

POLICY FOR ENVIRONMENTALLY SUSTAINABLE DEVELOPMENT: PERSPECTIVES FROM VIETNAM

Nguyen Huu Ninh
Center for Environment Research, Education and Development
Vietnam Union of Science and Technology Associations
&
Vietnam National University, Hanoi

Introduction

Vietnam is one of the fast-growing economies in Asia, which is going through a far-reaching transformation from an inward-looking planned economy to one that is globalized and market-based (World Bank, 2012). Over the last 25 years Vietnam has transformed itself through remarkable economic growth, which has increased standard of living for millions and reduced poverty significantly.

The country has been developed since the mid-1980s with the policy of doi moi (renovation or new changes) and the end of the United States-led trade embargo in 1994. Its strong economic growth of 7.5 per cent per annum in the past decade (before slowing down to 6.3 per cent per annum from 2008) has brought stability, while many other countries have experienced a strong downward trend due to global political and socio-economic circumstances. The policy of doi moi has led to significant progress associated with economic reform aimed at making the transition from a centralised economy to a market economy.

As a result, Vietnam has transitioned from an extremely poor country to a lower-middle-income country in less than two decades. Vietnam's goal is to build solid foundations as an industrialized country by 2020. However, rural development and poverty reduction are still challenging hurdles.

Vietnam is increasingly attracting foreign direct investment (FDI) and Official Development Assistance (ODA) from potential donors such as the World Bank, Asian Development Bank, Japan, European Union, etc. The Government of

Vietnam puts a high priority on its reform program and on the effective coordination of donors.

In 2008, Vietnam became a middle-income status nation (as defined by the World Bank as countries with a per capita income of US\$1,000). However, it is still a relatively poor country, with an estimated 10.7 percent of the total population living in poverty in 2010 compared to 58.1 percent in 1993. The burden of poverty is still much higher in rural areas.

Economic development largely relies on natural resources, particularly agriculture, fisheries, and forestry. Such dependence raised conflicts and compromises by placing stress on the environment as a result of deforestation, land degradation, flooding, water pollution, overfishing, and pollution. Furthermore, despite many potentials and opportunities in socio-economic development, the country is facing real impacts of climate change with serious floods, droughts, increase of the frequency and intensity of tropical cyclones, sea-level rise, particularly Mekong River Delta and Red River Delta.

These stresses make it more difficult for people, especially those living in the country's poorest areas (Nguyen Huu Ninh et al. 2007, 2012).

In order to integrate into the UN's framework, the Strategic Orientation for Sustainable Development in Vietnam (Agenda Vietnam 21) was issued by the Government in 2004. With the efforts of the UN for the United Nations Conference on Sustainable Development (Rio+20) in June 2012, a draft of Green Growth Strategy period 2011-2020 with a vision toward 2050 is being prepared by the Ministry of Planning and Investment (MPI) to be submitted to the Government in 2012. With this effort, Vietnam would take a new road of green economy in the coming decades.

However, there is a need for Vietnam to direct attention on the policy for environmental protection and sustainable development, meanwhile reducing

vulnerability to detrimental environmental change. This environmental protection and sustainable focus must be a key component of any strategy for the future of Vietnam.

Geographical and socio-economic context

Vietnam is located in Southeast Asia, the most dynamic development region in the world, with territory of 331,114 km², bordering China, Lao PDR, Cambodia, Gulf of Tonkin, Gulf of Thailand and the sea.

The country has a length of 1,650 km and is about 50 km wide at the narrowest point. With a coastline of 3,260 km, Vietnam has approximately 3,000 islands, and more than 1 million km² of territorial sea surface. In terms of geo-biology, Vietnam is an intersection point of fauna and flora in India-Myanmar, South of China, and the Indo-Malaysia region. It is one of 16 countries that have the richest biodiversity in the world (MARD, 2002).

Vietnam is an agricultural country, dominated by the two major deltas, the Red River Delta in the north and the Mekong River Delta in the south, where more than half of the country's population of 87 million gather in these fertile agricultural deltas. In the central territory of the country, a narrow agricultural land runs along a beach to the Pacific Ocean. Vietnam now is the world's second largest exporter of rice with seven millions tons in 2011. In addition to rice production, fisheries and aquaculture constitute a significant economic sector. In 2010, agriculture accounted for 20% of Gross Domestic Product (GDP). Although agriculture remains a vital part of Vietnam's economy, its percentage of total national economic output is decreasing as industrialization develops (Index Mundi, 2012).

