin, Frank and Jackson (2004) have argued that planning practitioners need to understand the impact of the built environment and other health determinants on human health. The Nuffield Council on Bioethics (2007) says that the government has responsible for protecting the health of vulnerable groups, such as children, and is committed to tackle any form of discrepancy that may occur in such groups.

Fisher, Matuzzi and Nowacki (2009) mentioned that as PPPs in the other sectors affect health, addressing the wider determinants of health in SEA provides a scope for action outside the health sector itself. This action prevents detrimental effects on health and boosts health promotion.

Many authors like Barton and Tsourou (2000); Davies and Sadler (1997) highlighted reasons why considering health in planning creates substantial benefits for main groups of stakeholders such as governments, communities and developments. These reasons include that health contributes to sustainable development, because human health and well-being were recognized as the ultimate goal of sustainable development.; minimizing adverse effects on health and maximizing beneficial ones by identifying appropriate mitigation measures, even mitigation measures used for environmental protection; addressing public concerns help to provide a useful means of addressing these issues, and create more chances for public to approach relevant information and talk about their concerns; minimizing the need for separate health impact assessment, because the health effects of projects and policies are considered at the same time as environmental and economic issues; demonstrating cost effectiveness is thank to the health effects prevented from occurring, the cost on health care services is avoided.

Some countries have legislative requirements on including health in EA. But even where there are such requirements, the scope of the health effects to be assessed

is rarely stated and the term ‘health’ is not defined. The level of consideration of human health in SEA has been limited, although human health is included as one of the types of environmental effects or the biophysical aspects of health to be addressed; or linked with requirements to consider social and cultural effects (Davies & Sadler, 1997). While legalistic planning traditions appear to lead to a limitation of the factors for assessment to those legally required, they often appear to be used subsequently more consistently (Fischer et al, 2009).

2.4.3 Health in SEA Process

According to the Protocol, with the support of UNECE, 2003 and the EU SEA Directive, there are five stages needed to support health assessment in the SEA process. These five stages are shown in Table 2.2

Table 2.2 Health Sectors in the Five Stages of the SEA Process

SEA Stage	SEA Tasks	Potential Health-Sector Input
Stage A: Setting the context and objectives, establishing the baseline, deciding on scope	A1:Identifying relevant plans, programmes and environmental protection objectives A2: Collecting baseline data A3:Identifying environmental problems A4:Developing SEA objectives, indicators and targets A5: Consulting on the scope of SEA	Cover key health issues from existing documents Include relevant health data in the baseline, including a review of health evidence Involve health organizations in objective setting Consult regional DPHs and primary care trust (PCT) DPHs for their opinion on the scope Identify vulnerable groups

Table 2.2 (continued)

SEA Stage	SEA Tasks	Potential Health-Sector Input
Stage B: Alternatives and assessment	B1:Testing the plan or programme objectives against the SEA objectives B2:Developing strategic alternatives B3: Predicting the effects of the draft plan or programme, including alternatives B4: Evaluating the effects of the draft plan or programme, including alternatives B5: Considering ways of mitigating adverse effects B6: Proposing measures to monitor the environmental effects of plan or programme implementation	Include health organizations in assessing plans against objectives and developing alternatives as appropriate Consider potential health effects Suggest relevant measures to mitigate negative effects and maximize opportunities for health gain Include health data for monitoring effects
Stage C: Preparing the Environmental report	Preparing the environmental report	Presenting the findings and recommendations of health impacts/issues in a written report.

Table 2.2 (continued)

SEA Stage	SEA Tasks	Potential Health-Sector Input
Stage D: Consultation and decision-making	Recommendation approvals will: Consult on the draft plan or programme and environmental report Assess significant changes	Providing information for decision making Contribute to consultation and provide contacts from patient and public involvement groups Input to revisions as appropriate
Stage E: Monitoring implementation of the plan or programme.	Developing aims and methods for monitoring	Input to monitoring of health impacts of plan/programme implementation

From United Nations Economic Commission for Europe (UNECE). (2003). **Protocol on Strategic Environmental Assessment to the Convention on Environmental Impact Assessment in a Trans-boundary Context**. Retrieved 2012, 9 April, from http: //www.unece.org/env/eia/sea_protocol.htm

In practice, Fischer, Matuzzi and Nowacki (2009) researched and evaluated eight cases of SEAs from regions in Europe regarding the health consideration. Based on the results, the authors mentioned both challenges and opportunities for health inclusive SEA. Overall, good baseline data can be seen as an important starting point for effective health in of SEA, while an effective monitoring system is critical for effective implementation of the measures and recommendations. Particularly, health authorities need to engage more with SEA. Implementation SEA is the consideration

of not only physical, natural factors, but also social, behavioral factors; and always focuses on those that are relevant in a specific situation.

2.5 Health Sector in Vietnam

2.5.1 Current Status

Due to climate change the health of millions of people in Vietnam is risk, with the rapid industrialization, urbanization and motorization in Vietnam in recent years and environmental pollution also adding serious health issues (WHO, 2011).

According to preliminary statistics from the Census and Housing survey on 01/4/2009, 87% of households have access to safe water source and 54% of household use hygienic latrines.

In line with industrialization and urbanization process, urban environmental pollution, air and water pollution in residential areas is getting serious, which directly affects people's health. Air pollution in urban areas is mainly caused by traffic (70%) with overcrowding of vehicles such as cars, motorbikes, and ongoing construction work drastically increasing the problem (MoH, 2008).

Working environment and conditions have improved, especially when investors and production facilities import complete technology lines. However, in some local production facilities, many factories use old and out-of-date production lines thus causing pollution in the workplace. For small-sized and private businesses, and traditional craft villages, working conditions are not supervised or are under very limited supervision. There is a great in-flow migration from rural to urban centers with workers seeking jobs with diverse and uncontrolled work, and working under unsecured conditions, and these people are at risk of health hazards and diseases because full support from occupational health hazards is not provided (MoH, 2008).

It shows that about 200-300 cases/million inhabitants/year get diseases caused by outdoor air pollution, surface water (Cau, Nhue, and Sai Gon River Basins), underground water (some provinces were contaminated from PO_4 and As), and the poor quality of rural and small urban water supplies, and the inadequate collection and treatment of solid wastes (urban and industrial parks generate 70% total of generated

waste). Besides health matters related to food safety and sanitation need to be noticed because of more 4,000 cases of food contamination in the nation, among them, there were 50 cases of death (Thanh & Hieu, 2008).

Vietnam has suffered $780 million per year losses in the terms of public health services because of environmental pollution (MONRE, 2007).

2.5.2 Assessment of Health Impacts in Vietnam

Reviewing what health issues were concerned in policy, plan, and program in Vietnam can be seen as opportunity for achieving the best practice framework in the process of SEA.

The need to develop appropriate policy, legislation and management approaching to integrate environment and health into planning for sustainable development have recognized in Vietnam since 1991 from State Committee for Science. The plan recognized the impact of poor environmental management on national mortality and morbidity rates, stating that '…in urban areas the threat to human health lies principally in effects of industrial pollution, vehicle emissions, overcrowded living conditions, poor sanitation infrastructures such as drinking water, toilet facilities, sewage disposal and waste management as a whole.

After 3 years, since 1994 the model for development of a National Environmental Health Action Plan (NEHAP) in Vietnam led by the WHO has been to provide the opportunity to link environmental and health policy and its implementation, at both the national and local levels. However, Powis, Nga and Ireland (2001) through NEHAP process in Vietnam concluded that the difficulty in developing and implementing national environmental health action plan may be attributed to top down approaches and separating planning from implementation. According to Burns and Bond (2008); Steinemann (2000) stated that securing human health is seen as one of the major challenges for planning and SEA.

Then the high level Meeting on Health an Environment in the ASEAN and East Asian countries, 2004 reviewed major and common Environmental health issues, and delineated actions to strengthen the effect on collaboration between the health and environmental sectors, which marked an obvious advance in terms of the line of leader vision.

Vietnam has general and specific regulations for preventing and mitigating Environmental and socio-economic problems to protect public health and environment. Some legal instruments summarized in Table 2.3

Table 2.3 General and Specific Laws, and Regulations Applicable to Health Issue

Category	Laws and Regulations
Environment	1. National Environmental Health Action Plan (NEHAP) in Vietnam, 1994. 2. Meeting on Health an Environment in the ASEAN and East Asian countries, 2004.
Health	1. Decision 152/2010/BYT about occupational health. 2. National Target Program for Clean water and sanitation; on Food Safety; on prevention and control of HIV/AIDs, 2011 3. National Health Target Program, 2011
Applicable to all sectors	1. IEC materials for 63 provinces on coping with climate change. 2. Natural disasters, catastrophes plans: e.g. prevention of outbreaks of diseases. 3. Law on prevention and control of infectious diseases, 2007. 4. Resolution No.41 NQ/TW, 2004: environmental protection is one of the issues of vital importance to humanity, and quality of life of the people.

In Vietnam, establishing the Health Environment Agency in 2010 has helped to take health into account across all policy areas and, where possible, integrating action to promote better health and wellbeing as part wider policies and programmes. It includes environmental protection at health facilities, environmental health, hygiene and health of workers, prevention of occupational disease and labor accidents, control of factors affecting health from climate change, control of chemical pesticides used in the health sector. In other words, it

is the point of contact for health advice for Responsible Authorities undertaking SEA/EIA if these fields will be considered in the SEA/EIA.

In summary, there are facilitation factors such as appropriate policy, legislation and management approaching to integrate environment and health into planning and establishment the new Health Environment Agency, which helps to promote for effective health inclusive SEA.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 Introduction

In the previous chapter the second objective of this thesis has been fulfilled with the establishment of a conceptual health and consideratiion of health in the context of SEA, based on literatural reviews. Yet some practical techniques have to be specified in order to assess the quality and adequacy of the SEA in Vietnam and to provide some recommendations on improving current extent related health sector and SEA practice. Therfore, this chapter encompasses the development and objectives for the methodologies adopted.

The study employs a qualitative method, starting with literature review to refine the analytical framework to answer the first research question: “How has the health consideration in SEA been introduced in Vietnam”. To answer question two “What are key challenges to implement SEA as an approach to integrating health consideration into the policy formulation process in Vietnam”, from this review is analyzed using the analytical framework of the selected SEAs based on that used by Fischer, Matmuzzi and Nowacki (2009) in their analysis of SEAs conducted across Europe. From an interview and the review of the SEA introduction, Vietnamese strategic planning process is drawn to answer question three “What methods are used in identifying the impacts of a proposed development on human health”. Finally, based on the analysis of challenges, limitation, and recommendations to improve the implementation of SEA in Vietnam are proposed to question four: “How effective or relevant are these methods in analyzing the ultimate goal of sustainable development”.

3.2 Selection of Documents

The essential first step in this study is to collect SEA reports in Vietnam. The choice of documents comprised of a desk-based literature study and eight SEA documents was obtained for review. The reason for the small sample size was as a result of time constraint in reviewing all the documents; and in fact this step has been a difficult task because of legislative and bureaucratic reasons. Furthermore, it is also believed that all government SEA/EIA reports in Vietnam need permission from the Government agency (e.g. MONRE or provincial DONRE) before they can be released to the public (Hostovsky, Maclaren & McGrath, 2010). By contrast, in case of projects receiving SIDA funding (Official Development Assistance), SEA reports are made available to the public through the Internet, following the policies of these organizations. When selecting the SEA case studies to be reviewed in this study, the following strategy was used:

1. SEA was carried out according to requirements of LEP (2005) and new Decree No.29/2011/ND-CP on projects proposed to assess relevance to human health;
2. SEA covered all categories of the planning region where the assessment was carried out (national, provincial and city);
3. SEAs covered plans of socio-economic and industrial infrastructure development;
4. SEA was prepared by either private sector consultancy or international consultancy.

The choice of selection in the above sectors was as a result of the small sample size and more than one document was chosen to obtain a variety of results from the various sectors.

Most SEA reports collected for analyzing in this study were extracted from MONRE. The total of eight (8) samples with different number of SEA reports for each category were produced from 2006 to the middle of 2011 with 6 SEAs from MONRE and 2 SEAs from SIDA, WB funding. Selection criteria included a range of different sectors (Socio – Economic Development Plan; Mineral Industry development Plan; Power Development Plan; Hydropower Plan) and a range across

the difference levels (local, regional, national). Most SEAs were prepared by domestic consultants.

Table 3.1 SEA Case Studies

No.	Case Study in Vietnam	Period
1	SEA of the Ho Chi Minh city Socio- economic Development Plan	2020 - 2025
2	SEA of the Quang Ngai Province Socio- economic Development Plan	2010 – 2020 with a vision 2025
3	SEA of the Tra Vinh Province Socio- economic Development Plan	2006 - 2020
4	SEA of Master Plan on exploration, mining, processing and using of titanium ores	2007 – 2015, a vision 2025
5	SEA of development plan for the coal industry, Vietnam	2020 with a vision 2030
6	SEA of development plan for the cement industry, Vietnam	2020 with a vision 2030
7	SEA of the National Power Development Plan (NPDP) VII	2011 – 2020 with a vision 2030
8	SEA of the Quang Nam Province Hydropower Plan for the Vu Gia-Thu Bon River Basin	2006 – 2010, a vision 2015

Firstly, the 8 cases are introduced, focusing on the overall context which they were prepared, describing the specific plan that SEA is applied to (For more details, see Appendix A). In other words, the context of the eight reviewed SEAs is explained, particularly to gauge an understanding for the underlying plan. Main objectives of the underlying plan are listed. If the plan is linked to health issues to start with, SEA can be expected to focus more closely on health. Secondly, results of the review of the SEA documentation is presented, based on a set of questions, shown in Table 3.2. Thirdly, the eight case studies are compared together regarding the consideration of

health aspects. In this context, added value, as well as shortcomings and problems are elaborated on SEA reports.

3.3 Criteria – Based Approach

This method involves the use of a technical review to assess the quality of SEA reports based on a set of questions, shown in Table 3.2. The technical review was designed by incorporating the criteria for good quality SEA into a review format with respect to health impact assessment. The questions created based on the approach introduced by WHO and derived from an earlier of Fischer, Matmuzzi and Nowacki (2009) which presented at the 9th International HIA conference on 9 October 2008 in Liverpool. The questions are divided into 4 review areas with 10 sub-questions. Both quantitative and qualitative information were collected on each of the following four review areas:

A. The first area on understanding of health was assessed on the following criteria: a number of SEA related regulations such as Directive 42/EC/2001, SEA Protocol, 2003, and Agenda 21 that addresses interactive *links between different factors* (e.g. social, economic, biophysical …) *and human health, especially its considered on different groups of the population* in any case of development action such as national socio-economic development; plans for land use, forest protection or of other natural resources; or plans for inter-provincial river watersheds.

B. The review area of health expertise was assessed on the following criteria: *health authorities engage in the stage of SEA and decision – making process* as determination of significant health effects, assessment of expected impacts on health, monitoring implementation of the plan/programme to draw on the potential for health protection and promotion in environment and public health decisions.

C. The third area on considering health data was assessed on the following criteria: *good baseline data* can be seen as an important starting point for the main stages of effective health inclusive SEA at the screening, scoping, environmental report and *monitoring to gain an understanding of the affected environment* and carry

out the assessment. The baseline information is the inter-relationships between physical, natural, social, economic, behavior and human health.

D. The final area on following up health and well – being impacts was assessed on the following criteria: *participation of health stakeholders, the influence of health inclusive SEA on the decision – making process, the SEA recommendations refer to health effects, and interaction between the responsible authority and key stakeholders to identify appropriate indicators and measures*. All these factors are shown in the framework presented in Table 3.2 (WHO/Europe, 2009) and Fischer, Matmuzzi & Nowacki, 2009).

Table 3.2 The Review Framework to Assess the Quality of HIA in SEA Reports

No.	Review Area: Sub – Questions
A	Understanding of health
	1. How is health and wellbeing understood/interpreted? What are the terms defined or described?
	1) Natural: connection of health with e.g. flora, fauna biodiversity, soils, air, water
	2) Physical: connection of health with e.g. the built environment, noise, emissions
	3) Social: connection of health with e.g. education, unemployment, social exclusion, crime
	4) Behavioral: connection of health with e.g. lifestyles (smoking, alcohol, sport), healthy forms of transport
	2. Is characterization of the existing environment and alternatives related to health issues described?

Table 3.2 (continued)

No.	Review Area: Sub – Questions
	3. Which of the following issues/aspects are considered? *1) Health behavior (*Healthy lifestyles (Diet, Smoking, Alcohol and drug additions, Sexual practices); Leisure activities; Food; etc.) *2) Physical infrastructure (*Housing facilities; Transportation network & services; Health care services; Open and Green/ Natural spaces*;* Water, solid waste, sanitation systems; etc.) *3) Environmental conditions (*Contamination of air, soil, or water resources with hazardous substances*;* Community noise, vibration*;* Light pollution*;* Geographical hazards from floods, landslides*;* Climate change; etc.) *4) Socio – Economic conditions (*Education & Training*;* Income & livelihood*;* Social networks and support; Crime rates*;* Inequality or equity*;* Poverty*;* Migration & Resettlement; etc.)
	4. Does the SEA consider distributional impacts i.e. the impact on different groups of the population (affected groups and communities, including workers, the public and any sensitive sub-groups such as indigenous people, children, the elderly, pregnant women, etc.)?
B	Health expertise
	5. Were health professionals involved? (yes/no/not stated). If yes who and at what stage?
C	Health data
	6. What if any explicit health data is used? If used, is the health data based on existing studies or is new data collected specifically for the SEA?
	7. Is there a mix of quantitative and qualitative methods in SEA in terms of identification and evaluation of health impacts?
	8. Do inequalities identify in the health impacts and state the effects of the inequalities on the population?

Table 3.2 (continued)

No.	Review Area: Sub – Questions
D	Following up Health and Well – being impacts
	9. Do the report describe how the engagement undertaken, in terms of results, conclusions?
	10. Do the SEA list recommendation to facilitate the management of health effect, regarding monitoring of health impacts and the enhancement of beneficial health effects?

The SEAs selected can be seen to reflect current areas and levels/ tiers of application well. Most current SEA practice is happening in socio – economic development planning at local and industrial sectors and energy planning at regional and to a lesser extent at national levels.

3.4 Data Analysis

SEA reports were reviewed using the designed review framework showed above. Some additional sustainability questions are included based on WHO/Europe (2009), Fischer, Matmuzzi and Nowacki (2009) – Consideration of health in SEA, and policies and regulations relevant to health impact in Vietnam. The review framework consists of 4 sections, as follows:

Section A: Understanding of Health

Section B: Health expertise

Section C: Health data and analysis

Section D: Following up health and well – being impacts

The four sections are sub-divided into 10 questions (see table 3.2). Each of these questions is answered and scored in a qualitative manner, using the following grade system including 7 levels to show quality of SEA reports from very good to very poor (Lee & Colley, 1987):

Grade 1: The work has generally been well performed with no important omissions.

Grade 2: Is performed satisfactorily and complete with only minor omissions/ inadequacies.

Grade 3: Is regarded as just satisfactory despite some omissions or inadequacies.

Grade 4: Indicates that parts are well attempted but, on the whole, are just unsatisfactory because of omissions or inadequacies.

Grade 5: Is not satisfactory, revealing significant omissions or inadequacies.

Grade 6: Is very unsatisfactory with important tasks poorly attempted.

Grade 7: Task not attempted at all

Each of the four sections was answered and graded in a case-by-case manner, based on the overall picture emerging from the grades allocated to the underlying questions. In this context, section grades were not necessarily representing averages, as, for example, a very poor grade in one of the questions could result in a poor grade for the overall section, even if other sections received higher grades. This suggests that little additional effort may be needed in order to improve a certain section. In the discussion and interpretation of the results, as well as in the recommendations provided later, this was taken into account

3.5 In – Depth Interview

The quality of a health-inclusive SEA report is one key scientific question of this study. The criteria-based technical review, which is described in the previous section, was the main method to evaluate the consideration of health impacts in the SEA process. The criteria were developed based on the international guidelines (WHO/Europe criteria, 2001); thus the results of the evaluation should be objective if the guidelines contained defined levels of completeness. Unfortunately, the international guidelines contain only the criteria that should be included in the HIA and not a grading system to measure the degree of completeness or adequacy. Hence, the evaluation done in this study with respect to the HIAs studied was quite subjective. In addition, the evaluation was not able to explain the reasons behind the

observed practices or shortcomings that appeared in the 8 SEA reports studied and other SEA reports. Therefore, this study supplemented the technical review using in-depth interviews as an additional method to validate the results of the technical review and to provide a deeper understanding of the challenges in carrying out health-inclusive SEAs in Vietnam.

Interviews can be done by semi-structured method which uses the informal conversation between the author and interviewee involving SEA practitioners and health experts. A script of questions was prepared in advance. An interview outline was developed based on preliminary findings from criteria-based technical reviews (see more Appendix B). The outline was essentially comprised of effective probing questions required to reveal greater detail and clarity or expanding upon earlier responses, which help to reflect on their personal experience. In order to achieve the objectives of this research, it was important that the topic areas for the interview were considered to gain relevant data with findings from the preliminary criteria-based technical review. To do this two points needed to be clarified: firstly the quality of the case studies needed to be established; and secondly the key aspects required for good practice in integrating health in SEA in developed countries highlighted (NEPA legislation in the United States; European Commission (EC) Directive 2001/42/EC, Protocol with the support of UNECE, 2003). Identification of these key aspects was required to achieve answers for the final research question. The key aspects were stated as follows:

1. Description of definition of health and regulations that promote public health and support the protection of well-being;
2. Stakeholder/ Consultant with relevant health expertise;
3. Consideration of distributional impacts i.e. the impact on different groups of the population (particularity health inequalities);
4. Data sources to establish the baseline information and methods to identify potential health impacts;
5. The level of improvement of SEA quality in the health context in Vietnam

The semi structured format allows for the interviewee to elaborate on 4 review areas. This enabled a greater depth and range of information to be provided by the interviewee. Further clarification of any information arising from the data analysis

process was then obtained through personal conversation. The method is decided doing the interviews by face-to-face. Because the research can be adapted the questions as necessary, clarify doubt and ensure that the responses are properly understood, by repeating or rephrasing the questions. The extension and enrichment of the understanding expressed can be achieved.

Firstly, the emails were sent to the interviewee in Vietnam to request for the face-to-face interview. This process took time since the emails were sent to the interviewee first to inform him/her about the study:

1. Background of study;
2. The purpose of the interview and the estimated time it would take;
3. How the research would be used and its potential benefits for a sustainable development in Vietnam;
4. The time and date of the interview could be flexible and enough to fit in with their timework.

Interviews were carried out with six SEA practitioners and health experts from Vietnam. The details of the persons interviewed in Vietnam can be seen in Appendix C. The interviewees consisted of consultants, environmental managers, environmental health managers, and appraisers participated in various SEA reports in generally. The reason for choosing participants from different professional areas was to cover the possibility that the research participants would not put the same emphasis on the consideration of health issues in SEA reports generally.

The data collected from the interviewees were transcribed based on the notes taken during the interviews, and analyzed to identify emerging findings and connections between statements. These findings were then coded into categories which related to the key findings covered in the technical review to highlight similarities between interviewee responses. Where possible, categories were subdivided into: limitations, causes and recommendations to achieve the main objective of the research.