The Red River begins in Yunnan province (China) along the mountainous border of Vietnam, and spread out to form the Red River Delta before flowing into the Gulf of Tonkin.

The delta area is about 15,000 square km, and well protected by a network of thousand-year historical dikes.

The Ba Lat Estuary of Red River is one of the largest river mouths in Northern Vietnam, which had been recognized as the first Ramsar site of Vietnam in 1989 with the name of Xuan Thuy National Park.

In Southern Vietnam, the Mekong River Delta is the most important “rice stomach” of the country. With an area of approximately 40,000 square kilometres, the Mekong River Delta is a low-level plain not more than three metres above sea level with a complex system of canals and rivers. About 10,000 square kilometres of the delta are reserved for rice cultivation, making it as one of the major rice-growing regions of the world.

It is estimated that the amount of sediment deposited annually to be about 1 billion cubic metres, or nearly 13 times the amount deposited by the Red River.

Mekong River is one of the 12 great rivers of the world, which is 4,200 kilometres long and a catchment area of 795,000 km². It flows through the Tibetan plateau and Yunnan province of China, forms the boundary between Laos and Myanmar as well as between Laos and Thailand, continues to Cambodia, and divides into two branches in Vietnam before draining into the sea through nine river mouths known as the *Cuu Long* (nine dragons).

Mekong River Delta is home to 18 million people, spreading in 13 provinces and cities with an intensity of 435 people per square kilometres, making it the most populated area of the basin. Population growth rate has been kept at a steady 1.8 – 2.0 percent during the 1990s until now. Recent estimated data showed an approximate 80% of Mekong River Delta population lives on agricultural activities. The region produces and supplies 90% of national rice exports and nearly 60% of the country's total export turnover from fishery products. During the past quarter century, Vietnam has emerged as one of Asia's great success examples with an entire economic reform.

With the policy of doi moi (renovation or new changes) since the mid-1980s, the socio-economy has showed an impressive growth, and created a new path for economic development, shifting from a centrally planned economy to a new, more

open market economic system. Its economic growth is faster than any other Asian economy except China.

In 1986-1987, Vietnam stated the following aims of doi moi:

- to replace a centrally planned economy with a market economy with a socialist orientation under State control;
- to build a democratic legalistic society, in which the State belongs to the people, is elected by the people and works for the people; and
- to carry out an open door economic policy, promoting cooperation and relations with all countries with the wish of being friends with all nations for the common benefits of development.

In 1994, the US economic embargo against Vietnam was lifted. Vietnam rebuilt relations with international sponsors and financial organizations, and the inflow of ODA and FDI into Vietnam has significantly increased.

The renovation performance has been associated with Vietnam's integration into the world economy mechanism. After becoming member of ASEAN and AFTA in 1995, Vietnam's accession to the WTO in 2007 is recognized as a milestone in the country's integration process.

The brief contextual account of the key features of Vietnam that follows draws on country reports (World Bank, 2009; UNDP, 2010) and the data sources cited in Tables.1 and 2, which details key societal, economic and human development statistics.

In development strategy, the Government of Vietnam has scheduled regularly 5-year socio-economic plans.

In the latest cycle, the year 2010 was the final year to implement the 5- year Socio-economic Development Plan 2006-2010. It was implemented in the context of Vietnam having to face many difficulties and challenges derived from serious impacts of the financial crisis, natural disasters and epidemic diseases. The negative impacts of global economic crises influenced significantly economic situation in Vietnam, which indicated in lower levels of GDP growth and human development indexes in 2008.

After the global economic crisis in 2008, the Vietnamese economy quickly recovered from slowdown and attained comparatively high economic growth. In 2010, GDP increased by approximately 6.8%, which is higher than the target expected by the government. The agriculture sector has risen by 2.78%, the industrial and construction sector has gone up by 7.70%, while the service sector is 7.52% higher. With such results, the average GDP growth rate of the 5 year period, from 2006 to 2010, is approximately 7% per year with the GDP per capita in 2010 of about 1,160 USD.

Since Vietnam has been continuously affected by global economic crises, the consumer price index CPI in 2011 increased by 18.13 percent over 2010's, which is a record high inflation rate of 18 percent. Associated with this record inflation is a sharp depreciation of the Vietnamese currency (the dong) of 7% by the Vietnamese central bank on February 11, 2011, the most since 1993. This was the fourth devaluation in 15 months to curb the trade deficit and to narrow the gap between the official and the black-market exchange rate (Bloomberg News, 2011). In 2011, nearly 50,000 businesses had stopped operation, stopping paying tax, got dissolved or bankrupt.

Vietnam's GDP growth was at 5.9%, lower than the growth level of 6.8% in 2010. This number is lower than the Government's GDP adjustment rate of 6%.

However, a GDP growth of 5.9% is acceptable as long as Vietnam focuses on controlling inflation and on stabilizing the macro-economy with a tight monetary policy. In April 2012, the Government has decreased banks' interest due to inflation slowdown with a proof of 15 percent per year. Despite lower economic growth in period 2011-12, Vietnam is still expected to be an emerging country in the medium and long-term period in Asia.

Government policy on environment and sustainable development

The Law on Environmental Protection was passed on December 27th, 1993 by the National Assembly, and went into effect on January 10th, 1994. The Law provides for the protection of the environment with serving the cause of sustainable development of the country (National Assembly of S.R.Vietnam, 1994).

It is estimated that the total economic loss resulting from environmental pollution in Vietnam accounts for at least 1.5% to 3% of GDP. Consequently,

environmental problems must be identified and solutions put forward for environmental protection (EP) in the next five years in order to mobilize all resources necessary to fulfill the goals set in the “National strategy for environmental protection to 2010 with a vision to 2020” (MONRE, 2010).

In 2003, the Government started the National strategy for EP to 2010 with a vision to 2020, which launched 36 programs, projects, and schemes of EP to implement the elements of the strategy such as pollution prevention, control and improvement of the environment.

In 2004, the Vietnam Communist Party issued the Politburo Resolution No.41-NQ/TW on EP in accordance with the country’s accelerated industrialization and modernization, which is considered the strategic orientation for the country’s environmental protection.

In late November 2005, Vietnam’s National Assembly passed a revised Law on Environmental Protection (National Assembly of S.R.Vietnam, 2005). Some of the changes are significant and updated the framework, which was established in 1993. However, other aspects of the Revised Law would require further improvements, probably in 2012-2013.

Following the Politburo, The Prime Minister also issued Decision in 2005 on a National Action Program to implement the Politburo Resolution No.41-NQ/TW on EP in the country’s accelerated industrialization and modernization process.

Legal documents on EP have been more detailed with specific guidance documents regulating EP areas such as pollution control, waste management, SEA (Strategic Environmental Assessment) and EIA (Environmental Impact Assessment), environmental management of river basin areas; management of the marine and islands’ environment, biodiversity, environmental monitoring and information, incentives, financial support, technology development and environmental technical standards, socialization of environmental protection.

In addition to the EP provisions at central level, regulations on EP have been established in provinces and cities. Planning is now taking place for

environmental monitoring networks in the provinces and cities. These monitoring systems are being set up and developed.

Due to strengthening socio-economic development, the "Strategic Orientation for Sustainable Development in Vietnam" was approved by the Government in 2004, which is a framework defining strategic direction and providing a legal basis, enabling ministries, sectors, localities, organizations and individuals to coordinate measures to ensure sustainable development of the country in the 21st century (S.R. Vietnam, 2004).

According to its guidance The Strategic Orientation for Sustainable Development in Vietnam is focused on five parts.

1. Sustainable development, Vietnam's anticipated path.
2. Priority economic areas for sustainable development.
3. Priority social areas for sustainable development.
4. Priority areas in natural resource utilization, environment protection and pollution control for sustainable development.
5. Sustainable development implementation arrangements.

Giving to future sustainability, priority areas in natural resource utilization, environment protection and pollution control should play a key role in the development process with the following areas requiring implementation.