CHAPTER 4

RESULTS

4.1 Introduction

This chapter reports and discusses the findings from analysis of the HIA in the SEA documents. Results of the analysis are presented, based on the overall performance of the different SEA documents in 4 review areas with 10 sub-questions dealing with health indicators, using the following grade system including 7 grade levels to show quality of each subcategory from very good to very poor. These findings from interview data validate the data of the technical review and provide a deeper understanding of the challenges in carrying out health impact assessment in SEA

Each indicator was judged according to these 7 grade levels and the most appropriate grade was given for each SEA as explained and shown in the subsequent sections.

4.2 Review Area A – Understanding of Health Issues

4.2.1 Review Area A1 – Definition of Health Issues

Table 4.1 illustrated the grades of each document on the definition of health which is a subcategory in the first review area. Overall, the main health concerns in the impact assessment in almost all SEAs were physical aspects, meaning concerns with air quality, water quality, noise, emissions.

Table 4.1 The Quality of HIA in SEA Reports in Terms of Definition of Public Health

	Definition of Human Health	**Case Study**							
		1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
A.1	How is health and wellbeing defined?	(2)	(4)	(4)	(4)	(4)	(4)	(2)	(2)
	Natural: connection of health with e.g. flora, fauna biodiversity, soils, air, water	✓	✓	✓	✓	✓	✓	✓	✓
	Physical: connection of health with e.g. the built environment, noise, emissions	✓	✓	✓	✓	✓	✓	✓	✓
	Social: connection of health with e.g. education, unemployment, social exclusion, crime	✓	-	-	-	-	-	✓	✓
	Behavioral: connection of health with e.g. lifestyles (smoking, alcohol, sport), healthy forms of transport	✓	-	-	-	-	-	✓	✓
	The document should describe regulations that promote public health and support the protection of well-being	-	-	-	-	-	-	-	-

(Grade 1: The work has generally been well performed with no important omissions;

Grade 2: Is performed satisfactorily and complete with only minor omissions/inadequacies;

Grade 3: Is regarded as just satisfactory despite some omissions or inadequacies;

Grade 4: Indicates that parts are well attempted but, on the whole, are just unsatisfactory because of omissions or inadequacies;

Grade 5: Is not satisfactory, revealing significant omissions or inadequacies;

Grade 6: Is very unsatisfactory with important tasks poorly attempted;

Grade 7: Task not attempted at all)

All SEAs put into consideration the physical effect on health from all types of emissions, such as noise, air pollution, solid and hazardous wastes, and water pollution. Only three SEAs (1, 7, and 8) gave a better clarification which included social and behavioral aspects of health

The Ho Chi Minh City SEDP (Case 1) was the only document that gave the definition of health which encompassed most of the facets relevant to health. Human health is defined in the case (1) that: depletion of environmental quality caused by, emissions from industries, transports; by air and water pollution, or climate change, which affected human health. In addition, the effects on mental and social well-being are relevant to socio – economic determinants in urbanization, development of industries and services and uncontrolled ecosystem. It stated these adverse effects on human health are relevant to not only depletion of environmental quality, but also socio – economic determinants as a state of physical, mental and social well-being. In other words, it dwelled into presenting how the determinants of health have evolved in the city. This was achieved through a detailed explanation of objectives for enhancing the health of the people in its city. However, many of the documents explained the baseline conditions of the plan but did not give detail on how the health of the public would be affected without the plan.

National Power Development Plan (NPDP) VII (Case 7) also gave an extensive list of how the health determinants are concerned in the country based on WHO Standards (WHO, 1948). It gave a detailed explanation of why the preferred options were selected. It explained that the determinants of health have a close relationship with wider indices, as for example that inter-relationships are mentioned between health and water quality, poverty, healthy lifestyles, fresh food, pollution, livelihood, settlement. It went on to further state that the existence of strategy can be addressed by pending issues on the cause of poor health and health inequalities. However, the NPDP VII as many of the documents did not support details about the

benefits and non-benefits to health of the proposition or its relationship with other proposals, and determine whether effects can be prevented on certain demographic or vulnerable groups.

The Quang Nam Province Hydropower Plan for Vu Gia-Thu Bon River Basin (Case 8) also described at good definition of health by using WHO Standards involved both health determinants and health outcomes, for instance that human health is a direct impact of environmental conditions. If environmental quality is degraded, human health will be affected directly through respiratory diseases, skin infections, or indirectly food poisoning i.e.. The document also interpreted that a connection is made between plans and ethnic minorities, environmental quality, healthcare services, and immigration that will continue to exist without the plan.

Using results from the interviews, what was reported by 4 respondents (1 environmental health experts, 1 appraiser and 2 consultants) has showed that wider determinants of health are basically seen as the level of awareness about the importance and benefits of health consideration in SEA. The result confirmed a statement that there is no specific definition of human health in the context of environmental assessment in Vietnamese law. And the health concept is only narrowly defined.

Interestingly, all case studies gave detail relating to the plan but insufficient coverage of the health concept, health regulations to promote public health and in putting public health considerations into the plan when deciding on the preferred option, and the alternatives to the proposal plan.

4.2.2 Review Area A2

Table 4.2 shows how characterization of the existing environment is described in terms of health issues. Only 2 SEAs gave characterization of the environment in terms of health.

Table 4.2 The Quality of HIA in SEA Reports in Terms of Characterization of the Background Information

Characterization of the Information		Case Study							
		1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
A.2	Is characterization of the existing environment and alternatives described?	(4)	(6)	(6)	(6)	(6)	(6)	(3)	(3)
	A description of the well-being of the people without the plan	✓	-	-	-	-	-	✓	✓
	The benefits and non-benefits to health of the proposition as well as its relationship with other proposals	-	-	-	-	-	-	✓	✓
	Description of the alternatives to the proposal plan on the population's health	-	-	-	-	-	-	-	-

National Power Development Plan VII (Case 7) gave a description on diseases without the plan or its relationship with other proposals. The Plan VII stated that "Environmental pollution and employment pressure increase the risk of air related diseases such as respiratory disease, pulmonary disease, and cardiovascular disease, etc. in addition, there are water related diseases such as malaria and snail fever, which are caused by organisms living in the water (mosquitoes and snails), and dysentery, cholera and hepatitis A, which are spread through contaminated water . Occupational illnesses include deafness, loss of vision, blood pressure, etc. Some diseases are more dangerous such as cancer, cardiovascular disease, and liver and kidney failure, etc.". While all these statements are correct, there was no analysis relating these health concerns with the National Power Development Plan or which power options would increase or decrease potential impacts to health. The study further stated that "the metal and social well-being of people are affected as

illnesses reduce productivity and income. If someone in the family is ill, it not only costs money but also has effects on the time and psychology of the sick person and other family members". However, the mentioned health related issues and described possible impacts were satisfactory with some omissions, but analysis moderately provided. The analysis of how these statements relate to the overall NPD VII, and how many people might be affected was not done. The findings are discussed explicitly more in 4.2.3 (review area 3) Thus the HIA was minimal and of little value to decision makers.

The Quang Nam Province Hydropower Plan for Vu Gia-Thu Bon River Basin (Case 8) showed that although detailed information on specific indicators in the basin has been partial, the area is likely to reflect current national trends. It is clear that the document also gave a description of well-being profile based on national health indicators statistics to analyze health problems in affected communities without the plan, and predict future trends with, or without the plan. The HP illustrated that "morbidity related to basic sanitation and the level of available health services has declined. Upland areas remain of key concern due to poverty, child malnutrition, low education levels and poor health care provision". The SEAs provided supporting analyses, such as the increase in morbidity and mortality risks resulting from poor sanitary conditions and a decrease in the level of available health services. However, quantitative risk assessment was not used to estimate mortality risks from disease, for example the total individual disease risk at around level was not estimated when the proposed project is not expected to have significant adverse effects on human health.

The finding is also recognized by 2 environmental health experts that the detailed information of the environment in terms of health has been partial; the area is likely to reflect trends in morbidity – mortality risks and types of causes-effects which were not done. Thus it may bring sure value to decision makers, but it is not enough to establish a decision pathway that determines future PPP-level alternatives.

4.2.3 Review Area A3

Table 4.3 shows which health issues/aspects were considered in the SEA. The impacts of natural - physical aspects on public health was assessed in all 8 cases, even some aspects such as health inequalities between different neighborhoods are

mentioned in 3 per 8 case studies (case 1, 7 & 8); however, almost all the assessments of reciprocal effect between these aspects and human health were not elaborated in terms of types of causes – effects of each stage of development or types of diseases in these reports.

Table 4.3 The Quality of HIA in SEA Reports in Terms of Determinants Related to Human Health

	Human Health Determinants	**Case Study**							
		1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
A.3	Which of the following issues/aspects are considered?	(3)	(4)	(6)	(5)	(4)	(5)	(3)	(2)
	Health behavior	-	-	-	-	-	-	✓	✓
	Physical infrastructure	✓	✓	-	-	✓	-	✓	✓
	Environmental conditions	✓	✓	✓	✓	✓	✓	✓	✓
	Socio-Economic conditions	-	-	-	-	-	-	✓	✓

Physical and natural impacts on health: it is clear that the cases (1, 2, 7 & 8) have analyzed sufficiently the important health risks associated with the hazards from surface water pollution: non-communicable diseases and communicable diseases. Besides, it is also the link between heavy metal pollution in underground water and the main health hazards, risks when PPPs are set up. For example, Case 2 gave a clarification on types of causes-effects and types of diseases in connection between water pollution and public health. A large increase in diseases and new health risks such as gynecological, cholera, dysentery, rectal diseases, etc. in Case 2 is associated with water pollution as a result of domestic wastewater, solid waste, salinity and acidification due to irrigation, Flood-Control, or the use of pesticides and fertilizers in agricultural which leads to increase morbidity related to the use of water resources in Quang Ngai province, especially skin diseases and gynecological diseases. In contrast, Cases 3-6 did not consider physical and natural impacts on health in detail.

These case studies only referred to them as an element affecting human health. The analysis of health impacts was only one sentence. For instance, the connection between environmental problem and well-being, public health is stated in Case 3 that "Socio-economic development plan of the Tra Vinh province has led to environmental problems (water, air, soil) as factors directly or indirectly on affecting human health"; in Case 4 only showed that "the high level of radioactivity in drinking water which would be contaminated could have an adverse effect on health of mining workers, or neighborhoods around the PPP". Health impacts were mentioned, but inadequately supported by analysis, such as the increased in morbidity and mortality risks resulting from an increase in environmental problems like drinking water or air quality. The analysis focuses on a single cause, single effect and single generation, rather than cumulative impacts. Thus the HIA was little value to be useful to decision makers reviewing the SEA.

For Socio-Economic Development Plan (SEDP) Cases 1-3, soil pollution in agricultural land was mentioned as one of the main environmental problems hazardous to the health of plants intended for human consumption. The most serious health risks result such as food poisoning, or cancer; was given in Cases 1 & 2 but did not appear in Case 3 which would influence social and economic development. The specific example in Case 1 is illustrated that soil pollution is mainly due to accumulation of heavy metals in soils after long-term use of fertilizers, infiltration of chemical wastes from certain types of industrial operations, and from oil wastes coming from urban development and transport services into soils. These hazardous wastes may exist in soils and penetrate ground waters, and thus accumulate in the human body through food chain in high enough concentrations to be of risk to human health such as poisoning, cancer, gastrointestinal diseases, or cardiovascular diseases. In contrast, Case 3 did not consider this aspect deeply without types of cause and diseases as a result of soil pollution, which stated that the soil pollution as a result of socio-economic development can affect human health indirectly or directly. However, with soil pollution, it is only referred from expert judgments; no other element, contaminant or disease related to soil pollution was mentioned, with the exception of the food poisoning. A crucial problem is that there is little or no information on measurements or projections of soil pollution from the proposed development

alternatives, which makes it impossible to assess the health risks resulting from the proposed development plan.