1. Institutional and legal perspective
2. Economic perspective
3. Science, technology and environmental perspective
4. Raising awareness.

In state-of-the-planet, Vietnam is stating its intentions for green growth. It intends to restructure its economy with an aim to increase economic efficiency and competitiveness, while reducing greenhouse gas and more effectively responding to climate change impacts. Vietnam's green growth strategy for period 2011-2020 and with Vision to 2050 is being prepared by the Ministry of Investment and

Planning (MPI). The MPI will submit its plans for review by the Central Government in mid-2012.

Climate Change Predictions

The Fourth Assessment Report of IPCC indicated that the impacts of climate change will seriously affect developing countries, in which Vietnam is cited as one of the “top countries” in the world most vulnerable to climate change (IPCC, 2007; World Bank, 2007).

In Vietnam, the Ministry of Natural Resources and Environment (MONRE) is assigned by the Government of Vietnam to be the National Focal Point to take part in implementing the UNFCCC, Kyoto Protocol, and CDM in Vietnam.

The Vietnam’s First National Communication to the UNFCCC released in 2003 and the second one in 2010 covers following areas to:

- undertake national GHG inventories by source;
- identify sufficient adaptation measures to climate change and prepare the Policy Framework of implementing adaptation measures for key socio-economic sectors; and
- determine climate change mitigation measures.

Based on the National Communications to the UNFCCC (2003, 2010), the impacts and future prediction of climate change in Vietnam are summarized as follows:

- In the medium scenario, the average temperature is estimated to increase by 2.4-2.6°C at the end of 21st century. Inland average temperature (focused mainly on the northern highlands) will increase by 2.8°C. Meanwhile, the average temperature of the coastal areas may increase by 2.5°C. These temperature increases will create drought, heavy losses in agriculture crops, widespread increase in the occurrence of epidemic diseases along the length of the country, and many others, in most parts of the country;

- Annual average high and low temperatures are also expected to increase. The number of days, with temperature higher than 25°C, will also increase. This increase will significantly affect the country's ecosystems, farming seasons, and human health; and

The north and south regions are affected by the southwest monsoons but the seasonal rainfall amount decreases in July and August, and increases in September, October and November. By 2100, annual rainfall in northern climate zones is projected to increase by 7.3 to 7.9%. From the South Central zone and southwards, the increase will be smaller, averaging 1.0 to 3.2%. Rainfall is projected to decrease during the dry season in almost every zone, most markedly in the south. In the rainy season, rainfall is likely to increase in all zones. Overall, total annual rainfall is set to increase throughout the country. Annual flows of rivers in the North and Northern area of North Central Coast are set to increase. In contrast, annual flows of rivers in the southern area of North Central Coast to the northern area of South Central Coast are bound to decrease. Flood flows in most rivers tend to increase while flows during dry season are declining.

- The evapotranspiration rate will also increase due to shifts in temperature with 7-10% for 2050, and 12-16% for 2100. Because rainfall is concentrated during the rainy season, rainfall during the dry season will decrease by 2100 in the central regions of Vietnam. Droughts will occur more frequently.
- Sea level in Vietnam may rise by 28-33 cm at 2050 and 100 cm by 2100 above 1980-1999 levels.

The World Bank (2007) has indicated that with a coastline of 3,260 km long and with two of the large deltas in the world, Vietnam is one of top ten countries in the world that will bear the worst damages brought about by climate change. With rising sea level, the annual flood-ridden area will expand. The Mekong River Delta would be most impacted, containing as much as 90% of

the national floodplain area. Sea-level rise may also lead to higher risks of saltwater intrusion of rivers and underground water resources, causing serious social and economic losses in Vietnam. If the sea level rises by 100 cm, it would potentially lead to a land loss of over 5 percent and thus displacing 11 percent of the population.

As a consequence of climate change, Vietnam is one of the most disaster-prone countries in Asia and the world. According to MONRE (2009), about six to eight storms and tropical depressions affect Vietnam each year over period 1960-2005. The runoff from rains, when added to rivers already swollen by monsoon rains, creates floods, which endanger river dykes and threaten to devastate millions of households. However, recent research has showed that that the number of heavy storms and typhoons to hit Vietnam will increase both in number and intensity with climate change as well as the track of typhoon has been slowly moved toward to the South.

Disasters in Vietnam occur in all geographical areas and economic zones with most severe damage caused by water disasters or climate-related disasters such as tropical storms, floods, inundation, drought, salt water intrusion, storm surge, landslides, and flash floods (Table 3). Between 1989 and 2008, Vietnam lost at least 1% of GDP per annum due to natural disasters.

Perspectives on Green Economy

The world enters the 21st century with many new challenges such as population exceeding 7 billion in the year 2011, poverty, environmental problems, climate change, economic crises, etc. The Rio+20 Policy Briefs, released before the 2012 United Nations Rio+20 Summit, focuses mostly on transitions to sustainability in the context of a green economy and institutional frameworks for sustainable development. Beyond human well-being and global sustainability, there is a substantial incentive to reform: a green economy, according to some analyses, will grow faster than the existing “brown”, or polluting, economy (Rio+20 Policy Brief No.5, 2012).

The green economy is important because the balance of existing nature is becoming irreversible if the Earth’s environment is destroyed to a critical

threshold where human existence is threatened. Where the green economy is engaged within resilient communities, local ecosystem services can be preserved, if not overwhelmed by the aggregate destruction caused by the brown economy. By scaling up the green economy in many communities and societies globally, while decreasing the negative impacts of the brown, polluting economic sectors, sustainability is achievable for those communities and societies living within their carrying capacities.

If we are continuing to use the Gross Domestic Product (GDP) per capita to measure progress of economy, that will lead the green economy strategy to fail. Therefore, we should use a new set of measures which take into account the natural, ecological, social, human and produced capitals, and not just economic output. This approach can be seen in the Human Security Index.

In principle, green growth/economic development is the process of restructuring economic activities and infrastructure to obtain better results from investment in natural resources, human resources and finance, simultaneously reducing greenhouse gas emission, exploiting and using less natural resources, generating less waste, and reducing social inequality.

Vietnam's Green Growth Strategy is currently prepared by MPI (2012), and will be possibly approved by the Government in 2012, which is integrated into the Socio-Economic Development Strategy 2011-2020 and Strategic Orientation for Sustainable Development.

The necessity of Vietnam's green economy is based on the facts:

- Growth in productivity, efficiency and competitiveness is still low;
- Brown economic growth relies on cheap labor, low efficiency in the exploitation of natural resources, processes that deplete non-renewable natural resources and seriously pollute the environment, with the risks of environmental degradation externalized from businesses to the commons;

- Environmentally sound economic sectors have not yet been developed;
- Energy needs are being fulfilled by fossil-derived energy and the efficiency is low due to use ordinary internal combustion technologies;
- Climate change impacts, especially in Mekong River Delta and Red River Delta, are seriously challenging issues in medium and long-term period; and
- Financial recession on global scale threatens export markets.

Given the necessity of shifting away from the unsustainable, brown economy, the objectives of green economy require a strategy incorporating the following:

- Economic sectors are encouraged to efficiently use natural resources with high added value, then phase out the sectors that wastefully use natural resources and cause environmental pollution;
- Updated technologies are developed and applied with an aim to efficiently use natural resources, reduce greenhouse gas emission, and effectively respond to climate change; and
- Peoples' livelihoods are improved by generating employment in green industries and their quality of life are further improved through establishment of ecologically sound lifestyles in resilient communities.

The priority of sectors of green growth is shown in Figure 1.

In Vietnam's green economy, there are three key strategic directions: reducing greenhouse gas emission; greening production; and greening lifestyles and consumption. The new strategy is facing new challenges, but at the same time bringing opportunities for enterprises. It would identify challenges when factors in the competition-development model change, at the same time ensuring compliance with regulations on environmental practices, and increasing social responsibility. For example, the green economy will: reduce emissions; protect the environment; remove inappropriate and harmful businesses; and enable stronger local competition with leading foreign enterprises (Figure 2).

The Vietnam Green Label coordinated by the Ministry of Natural Resources and Environment is a parallel programme, which helps enterprises to enter a global market further increasing competition benefiting Vietnam and consumers globally. The goal of green growth approach is clearly indicated in the quantitative indexes set up in MPI's proposed strategy.