The link between climate change and health was only considered sufficiently in Case 1, where the type of health risks, vulnerable groups and solutions of the problems were discussed. It is shown in the Case 1 that the main areas of health outcomes identified are heat – related illness and mortality; health impacts of extreme weather event such as floods; infectious diseases including vector and water and food borne diseases; or health outcomes associated with mental health because of altering biological time. The connection between climate change and health is mentioned in some remaining case studies, but there were not analyzed satisfactorily.

For Mineral Development Plan in Cases 4, 5, 6), air pollution as a main issue of industrial development is mentioned explicitly both particulars of the pollution and impacts on different groups. In case 5 respiratory diseases, ophthalmic diseases, and deaf diseases from producing coal are given as examples of health hazards which result from different types of air pollution and those whose occupational activities result in high exposure levels to air pollutants such as transport workers, workers in factories, or its surrounding villages. The environmental impacts of dust emissions can cause widespread public health problems, which affects the eyes, skin and digestive system. Penetration of dust into the respiratory system is clarified clearly based on the size of particles (e.g. a range from 0.1μm to >0.5μm). While the case 4 and 6, which have a similar objective to case 4 (the development of material resources in determinants of environmental issues, labor safety, and economic development for strategic purposes), these case studies did not establish a clear link between industrial pollutants and the various types of diseases. Cement dust has been shown to cause lung function impairment, chronic obstructive lung disease, restrictive lung disease, pneumoconiosis and carcinoma of the lungs, stomach and colon (Meo, 2004). Other studies have shown that cement dust may enter into the systemic circulation and thereby reach the essentially all the organs of body and affects the different tissues including heart, liver, spleen, bone, muscles and hairs and ultimately affecting their micro-structure and physiological performance (Schuhmacher et al., 2004; Vestbo & Rasmussen, 1990).

Social and economic conditions that influence health, education, employment, livelihood, and health behavior of community such considerations were only stated in some cases (Case 7, 8). As a result that the highest grade which was satisfactory with omissions/inadequacies (grade 2) was the Cases 8. Health impacts generally mentioned; the documents did provide an additional explanation, but there were inadequately supported by analysis in Case 7. In Case 7 lifestyle and living conditions such as housing tenure, employment status, and income were stated to affect human health, and did not explain influences of each factor. In contrast, in Case 8 it presented clearly inter-relationships between health and direct impacts and the study indirect impacts on human health due to long term environmental change, construction, urbanization, and long term degradation of ethnic minorities. The Case 8 showed that health problems faced by ethnic minority populations living in the uplands are better documented by SWECO in a recent survey of Zuoih commune in Dong Giang district (SWECO, 2006). A good example of this inter-relationships would be stated in the case that residents in these areas report respiratory illness in the dry season (flu, pneumonia, bronchitis), and digestive diseases during the winter and rainy seasons. Diarrhea, bronchitis and pneumonia are common amongst children. Tuberculosis is also present amongst the adult population. Malaria occurs occasionally in the wet season (SWECO, 2006). A key cause of illness amongst men appears to be stomach problems associated with daily consumption of rice wine. Drug addiction is reportedly common amongst gold miners and loggers. Prostitution is also reported to occur in some locations presenting an increased risk of HIV/AIDs and STDs (SWECO, 2006).

Interestingly, while the case 1 has a better clarification in definition of health, the health behavior and socio-economic aspects were not followed up in the determinants. This has an implication that only mandate a better definition of health might not be sufficient, it is necessary that a guideline specifies the factors need to be considered in health impact assessment for a range of different sectors.

Health impacts were assessed in a section titled “Public human health”. The length of these sections varied from one paragraph to several paragraphs, but the analysis of health impact did not vary widely, and was almost one sentence. All of these SEAs focused on a direct cause-effect, rather than other mortality and morbidity

risks around communities. It is the HIV aids cases that become the spread health issue around communities because the workers take this disease home to their wives (pregnant woman), which was not done. Thus a more complete assessment of human health impacts would require a more complete understanding of causes and effects, possible health outcomes. But it may be impossible to identify and predict the effects of an action on the health of current and future populations, which leads to be useful to little value to decision makers.

For the connection between urbanization and health problems, incidence is likely to be concentrated around large urban areas which already suffer from a relatively high incidence of the disease. Diseases related to urbanization and urban living can also be expected to increase, as has been seen with recent increases in the incidence of dengue fever. It is noticeable in case 6 that immigration and resettlement was mentioned in terms of the health outcomes as a cause of increasing health risks including social diseases (HIV, infectious diseases). However, the connection between behaviors of community, socio-economic conditions and public health in most case studies were rather insufficient.

This finding was also confirmed in the interviews where some experts explicitly stated that the current range of determinants of health related to socio-economic conditions considered in the SEA process is limited. Because indirect and direct factors, in the long term and the short term affecting human health need to have concerned professionals focus on data and analysis to achieve meaningful information for decision making.

4.2.4 Review Area A4

Table 4.4 shows the distributional impacts on different groups of the population as presented in the 8 SEAs. As seen from Table 4.4, this aspect of HIA was very unsatisfactory in 5 of 8 SEAs.

Table 4.4 The Quality of HIA in SEAS in Terms of Considering the Distributional Impacts on Different Groups of the Population

	Distributional Impacts on Different Groups of the Population	Case Study							
		1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
A.4	Does the SEA consider distributional impacts i.e. the impact on different groups of the population?	(3)	(6)	(6)	(6)	(6)	(6)	(4)	(2)
	Defining inequality (social groups, vulnerable groups i.e.)	✓	-	-	-	-	-	✓	✓
	Determining whether effects are more prevalent in certain demographic or vulnerable groups	-	-	-	-	-	-	-	✓

Many of the cases mentioned a connection between impacts of proposal PPP on social groups or vulnerable group but did not determined generally, and analyses rarely supported. More than half (5 of 8 Case studies) contained the impacts on different groups of the population were mentioned, but inadequately provided. The inequality was only one sentence in 5 Cases (2, 3, 4, 5, and 6), such as, “the change content of Environment during implement PPPs can sometimes have a detrimental effect on human health and workers”. Other one sentence explanations cited different groups in Case 7, but without explicit analysis, for instance, “Unequal access to factors associated with good health such as good quality condition between urban and rural, adequate and stable income, access to health care, clean water, and good nutrition”. In contrast, in 2 Cases (1, and 8) provided a more explicit explanation of the health inequality, such as, “vulnerable groups would include people with low incomes, women, the elderly, children, and communities near coast affected by climate change.” in case 1. And connection is made between plans and ethnic minority, environmental quality, healthcare services, and immigration in Case 8. The

study illustrated that morbidity related to basic sanitation had declined while the level of available health services had resulted in better overall health indicators. However, diseases amongst certain groups and in certain areas have increased (HIV/AIDs, dengue fever). Upland areas remain of key concern due to poverty, child malnutrition, low education levels and poor health care provision.

What was reported by SEA practitioners has shown that wider determinants of health are basically seen as the level of awareness about the importance and benefits of health consideration in SEA. Consultants have shown that the ultimate goal of environmental protection and promoting environmental quality is to improve and ensure better human health, and therefore SEA is relevant to changes in the long term so it is necessary to consider and assess human health aspects both negative and positive influence on communities and their neighborhoods. Health experts and appraisers described the importance of health considerations in SEA that human health is a key factor in developing programs, plans and policies, and SEA is relevant to the selection of future PPPs carried out in the long term. Developments could have adverse effects on human health and surrounding environment and neighbors, so health needs to be articulated at the same level as environmental issues. Statements by practitioners made the connection between protecting environmental quality and improving living conditions of humanity to ensure better human health. Unfortunately, in the 8 SEAs studied not all aspects relevant to human health are considered and analyzed.

In addition, what was reported by 2 environmental health experts about the distributional impacts on different groups of the population that SEA is relevant to changes in the long term so it is necessary to consider and assess human health aspects both negative and positive influence on different groups. But it was not elaborated inadequately and analyzed rarely supported which is presented through the results from the technical review.

4.3 Review Area B – Health Expertise

Generally, the results in Table 4.5 reveal that the involvement of health professionals in general SEA process is unsatisfactory. Only one of the total SEAs was satisfactory (grade 3).

Table 4.5 The Quality of HIA in SEA Reports in Terms of Health Expertise

	Health Expertise	Case Study							
		1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
B	Were health professionals involved? (yes/no/not stated). If yes who and at what stage?	(6)	(6)	(7)	(7)	(7)	(7)	(3)	(6)
	Identify applicable stakeholders (apart from the general public) and consultants	-	-	-	-	-	-	✓	-
	Define the timeframe of the consultation (in which stage and the reason why the consultation with the relevant stakeholder was late if need be)	-	-	-	-	-	-	✓	-
	Describe the procedure used in engaging the stakeholders (the strategy used in contacting the stakeholders groups: how, what means, reasons for not contacting some stakeholders groups)	-	-	-	-	-	-	-	-

The category is one of the least performed areas that almost all documents had vey unsatisfactory with significant omissions. Many of the cases had a list of stakeholders/ consultants but only one Case 7 mentioned health organizations as consulters.

More than half of SEAs contained no mention of health experts in all SEA's stage from the scoping stage to measures and management for development plans, especially, responsible for carrying out the SEA to come to a determination of key issues, and health comments mostly came from non–health organizations or people. In other SEAs (1, 2, 8), health organizations, which are such as Case 1: Ministry of Labor-invalids and Social Affairs; Case 2: Quang Ngai Department of Health; Case 8: Quang Nam Department of Health, participated in the recommendations stage to management for development plans, but inadequately supported by non-health comments. However, only one SEA gave the role of health professionals in SEA process, namely the National Power Development Plan VII (Case 7). It recognized the Community Health Institution as a consultant; the document gave a detailed explanation responsibility of health expertise in analyzing and calculating costs relevant to health impacts; and human health impacts in SEA gave a better classification than other cases. It is clear that in Vietnam there is a lack of participation of health professionals in SEA's process. Health professionals are needed to identify the need for HIA, demand that public agencies conduct an HIA; participate in scoping exercises to identify high priority community health issues and concerns; suggest mitigations and design alternatives, prioritize recommendations; review and critically examine reports, host a press release to issue the HIA findings to the media, meet with public officials and decision-makers; and create a responsible group to monitor decision outcomes and long-term results.

Although most interviewees agreed that good relationships between planners and health authorities were very indispensable, 3 respondents (2 appraisers and 1 environment health manager) thought that in general the involvement of health professionals was lacking in almost all SEA's stage from the scoping stage to measures and management for development PPPs. Two experts further explained that low involvement of health professionals might be due to a lack of nodal environmental health agency who is responsible to consider health problems outside

of health PPPs. In the fact that the Health Environment Management has only recently been set up and is short on staff (number and skills), funds, testing equipment and experience in Joint Annual Health Review (JAHR) (MoH & HPG, 2012). And one expert interpreted that there are not any compulsory regulations about the involvement of health professionals in SEAs in Vietnam.

Furthermore all case studies (both Case 7) did not define the clear timeframe in which stage and reason why the consultation with the relevant stakeholders was late engagement if need be, or reason for not contacting some health stakeholders groups. In addition, the result obtained states that general public participation from health practitioners is not being given adequate attention. Especially, the finding draws the fact that the decision makers are mostly not knowledgeable on the health theme in any depth.

4.4 Review Area C – Health Data and Analysis

4.4.1 Review Area C1 – Health Data

Health Data: Table 4.6 shows that health data is also one of the poorly performed areas of most HIA cases. All of the health related data collected were existing data, such as Census, healthcare infrastructures, medical foundations, staff of doctors and nurses, while environmental and occupational epidemiology were so sparse and unavailable to assess.

Table 4.6 The Quality of HIA in SEA Reports in Terms of Health Data

	Health Data	Case Study							
		1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
C.1	Was health data collected freshly sourced or from existing data?	(5)	(6)	(5)	(6)	(6)	(5)	(3)	(3)
	Existing population demographic and health statistics	-	-	-	-	-	✓	✓	✓
	Environmental measures (used to assess public health assets and resources)	✓	-	-	-	-	-	✓	-
	Maps of demographics, health statistics, or environmental measures to identify spatial differences in the intensity of hazards	-	-	✓	-	-	-	✓	✓
	Epidemiological research (relationships between health determinants and health outcomes)	-	-	-	-	-	-	-	-
	Qualitative group (focus groups and structured and unstructured interviews) – experiences of community members.	-	-	-	-	-	-	-	-
	Limitations in obtaining the data should be clearly highlighted	-	-	-	-	-	-	-	✓

The finding was fully supported for a result of moderate data, tool and resources in decision-making process. The relationship between health data sources and epidemiological research to communicate human health impacts is particularly strong when existing of available data between health determinants and outcomes, focus group and structured/unstructured interviews. For example, the Case 7 is

recognized as the quite satisfactory with some omissions. Health data used in identifying health impacts through quite clear methods as follows: Economic losses as the result of environment -related diseases are reviewed for each type of production and pollution. However, focused less on the risk factors of the development on the health population is be clearly due to limitation of existing available data.

Two environmental consultants stated that although most countries have national health statistics, there is often a shortage of information on health status and the determinants of health at a community level. In particular, there is a shortage of information on morbidity, psychological well-being and social and community health. For example, the case 8 is SEA of Hydropower Plan for a range of regional level; however, the document used national health statistics (e.g. Infant mortality, under five mortality, maternal mortality, and malnutrition among children under five, birth weight, and life expectancy) as data resources to predict and evaluate health impacts of the proposed PPP at regional level. It is stated that "Although detailed information on specific indicators in the basin has been partial, the area is likely to reflect current national trends". Thus the HIA was little value to be useful to decision makers reviewing the SEA.

There are no guidelines on choosing indicators relevant to health in Vietnam. It could also be as a result of limited resources on the decision-makers. For example, the Case study 1, use of the HIA studies did not have or use a unified system between consultants and stakeholders, especially the planning group in the calculation of cost associated with these impacts on communities' health, socio-economic and environment, because of the unavailable data for assessment. And as one environmental management analyst said, "we'll spend most time and money, figuring out the calculation of cost associated with the impacts on humans". The statement indicated a fact that it works the general trend repeated by Steinemann (2000) and 2 environmental health managers and 2 consultants, such as, "spending all this time and money, figuring out the impacts on natural environment, instead of bothering to the impacts on human health".

4.4.2 Review Area C2 - Documentation: Identification and Evaluation of Impacts

Documentation: Table 4.7 gives information that the impacts were identified for the PPP as a whole, even though the regulations require that the impacts on each stage of the development should be separated with reasons on the choice of health related issues, and methods in identifying/predicting health impacts. However, only two SEAs gave a better clarification (Case 7 & 8).

Table 4.7 The Quality of HIA in SEA Reports in Terms of Documentation

	Health Data	Case Study							
		1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
C.2	Documentation: Identification and evaluation of impacts	(3)	(5)	(5)	(5)	(5)	(5)	(3)	(3)
	The methods used in identifying and predicting health impacts should be explained	✓	-	-	-	-	-	✓	✓
	Reasons should be given on the choice of health related issues and aspects considerate	✓	✓	✓	✓	✓	✓	✓	✓
	In case of uncertainties on predicting the impacts and assumptions have been made, provided a justification	-	-	-	-	-	-	-	-

National Power Development Plan VII (Case 7): The SEA assessed Power Development Plan VII for a range of national level, and was a mandatory requirement to meet national regulations on planning for all sectors. In the current trend, power generation in Vietnam relies on three main primary energy sources, which are hydropower, coal, and oil and gas. So the health impacts as the result of different sectors development (e.g. hydropower development, thermal power development, or

electromagnetic fields from high voltage transmission lines) were identified/predicted with reasons on the choice of health related indicators.

The Quang Nam Province Hydropower Plan for Vu Gia-Thu Bon River Basin (Case 8): the SEA of a sector for a range of regional level also gave a detailed analysis of health impacts with reasons on the choice of health related issues, health considered. It is showed that Hydro power development is unlikely to have any health impacts on populations living outside the immediately affected areas, by and large impacts will be confined to upland areas; and the impacts felt in upland areas are due to either long term changes in environment due to dam construction, to impacts felt due to the construction of the dam itself and longer term impacts on ethnic minority groups.

The results from the quality of HIA in SEA reports in terms of Documentation of the third review area is matched with the view of 2 appraisers that all case studies did not define reason for not contacting some health stakeholders groups to explain the reasons on the choice of health related issues. And the public participation from health practitioners is not showed adequate attention to support the deeper explanation in identifying and analyzing the health impacts.

4.4.3 Review Area C3 – Analytical Methods

Table 4.8 The Quality of HIA in SEA Reports in Terms of Analytical Methods

	Health Analysis	**Case Study**							
		1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
C.3	Analytical Methods	(4)	(4)	(4)	(4)	(4)	(4)	(3)	(3)
	Evaluate and weigh evidence of causal effects	✓	✓	✓	✓	✓	✓	-	-

Table 4.8 (continued)

Health Analysis	Case Study							
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Synthesize existing data on baseline conditions (these determinants and outcomes)	-	-	-	-	-	-	✓	✓
Forecast health effects quantitatively where feasible (prediction models, baseline conditions, changes in risk factors)	-	-	-	-	-	-	✓	✓
Identify inequalities in the health impacts and state the effects of the inequalities on the population	-	-	-	-	-	-	-	-

Analytical Methods: Table 4.8 gives information that most of the SEAs used checklists and matrices to identify and analyze health impacts. The interactions of physical, ecosystem, social aspects (including a health factor) are assessed by expert judgment and then weighted based on level of impacts of activities of PPPs. On the words, the cumulative impact of environmental factors is focused on assessing the interaction between development activities and aspects (particularly health factor) by matrices method. A matrix of potential interactions is produced by combining these two lists (placing one on the vertical axis for public health component and others, and the other on the horizontal axis for PPP activities). The impact associated with the development activities columns and the aspects (e.g. public health) row is described in terms of its magnitude and significance. The importance of impacts may be categorized (e.g. no impact, insignificant impact, significant impact) and assigned a numerical score, for instance, 0 is no impact, 10 is maximum impact. A crucial problem in applying the method is that each on their own may pose a low or minor negative health and well-being impacts together they may have different adverse

effects on individual and community health which are hardly more than simple pollution forecasts which are then weighted.

Furthermore, some cases used prediction models to forecast health effects quantitatively where feasible. Case 1, MIKE model was used to provide a range of aspect including air and water as well as spreading of waste in the broad area to predict its impacts on human health indirectly. Case 7 and 8 used map and simple graphs (GIS) to show spatial dimensions of key issues inclusive of human health, to set to illustrate evolution of key issues over time. Through map, it is easy to link between human health risk and the plan. It is undeniable that each local/region of the province in case 3 is separated to assess, and trans-boundary impacts between Tra Vinh province and others were mentioned, which help to make a complete analysis of health effects responsive to SEA. However, this trans-boundary impact is analyzed based on GIS insufficiently. A crucial problem of this SEA, however, is that maps relevant to each local/region were created, without baseline data including natural and physical health. So GIS based maps were not provided on a range of aspects, including human health, climate, air, water, and the linkage of human health and the remaining aspects.

Besides, the Case 7 is recognized as the quite satisfactory with some omissions. Health data (map of population demographic, health statistics; and environmental measures) used in identifying health impacts through quite clear methods as follows: (1) Economic losses as the result of environment -related diseases are reviewed for each type of production and pollution. According to calculation the costs of health care services, reduced longevity, time and income loss due to illnesses, and loss of crops, the economic analysis is to provide a means for comparing the full range of risks and impacts, and to compare potential impacts on human health including significant impacts or insignificant impacts. (2) The IRR (Impoverishment Risk and Reconstruction) model with functions including prediction, diagnosis, and problem resolution reflects risk factors such as the long term impacts on the health of communities, and to provide point for assessing risks of impacts and the mitigation measures in terms of short, medium and long term effects. However, focused less on the risk factors of the development on the health population is be clearly due to limitation of existing available data.

Some deficiencies found out in this sub-category were confirmed by interviewees as follows:

1. Health data sources for identifying impacts based on epidemiological research between health determinants and outcomes, focus group and structured/unstructured interviews are a limitative aspect in all cases. It is stated by interviewees (2 appraisers) that it is difficult to satisfy in terms of time, expenditure when integrating HIA in SEA process.

2. The methods used in identifying health impacts did not be explained explicitly, and the general approaches are mostly qualitative analysis on the availability of data.

3. Identifying inequalities in the health impacts and state the effects of the inequalities on the public could be considered as one of weaknesses that most documents had very unsatisfactory results. Two interviewees mentioned the reason for the problem that there is a limitation of the number of trained SEA consultants who have good health knowledge about the link between health aspects social and economic factors.

Some suggestions also suggested by interviewees to improve the quality of data sources. The financial strategy has a capacity to gain enable the more effective consideration of health issues in SEA and help consultants to have lots of time to synthesize and analyze more particularly and more streamlined. The statement is shown that “Considering the approach is important and necessary to have the financial strategy to support to some extent in implement health impact assessment” (Environmental Health Managers).

4.5 Review Area D – Following up Health and well-being Impacts

Overall, Table 4.9 showed that the level of commitment of the PPP proponent to the recommendations and mitigation method for health effect did not cover most case studies. However, only two SEAs showed a better recommendation to health effects (Case 1, 7).

Table 4.9 The Quality of HIA in SEA Reports in Terms of Mitigation and Monitoring

Following up Health and Well-being Impacts		Case Study							
		1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
D.1	Do the report describe how the engagement undertaken, in terms of results, conclusions?	(4)	(5)	(5)	(5)	(5)	(5)	(3)	(5)
	Commitment to reduce any adverse effect on the health of the people resulting from the plan	✓	-	-	-	-	-	✓	-
	Does the document pin point the indicators used for monitoring and are they in line with the baseline information?	-	-	-	-	-	-	✓	-
D.2	Do the SEA recommendations refer to health effects?	(3)	(5)	(5)	(5)	(5)	(4)	(2)	(4)
	List of recommendation to facilitate the management of health effect and the enhancement of beneficial health effects	✓	-	-	-	-	✓	✓	✓
	The level of commitment of the PPP proponent to the recommendations and mitigation method for health effects is stated	✓	-	-	-	-	-	✓	-

The Ho Chi Minh city Socio-Economic Development Plan (SEDP) (Case 1): For climate change, to deal with the problems, making diseases – model focused on the potential diseases as result of increasing temperature and floods; improving capacity of coping with climate change of health services; setting up and managing

data bases and map of vulnerable areas caused by climate change; raising public awareness to be urgent types of climate health effects etc.

National Power Development Plan VII (Case 7): It is proposed that financial contribution from thermal power plants that release gaseous emissions is used to invest in infrastructure development for local communities and to support the public health system through health insurance and development and maintenance of health care facilities. To make sure that all power projects recommended for cancellation in the previous sections of this report will not be implemented without commitments and detailed solutions to avoid or mitigate all the potential impacts

In generally, it should be noted that one area where reviewed documents had an insufficient performance was in identifying indicators for monitoring health effects. The separation between the environment and human health is that the monitoring progress applies to impacts on the environment, not on humans. For example, most of cases pin pointed that the indicators used for monitoring are mostly of a natural and physical nature (emissions, waste, noise etc.). As one environmental analyst said that SEAs or EIA have attend to be examining the impacts of human on the environment, rather than impacts on human from the environment. However, the interaction was not done. This statement is also affirmed by 2 environmental consultants and 1 appraiser that monitoring program primarily focused on the quality standards of ambient air, water related to public health. Because there are existing national technical regulation on air quality, water quality in inter-linked with public health under legislations in MONRE, which is easy for consultants and appraisers to audit the impacts of PPP activities on public health. A summary of these comments in almost case studies was also provided recommended measures with different types including regulatory measures, technical design and economic tools (subsidies in case 7), but health is indirectly mentioned here, but there are links with the aspects “air, water quality, ecosystem, etc.” and threshold of noise. For example, monitoring process of gaseous emissions, water quality is set up almost case studies for the affected environmental quality by economic development, tourism areas, and community areas.

However, there was the lack of monitoring socio-economic indicators in all most 8 cases; they were not in line with the baseline information. Only case 7 have a better monitoring program health effects as state of mental and social well-being by relevant indicators, process for evaluation. The main principle of the document is to ensure full conformity in line with the baseline information, detailed tasks are as follows: monitoring of waste discharges and gaseous emissions, wastewater quality and changes to surface water quality, soil quality, displaced people in resettlement areas (e.g. level of people's satisfaction with their home, their livelihood and income, their living arrangement). However, the monitoring of the process of displaced people in the resettlement areas are not described how to implement clearly.

A trend in most cases was that they are often described within the different environmental themes and comprehensive dedicated health chapters are rarely found. Furthermore, all the cases gave a separate executive summary on the whole report. However, not all supplied a different theme on health (exceptive case 7). So it is recognized that treating health under several themes makes it be difficult to obtain an overview of the impacts for decision-makers. And this statement is also confirmed by 2 interviewees (consultants).

Interestingly, some important suggestions are emphasized by all interviewees. Environmental health managers commented that it is necessary for cost-effective monitoring of any anticipated impacts in the linkage between socio-economic indicators and health, disease, and well-being. With consultants, national technical indicators to HIA are an essential to be quantitative and qualitative in the three dimensional space including line of time – space – impacts.

CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

The study identified the key challenges of carrying out a HIA within strategic planning in Vietnam. The study sought to fill the gap in the research on integrating health issues in the SEA process which has typically focused on legislation and technical standards, but not on real-world SEA practice.

Previous studies in Europe have used the criteria – based approach to examine the integration of human health in SEAs. This study departed from the approach taken by WHO and modified an earlier study of Fischer et al (2009) by incorporating the criteria for good quality SEA into the review format. The evaluation framework consisted of four review areas with 10 sub-questions. Each of the four sections was answered and graded (7 levels) in a case by case manner, based on the grades allocated to the underlying questions.

The grades were used to judge the strengths and weaknesses of the 8 SEA studies (Table 3.1). The Table 5.1 below indicates the summary of the grades for each review area of the SEA documents analyzed in Vietnam.

Table 5.1 The Grades for Each Review Area of the SEA Documents

No.	Review Area	Case Study							
		1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
A	Understanding of health								
1	How is health and wellbeing defined?	(2)	(4)	(4)	(4)	(4)	(4)	(2)	(2)
2	Do characterization of the existing environment and alternatives be described?	(4)	(6)	(6)	(6)	(6)	(6)	(3)	(3)
3	Which of the following issues/aspects are considered? (*Health behavior, Physical, Natural, Socio-Economic, etc.*)	(3)	(4)	(6)	(5)	(5)	(5)	(3)	(2)
4	Does the SEA consider distributional impacts i.e. the impact on different groups of the population?	(3)	(6)	(6)	(6)	(6)	(6)	(4)	(2)
B	Health expertise								
5	Were health professionals involved? (yes/no/not stated). If yes who and at what stage?	(6)	(6)	(7)	(7)	(7)	(7)	(3)	(6)
C	Health Data and Analysis								
6	Was health data collected freshly sourced or from existing data?	(5)	(6)	(5)	(6)	(6)	(5)	(3)	(3)
7	Documentation: Identification and evaluation of impacts	(3)	(5)	(5)	(5)	(5)	(5)	(3)	(3)
8	Analytical Methods	(4)	(4)	(4)	(4)	(4)	(4)	(3)	(3)

Table 5.1 (continued)

No.	Review Area	Case Study							
		1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
D	Following up Health and Well-being impacts								
9	Do the report describe how the engagement undertaken, in terms of results, conclusions?	(4)	(5)	(5)	(5)	(5)	(5)	(3)	(5)
10	Do the SEA recommendations refer to health effects?	(3)	(5)	(5)	(5)	(5)	(4)	(2)	(4)

The findings of this research showed that impacts on health have generally been mentioned in all of the SEAs, but these impacts were not adequately investigated. There is the lack of capacity building, methods and explicit definition-guideline for human health impact assessment (HIA) in Vietnam. The following sections provide a summary of the most important findings.

5.1.1 Health is a broad concept and was not explicitly defined in the majority of the cases beyond its natural and physical properties. The influence on health factors such as socio-economic variables and behavioral characteristics were rarely mentioned or assessed only in the context of factors such as employment opportunities and worker health and safety. Further, there is no specific definition of human health in the context of environmental assessment in Vietnamese law.

5.1.2 Although there is a quite adequate definition of health, the current range of determinants of health related to socio-economic conditions and health behavior, or especially its considered on social/vulnerable groups of the population in the SEA process is rarely determined and supported.

5.1.3 Many PPPs are outside the scope of the Ministry of Health and that there is often little or no intersectional collaboration with the non-health ministries, or

vice versa. No compulsory regulations about the involvement of health professionals in SEAs are a further conclusion.

5.1.4 Weak health data sources further undermines HIA in SEA, meaning that the data sources are limited and in almost cases superficial. The relationship between health data sources and epidemiological research to communicate human health impacts is particularly strong when existing available data between health determinants and outcomes, focus groups and structured/unstructured interviews are taken into account. In Vietnam, this "analytic complexity" needs to be developed by focusing on collection of more complete background data.

5.1.5 Health baseline data do not appear to have been used to any large extent in any HIA. There is a shortage of information on morbidity, psychological well-being and social and community health at the community level. These data are needed to establish a decision pathway for guiding future PPP-level alternatives.

5.1.6 The methods used to identify health impacts were not explained explicitly, and the general approaches used were mostly qualitative analysis based on the availability of data.

5.1.7 The expectation of the study identified the range of health determinants in the monitoring progress and decision-making process. The separation between the environment and human health is that the monitoring progress applies to impacts on the environment mostly of a physical nature (emissions, waste, noise etc.), not on humans. In addition, SEAs attempted to examine the impacts of human activities on the environment, rather than impacts on human health from changes in the environment. More importantly, it is the fact that there are no national technical standards on choosing indicators relevant to HIA in Vietnam.

5.1.8 Health issues are considered in the SEAs, but they are often described within the different environmental themes. This makes it difficult to obtain an overview of the health impacts in creating a management plan. Thus, the HIA has been considered to be of limited value to decision makers when making final - important decisions for proposed PPPs.

To sum up, it may be nearly impossible to identify and predict the significant effects of an action on the public health effectively without engagement of health professionals for a more complete understanding of causes and effects and possible

health outcomes; no relevant health impacts assessment – based guidelines and objectives; and the shortage of health data source at the community level. The major weaknesses in HIA identified above might be the result of these deficiencies showed by this study.

5.2 Recommendations to Improve HIA in SEA

The specific recommendations that can be drawn from this study to improve the health content of SEA reports in Vietnam are as follows:

5.2.1 It is necessary to have HIA in the context of SEA legislation to ensure HIA in SEA legitimacy. However, the legislation should start with a specific definition of human health in the context of environmental assessment that have visible human health impact, and with specific guidelines and trainings to targeted groups. Hence, it could insist on a *compulsory definition of health* based on WHO Standard to link human health and impacts assessment. For example, the definition of health should include: (a) natural, physical, social and behavior aspects; (b) characterization of the existing environment that have the potential to affect human health; and (c) effects are prevalent in certain demographic or vulnerable groups. This definition of health will complement the law human health protection and care in Vietnam.

5.2.2 However, a better definition of health might not be sufficient to improve HIA in Vietnam. It is suggested that *a Guideline be developed which specifies the factors* to be considered when linking human health to causes in impact assessment. The Guideline should describe the criteria for selecting certain indicators which include the effects on human health from the broad physical and social environment. MONRE and MOH should co-ordinate to establish criteria for choosing health indicators based on the guideline of California Department of Health Services, 2002: “(a) the indicator should be sensitive to changes in the environment (natural and socio-economic) that affect human health; (b) the indicator should be measurable; (c) data to compute the indicator should be available to examine status and trends”. Further, setting up indicator information should be based on definition, formula,

significance, data characteristic, data limitations, and additional information. Moreover, using input from community health status and well – being profiles should be as part of the selection process to insure the valid indicators.

5.2.3 Furthermore, in spite of these limitations, the finding of this study should still provide an indication of priorities in terms of *designing indicators* aimed at predicting the significant of potential adverse health that based on lesson learned in & Verheem (1997) as follows: "(a) The *magnitude or severity* of the potential health effects; (b) The *number of people* potentially affected; (c) The *size and nature* of the potentially affected population(s) (e.g., workers, children, the elderly, etc.); (d) The *frequency or duration* of the potential health effects; (e) The *degree* to which the health effects are reversible or irreversible; (f) The *probability or likelihood* that the health effects will occur; (g) The *level of uncertainty inherent* in the health assessment". To gain more value in terms of designing indicators for HIA in SEA, the indicators should be developed based on realistic HIA experience in Vietnam with reference from other countries with similar context and should be legislated soon.

5.2.4 *Engagement of health professionals/ health stakeholders & community* is crucial and indispensible for a more complete understanding of causes and effects, possible health outcomes in SEA. Thus, co-operation between environmental and human health professionals is further recommended. The principles should be regulated in technical guidelines of SEA in Vietnam, and developed into consultation with MONRE and Environmental Health Agency belonging to MOH. Moreover, it has engaged other health stakeholders and the community in the early process of HIA in SEA. Based on principles for assessing health impacts into SEA as proposed by WHO/Europe, this can be facilitated by the setting up of a formal Consultation or Advisory Group to provide or describe insights into the positive and negative health impacts from their experience.

5.2.5 It is important to have a dedicated agency to lead the process of HIA in SEA i.e. Environment- Health Management Agency directly under Ministry of Health (MOH) in Vietnam. A strength found was that GOV established the Health Environment Agency in 2010 which has helped to take health into account across different areas and, where possible, integrating action to promote better health and wellbeing as part wider policies and programs. Hence, it needs to capitalize on

existing Vietnam Environment-Health Management Agency with existing skills but will require training opportunities in considering how best to ensure that health experts and other can contribute to the further development of HIA in SEA as a policy tool. The Environmental-Health Management Agency should be more organized to retain a comprehensive view (including health, welfare and environmental quality for future generations) for a range of different sectors clearly with the hope to help people of Vietnam in: Assessing current environmental health conditions of our state; Observing trends in conditions that help forecast the future; Considering policy options to achieve our goals.

5.2.6 There is also a need to develop one essential responsibility of public health agencies at the state, regional, local capacity based on the guideline of Vietnam Environment-Health Management Agency directly under MOH, which is to systematically collect, assemble, analyze, and make available information on the health of the community. Such information includes statistics on health status, community health needs, and epidemiologic and other studies of health problems. This should be backed up with a well-planned financial strategy, and training courses for staffs.

5.2.7 In the long run, institutions such as the Department of Hygiene and Environmental Health, which belongs to the Faculty of Environmental Health Occupational Hygiene and Diseases – Hanoi School of Public Health, should be responsible to develop courses to provide knowledge and skills in identifying and assessing environmental health risks. However, these courses only focus on natural and physical aspects related to description of diseases. The socio-economic aspects are not being included. The Schools of Public Health, Environmental Science and Economics should also build curriculums for students to learn, research core health impact assessment skills generally, and incorporate health issues in SEA particularly from the one year to the next two years. Material, financial and human resources are necessary assisted from inside and outside academes. Besides, the resources should be sought from organizations relevant to public health field such as WHO, MOH, etc. to facilitate in implementation of the suggested programs.

5.2.8 The health issues should be described in a sector to supply information clearly for stakeholders. The content of the sector should be involved the method

which health issues considered into each step of SEA process. It is noteworthy that a draft report should be consulted by key health stakeholders and key health informants, and the feedback from them should be discussed and incorporated into the final report in a comprehensive dedicated health chapter.

5.3 Future Research

This research has revealed challenges for consideration of health impact assessment (HIA) in SEA in Vietnam. The result of this study, therefore will be improved with further study in this area. Baseline data in the relationship between health sources and epidemiological research must be developed to measure and quantify specific indicators as a way to improve the value of data sources to enable discussion of health status and health determinants. Moreover, technical criteria for choosing health indicators (definition, formula, significance, data characteristic, data limitations, and additional information), methodology must be established particularly as a way to promote monitoring and auditing programs in terms of health impacts. All the recommendations made which should be considered as guidelines to take appropriate actions in the future. It may be difficult for Vietnam to apply some of these recommendations on its own. Thus, the government might want to work with international organizations or NGOs or other partners to implement the recommendations.

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APPENDICES

APPENDIX A

8 CASE STUDIES IN VIETNAM

1.1 SEA of the Ho Chi Minh City Socio- Economic Development Plan up to 2020 with a Vision 2025

This is an SEA for SEDP of Ho Chi Minh city being a long – term plan up to 2020 with a vision 2025 (over 7,123,340 populations on about 2,093.7 km^2). SEDP is part of wider city development frameworks, which are to be prepared in regular intervals by the Ho Chi Minh City people's committee (since 2008) and must be submitted to Government every five years.

The main aim of SEDP of Ho Chi Minh city with the following principal contents are to build the city into one with fast, comprehensive and sustainable economic development; to ensure economic growth and proper settlement of social affairs, enhance living standard; to ensure environmental quality, continuously improving the people's material and spiritual life; to build a synchronous infrastructure network with rational spatial arrangement; to carry out industrial development in association with urban and service development with a view to boosting economic growth and sustainable development; to closely combine socio-economic development with environmental protection and the maintenance of defense, security in the city. This SEA was financed by Department of Planning of Investment – Ho Chi Minh City.

Maintaining an economic growth rate itself covers or attaches importance to developing housing, human resource training, and healthcare services; and ensuring national defense or social aspects. The Ho Chi Minh City, this includes a social concept covers aspects such as unemployment, education, wealth and etc.

Based on the economic growth rate, economic framework, overall state and spatial planning, transportation system, and environmental treatments, authorities both doing SEA and planning SEDP mentioned the core environmental issues of SEDP as following:

Depletion of surface water and groundwater quality

Deterioration of air quality

Collection and disposal of solid and hazardous wastes

Pollution and depletion of soil quality

Urban flooding

Depletion of biodiversity and ecosystem

Climate change and environmental risk

The human's material and spiritual life

Spatial planning is the responsibility of the Ho Chi Minh City and a part of the surrounding provinces including Tay Ninh, Dong Nai, Binh Duong, Long An located in the Southern focal economic Zone, with spatial planning frameworks differing substantially between states. These serve as state of the Environment/landscape reports, and provide for the environmental baseline for their related SEAs. Furthermore, they set overall Environmental development measures for the areas they cover. SEDP links state development plans with protecting environment and improving the people's life.

Regarding these 6 objectives of SEDP listed by authorities, SEDP establishes some concrete and binding spatial allocations for later development. There are a number of links with human health, regarding natural and physical aspect; and healthcare services. In other words, SEA for the SEDP of Ho Chi Minh City includes several environmental issues that impact and relate to human health, mainly in the context of pollution control, access to safe and clean water supplies, and the provision of health services to improve people's life.

1.2 SEA of the Quang Ngai Province Socio-Economic Development Plan (SEDP) up to 2020 with a Vision to 2025

This is an SEA for SEDP of Quang Ngai Province which is central coastal province and the central focal economic zone (over 1,217,159 populations on about 5,152.67 km^2, 2009). SEDP is part of wider coastal province development frameworks, which are to be prepared in regular intervals by Quang Ngai Province people's committee since 2005 through Decision No.04/2005 of Prime Minister.

SEDP for Quang Ngai Province was published in draft format in February, 2009. It is to bring into the fullest play local potential and advantages; to effectively utilize all resources focusing on key sectors for SEDP; to strive for the target of fast and sustainable economic development, aiming at hunger eradication and property alleviation; to improve people's material and spiritual life and develop a properly structured and high quality human resource; to synchronously implement solutions for incorporating environmental protection of the eco-environment, prevention of industrial an urban pollution and assurance of a safe labor environment and closely combine economic development with security and defense maintenance to assure an entire – people security and defense disposition.

The SEA was carried out with Quang Ngai Province funding by the relevant provincial authority with technical and scientific support from Hanoi University of Science.

This SEA aimed to enhance consideration of environmental issues such as water quality, air, soil quality, biodiversity, etc., within the SEDP of Quang Ngai Province, which encompasses a coastal areas and sensitive areas, and marine protected areas. It focused on analyzing the environmental and social issues and effects which should be considered in the planned socio – economic development. The SEA therefore has physical and natural focus. Health is addressed in the SEDP only occasionally, mainly regarding the strengthening and health services around the existing hospital, as well as in terms of making provisions for healthcare focusing on mother and children health. However, Quang Ngai Province people's committee also

have provisions for preventing, continuously monitoring epidemic diseases, on the state of the economy, crime, social exclusion, other socio – economic aspects, food safety. Finally, carrying out examination and treatment medically progress for children below 6 ages.

Based on these evaluations, the SEA team proposed changes in development goals, suggested specific modifications of the SEDP, and provided recommendations for further planning and decision – making processes in the study area.

1.3 SEA of the Tra Vinh Province Socio-Economic Development Plan, 2006 - 2020

This is an SEA for the SEDP for Tra Vinh province of Ho Chi Minh city (over 9,997.8 thousand people on about 2,292.8 km^2, 2008). The master plan must comply with the national socio – economic development strategy, the orientations of Vietnam's marine strategy through 2020 and the master plan on socio – economic development in the Mekong River Delta Region, and ensure synchronism and consistency with branch and sectoral plans, and close association with the key Southern economic region; to bring into play internal resources and the sustainable socio – economic development; to build a complete and modern infrastructure system; to associate economic development with health, cultural, educational, training development realize social progress, equality, and environmental protection, raise the quality of people's livelihood.

The process of SEA is undertaken to meet national regulations on planning for SEDP and will be addressed again when the SEDP for Tra Vinh province is corrected and submitted to Government every 5 years. This SEA aimed to assess Tra Vinh province SEDP to 2020, and was financed by Department of Planning and Investment – Tra Vinh province which provided consultant input and covered the costs of stakeholder meetings and document preparation.

The SEA focused on environmental concerns associated with the SEDP to 2020. Consultation with different stakeholders indicated the need to focus the SEA on soil, water, mineral, air, solid waste, biodiversity, climate change.

The SEA relied largely on desktop review, expert judgments and several workshops. First, a stakeholder workshop was held to review development trends and to determine environmental issues, objectives and indicators that should be considered during the SEA process. A second scoping workshop evaluated the current situation and trends and their likely evolution if the plan or strategy was not implemented (the zero or no action alternative).

After an analysis of the impacts of proposed development objectives and priorities in the SEDP, a rapid assessment of specific activities and an assessment of cumulative effects of the entire plan were under taken.

The SEA report produced highlight 7 objectives relevant to environmental issues. There are closely linked with health aspect, particularly those of a natural and physical nature. SEDP itself makes various references to health, including in particular the need to improve community health and take them care by building healthcare infrastructures (hospital, infirmary, etc); reducing transport related pollution and accidents, waste management.

1.4 SEA of Master Plan on Exploration, Mining, Processing and Using of Titanium Ores in 2007 – 2015 with a Reference to 2025

The Master plan on exploration, mining, processing and using of titanium ores in 2007 – 2015 with a reference to 2025 is stated in this Decision No.104/2007 that the development of titanium resources in the period 2007 – 2015 has to be modernized to suit the country's needs for advanced materials to replace imported goods, to reduce and then stop all exports of raw ores in the most appropriate time. The industry has to adopt technologies from joint ventures aiming to produce pigment TiO_2, synthetic retile and titanium slags in the future; also specifies areas and provinces in which titanium resources could be developed in determinants of

environmental issues for strategic purposes. None of objectives is relevant to human health.

The five regions of Vietnam currently being focused by the local and central governments for development are Thai Nguyen, Thanh Hoa – Ha Tinh, Quang Tri – Thua Thien Hue, Binh Dinh – Phu Yen, Binh Thuan – Vung Tau.

The process of SEA is undertaken in parallel steps to the planning process to meet national regulations on planning for all sectors. The SEA considered the economic, social and environmental issues and their interrelations, was financed by Vietnam National Coal – Mineral Industrial Group (VINACOMIN) in collaboration with Coal and Mineral Informatics – Environmental Technology Joint Stock Company. Following an extensive review and consultation with local stakeholders, the SEA team selected 20 economic, social and environmental themes of concern for detailed assessment. In the final stage, the SEA focused on several critical synergistic impacts of the plan for sustainable development of coal industry in Vietnam, namely: water, soil, air, landscape, and special development; ecosystem and biodiversity, climate change and natural risks; and social – economic development.

Health issues were addressed in this SEA through the social – economic theme, mainly regarding the strengthening of health services around improving human/ community health, education, culture in order to create a positive human and environment. The study of and assessment in this SEA were conducted in accordance with Strategic of National Environmental Protection to 2010 with a vision to 2020 (2003) and Strategic Sustainable development. The evaluation for health issues was bases on expert judgments and the index of disease, morbidity, educational development, human development, GDP, poverty, unemployment, and number of historical monument, cultural heritage. The SEA report sets up 6 objectives of the plan on the environment. Only one of the objectives is health inclined.

1.5 SEA of Vietnam's Coal Industry Development Plan up to 2020 with a Reference 2030

The development plan for the coal industry in Vietnam was prepared by Vietnam National Coal – Mineral Industrial Group (VINACOMIN) in collaboration with Coal and Mineral Informatics – Environmental Technology Joint Stock Company in 2008 as a consultation company for the development plan. The development plan for Vietnam's coal industry up to 2020 with a vision to 2030 concerns the sustainable development of coal industry in a synchronous effect; and be consistent with the overall development of the other sectors of the economy or on the basis of balancing general efficiency of the economy.

The main aim of the development plan is to determine objectives, orientations and solutions for developing Vietnam's coal industry generally to 2020 with a reference to 2030. According to the Master plan, development of coal sector is on basis of efficient and coal resource saving exploitation, processing and usage, mainly satisfying domestic demand; contributing to ensure national energy security with to maximum satisfaction of coal demand for the purpose of social and economic development; maintaining reasonable import-export balance with gradual reduction of export volume by planning. The development of a stable, efficient and integral coal sector is in line with other economic sectors. Coal sector development is tied with environment protection, labor safety, social, economic development and security strengthening, especially in Quang Ninh coal region.

In other words, the SEA aimed to optimize the contribution of sustainable coal to national development through 2020 in Vietnam and to predict negative impacts on environment surrounding Quang Ninh region. It was undertaken by local consultants for the Ministry of Industry and Trade with funding provided by VINACOMIN through connecting data in the long term to identify environmental changes from 2002 to 2010.

A geological survey of the biggest coal basins is in the Northeastern region, including Quang Ninh, Thai Nguyen, Lang Son provinces, but without the Red river Delta basin.

The environmental impacts on the province of Quang Ninh affected not only by coal mining activities but also by the production activities and socio – economic development of surrounding provinces. Besides, by dint of more than 250 km of coastline, Quang Ninh's province is also affected by inshore fishing activities and natural disasters.

Several principles for the coal industry development plan are formulated, as follows:

1. The development of new mine, road upgrades and installations as well as road, railway and conveyer belt system;
2. The development of key products – sectors;
3. The environmental protection, particularly in the coastal area;
4. The guarantee of national defense and security, and people's material and spiritual life.

All activities in the coal industry development create negative and positive effects on environment and human health. The SEA focused on environment concerns associated with the development plan 2020. Consultations with different stakeholder indicated the need to focus the SEA on air quality, water quality, soil quality, biodiversity, solid waste management and socio – economic aspects. The plan mentions health, particularly in the context of health services provinces and regarding natural and physical aspects. Health is addressed in 4 main social – economic issues of concern for the sustainable implementation of coal in development plan including community health, labor health, infrastructures and social – economic conditions, especially effects of air pollution from the production on human health both community and labor.

1.6 SEA of Master Plan for Cement Production until 2020

According to Decision No 108/2005 by the Prime Minister to approve the master plan for the cement industry to 2010 and the strategy to 2020, the target of Cement industry from 2010 – 2020 is fully meeting domestic demand (both in quality and variety). This SEA was financed by Vietnam Institute for Building Materials – Ministry of Construction. Planning on the cement industry development from 2011 – 2020 with a vision to 2030 was built on the view:

1. To develop sustainable cement industry, integration between economic development and environmental protection by using technology and high automatic machinery.

2. To expand development projects, new project in the South and Mid region.

3. To developing of the large scale plants; the smaller plants will be contributed at the highland and countryside.

The eight regions of Vietnam currently being focused for the cement industry development are Mekong River Delta, Red River Delta, Southeast region, North Central Region and Central coast; Northern midland and mountains.

The process of SEA is undertaken to meet national regulations on planning for all sectors and will be assessed and added when the coal industry development plan is corrected and submitted to Government every five (5) years. The SEA considered the economic, social and environmental issues and their interrelations. Following on extensive review and consultation, the SEA team selected 12 themes of concern for detailed assessment, as following air, ecosystem, biodiversity, water, soil, spatial development including industry, urban, transportation, infrastructure, mining exploitation, energy, demography problems and health.

Human health is considered in one of its themes and it aims to minimize adverse effects of air pollution from the process of cement industry; and reduce labor accidents.

Health issues were also addressed in this SEA through the social theme, regarding the strengthening of health services and training; and life – span of community.

1.7 SEA of the National Power Development Plan VII, 2011 – 2020 with a Vision 2030

The National PDP (Power Development Plan) 2008 – 2011 (VII) is stated in this Decision No. 42/2005, that provides the objectives, direction, and policy mechanism for the electricity sector to improve power grid to ensure a safe, and reliable power supply for economic sectors, social welfare, people's life and national security, on the basic of energy saving and efficiency.

The ex-post SEA assessed PDP VII, and was a mandatory requirement to meet national regulations on planning for all sectors. This SEA is the first of a PDP to consider the full range and environmental, social issues under the Law on Environmental Protection (LEP, 2005). The Environment Institute of Stockholm, Sweden, aided the Ministry of Energy to carry out an expost SEA of the PDP VI in 2007-8. Then with assistance from ADB, the Ministry of Energy (Institute of Energy) carried out its own SEA on the PDP VII in 2010. This was supposed to be very instructive for Vietnam in considering further developments of alternative power sources and their impacts to health, GHG emissions, and other environmental impacts.

The study of and assessment in this SEA were conducted in accordance with the SEA Guidance, which was completed by Department of Appraisal and SEA, under the MONRE, in 2008, within the scope of the SIDA SEMLA Program, 2008. The SEA has provided a mechanism to assess and understand the full range of potential risks associated with different types of power development and transmission for people and the environment.

The assessment and consultation in SEA focused on 20 main social, economic and environmental issues of concern for the sustainable implementation of PDP. Consultants with different stakeholders indicated the need to focus the SEA on the power demand for national socio-economic development in an efficient and sustainable manner; social and environmental issues of PDPs; assessing key Government to reflect the benefits and influence of these policies in PDP VII, and last but not lease mitigation measures to reduce negative impacts or compensate people,

human health negatively affected by the implementation of PDP VII. Based on the results of this first round of consultation and the consultation with specialized agencies and local management authorities, the working group had discussed and selected 12 strategic environmental issues. One of the key environmental issues of the SEA includes human health in aiming to minimize adverse effects of the implementation of PDP VII on the community health such as incidence of diseases related to environmental pollution, especially air pollution, incidence of water born diseases during flood season; healthcare services, and transmissible diseases.

Impact analysis for human health used 2 main tools including trend analysis and cost calculation of healthcare services, reduced longevity, and time and income loss due to illness.

The Institute of Energy (IE) was in charge of the plan and set up the SEA working group, consisting of 26 members who are experts from different fields both local and international expert including Environment, Economy, Energy, Electricity and one expert from Health Impact Assessment (HIA) at Institute of Community Health.

1.8 SEA of the Quang Nam Province Hydropower Plan for the Vu Gia – Thu Bon River Basin, 2008

The hydropower development plan 2006 – 2010 of Quang Nam Province is the target of this SEA with the provincial Department of Industry identified as the responsible proponent agency.

The plan is a component of the Master Plan for Electricity Development in Quang Nam Province, Period of 2006 – 2010 Towards 2015 approved by the Provincial Peoples Committee in 2006. The hydropower plan includes 8 large hydropower projects (more than 30 MW) and 38 small (less than 10 MW) to medium (between 10 to 30 MW) projects.

The ex-port SEA assessed hydropower proposals and other development activities in the Vu Gia – Thu Bon River Basin. It was undertaken on a plan approved in 2006 and prior to legal requirements for SEA under the Law on environmental Protection.

The SEA was not formally appraised by the government. However, its outcomes raised the interest of the relevant provincial chairman, and later triggered a formal review and adjustment of hydropower planning in the province.

The SEA considered the economic, social and environmental issues and their inter-relations. Following an extensive review, and consultation with local stakeholders and international authorities, the SEA team selected 15 economic, social and environmental themes of concern for detailed assessment. In the final stage, the SEA focused on several critical synergistic impacts of the plan for sustainable development in the basin, namely: (i) water supply; (ii) provincial economic development; (iii) ecosystem integrity; and (iv) ethnic minorities. The SEA mentioned health as one key issue in 15 themes in the river basin with and without the hydropower plan involved all relevant government agencies in Quang Nam, Da Nang provinces. And the objectives stated in terms of health include: increasing in life expectancy, high rate of child malnutrition, water borne diseases increasing in flood season, existence of Malaria, and better access to health services, HIV-small but potentially growing problem.

APPENDIX B

INTERVIEW OUTLINE

Dear Sir,

My name is Phan Thi Mai Hoa and I am a Master of Science candidate at Mae Fah Luang University in Thailand. Currently I am working on my thesis project regarding health, planning, and assessment. More specifically, the thesis is concerned with the incorporation of health in strategy environmental assessment.

The geographical area for my study is Vietnam. Although, the incorporation of health in SEA in East and Southeast Asia is also concerned to acquire useful experiences from other country. As such, I am particularly interested in gaining knowledge from experts - people who work with these issues in depth and have a great knowledge of them specifically in this region. You have been identified as one such person.

It would be of great assistance to me, and helpful to my research, if you would fill out the attached survey. The interview outline is divided into three sections that cover the topics A - General information, B – Question outline. Please feel free to add comments in addition to answering the questions. I have also left space for you to comment on your experience and background working with health, planning, and assessment.

Thank you very much for taking the time to answer the following questions.

Sincerely,

Phan Thi Mai Hoa

Background

The interview outline is divided into two sections that cover the topics A – General information, B – Question outline.

A. General information: about interviewees
B. Question outline aims to review the integration of health in SEA

A. General information

Please provide your information

Name: _____

Organization type_____

Area of Expertise:_____

B. Question Outline:

Reviewing the consideration of health in SEA:

Q1. Was health definition included in SEA in Vietnam? If so, how is definition of health used for assessment in SEA reports?

Q2. How is health currently covered in SEAs predominantly related to the physical aspects (i.e. biophysical aspects such as impacts of noise, emissions, pollution), and social and behavioral components (i.e. education, income, poverty, inequalities)?

Q3. Were policies in other sector described in SEA reports needed to address the determinants of health and heath inequalities to secure any improvements in health? If so, How to address the health determinants?

Q4. What professional backgrounds involved in the SEA process were they from? When health professional members were involved in the SEA process? If so what stage of SEA process are they participate?

Q5. Did the local PCt or any other health authorities consulted? If so, what stages and how?

Q6. What data sources were used to determine the baseline health status of the population effected by the strategy?

Q7. Were any particular existing health issues specific to the local population identified which may be affected by the Strategy? If so, How to identify the issues?

Q8. What sources of information were used to identify potentially significant health impacts? Do you feel the information available to you was sufficient in making accurate predictions?

Q9. Was the effect of the strategy on health inequalities considered? If so how?

Q10. Have the magnitude of impacts been described clearly for the potential effects of the plan, with either quantifiable data or qualitative data, as appropriate? If so what are the methodologies for assessing health impacts addressed?

Q11. Are mitigation measures clearly described and committed to that will prevent, reduce or remedy any significant adverse effects on public health and well-being resulting from the implementation of the plan? If so, Why?

Q12. Are there gaps in the baseline information to test the accuracy of the predictions, has monitoring been suggested to improve the future baseline work and improve the accuracy of information on well-being profile? If so what?

Q13. May monitoring reveal adverse effects, does the report identify a commitment to undertaking contingency arrangements to mitigate the potential health impact? If so How to be monitoring process?

Q14. Overall what were the main difficulties and limitations in incorporating health issues in the SEA?

Q15. How do you think health issues could be better considered in the SEA process?

APPENDIX C

LIST OF RESPONDENTS

Table C1 List of Respondents

No	Name	Organization type	Area of Expertise	Email Address
1	Dr. Le Ke Son	Deputy Director-General, Head of the Department of Environment,	Environmental Management and Toxicology	lekesontcmt@gmail.com
2	Dr. Nguyen Huy Nga	Director-General, Health Department of Environmental Management	Environmental Health	huynga2000@gmail.com
3	Dr. Tran Dac Phu	Deputy Director-General, Health Department of Environmental Management, MOH	Environmental Health, and Health Impact Assessment	trandacphu@gmail.com

Table C1 (continued)

No	Name	Organization type	Area of Expertise	Email Address
4	Dr. Pham Anh Dung.	Head of Strategic Environmental Assessment Division, Department of Environmental Impact Assessment and Appraisal – MONRE	Environmental Technology and Management	phamanhdung29564@yahoo.com
5	M.S. Nguyen Manh Khai	Faculty of Environmental Sciences, Hanoi University of Science	Environmental Science and Technology	nguyenmanhkhai@hus.edu.vn
6	Prof. Associate Hoang Xuan Co	Research center for Environmental Technology and Sustainable Development (CETASD), Hanoi university of Science	Meteorology and Environmental Science.	cohx@vnu.edu.vn

CURRICULUM VITAE

CURRICULUM VITAE

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ADDRESS	01/86 Au Co Street Tay Ho District, Hanoi city, Vietnam 10000

EDUCATIONAL BACKGROUND

2006 – 2010	Bachelor of Science Environmental Management Hanoi University of Science, Vietnam

WORK EXPERIENCE

2010 – 2011	Environmental Consultant: Conducting and managing ESIA for mining projects Song Minh Incorporated Company, Hanel CSF Building, Sai Dong B Industrial Zone, Long Bien District, Hanoi, Vietnam