According to it, by 2020, the average GDP per capita will double over the 2010 level, Energy consumption per capita will be reduced by 2.5- 3% per year. Greenhouse gas emission intensity will be reduced by 10-15%.

As a result, a modern and efficient economic structure will be formed, with which the value of hi-tech products and products applying high technologies will account for about 42-45% in the total GDP. The aggregate productivity of this sector will contribute about 35% to Vietnam's economic growth in this period.

By 2030, Vietnam will achieve middle-income country status, develop sufficient and appropriate material, technical, human, and institutional bases for a widespread implementation of green growth methods. The total greenhouse gas emission will be reduced by 2-3% per year; the aggregate productivity will contribute at least 50% to the growth.

By 2050, green energy and technologies will be widely used. Vietnam is developing a "green" Gross Domestic Product (GDP) index, which is expected to be ready for use in 2014. The construct of GDP currently used in Vietnam does not account for the costs of pollution and natural resource exhaustion, but the Green GDP will include values accounting for depletion of natural resources and costs of pollution.

However, the strategy relies on how the "top companies" respond to those goals and become a "core group" for its implementation, meanwhile small and medium

enterprises (SME) would transfer their existing systems to appropriate technologies accordingly in time given 98 percent of Vietnam's enterprises are SMEs.

Vietnam is encouraging SME formation and growth, but less concrete in the policy. According to the Ministry of Planning and Investment (MPI), up to the end 2010, about 544,394 enterprises were registered under the Law on Enterprises. During the first half of the year, more than 39,500 new businesses were added with a total registered capital of VND230.2 trillion (\$11.2 billion) (Business-in-Asia.com, 2011).

Conclusion

Sustainable development - ensuring equitable economic growth while protecting the environment on which health, human security, and prosperity depend – necessitates limiting the vulnerability of human populations and natural ecosystems, while enhancing their resilience (Adger N.W. et al. 2001). The policy and a new set of measures will identify development globally as defined in Rio+20 Policy Briefs, which lead to a path of green economy in the coming period.

There is a question about how Vietnam will direct its attention on the policy for sustainable development strategy in the future. In Vietnam's green growth strategy, challenges and opportunities of enterprises are identified when factors in the competition development model change, while ensuring compliance with regulations on the environment and increasing social responsibility as well as improving human well-being.

The restructure of economy of Vietnam will definitely follow a "green path." However, a number of emerging problems must be solved to balance the intersection between economic values and social values, in which a revised Land Law would play an important role in further the development in Vietnam.

The latest Land Law was established in 1993, and should be revised possibly in 2013-2014, given that so any socio-ecological conditions have changed during the past 20 years in Vietnam. The land issue relates to almost all sectors: enterprises, public and private investments, infrastructures, financial systems, society, etc. Alongside Land Law, education, science, and technological development are

playing key roles in Vietnam's shift toward a green economy from its present brown development framework. Furthermore, public-private partnerships (PPP) and public/private consortia will help to form a new structure in socio-economic development and poverty reduction, such as the cooperation between the Ministry of Investment and Planning (MPI) and the Vietnam Business Council for Sustainable Development (VBCSD). Public/private consortia, which are more agile in creating unity of effort, when unity of command is not feasible or desirable, will further augment the PPP-framework to enable more rapid change to address quickly emerging challenges.

I identify three priority areas that we can consider to improve Vietnam's development in coming decades.

First, there are several challenges for the country in globalization and the impacts of climate change such as physical risk, regulatory risk, reputation risk and litigation risk. Vietnam should learn from international experiences to improve the appropriateness of its development, as the late comer to the global market.

Second, Vietnam must follow a green economic path with global efforts, while at the same time continuing traditional commitments to equity and human wellbeing, particularly in rural areas, where 70 percent of population still relies on agriculture for their livelihood.

Third, the legal system and socio-economic restructure should be reengineered to be more flexible and should be improved over time to realize the diverse opportunities and the address the many gaps in local, regional and global circumstances during the early to mid 21st century. Strengthening the socio-cultural and socio-ecological underpinnings of Vietnam as a nation within the framework of its expanding green economy will protect Vietnam from negative impacts of globalization and other strategic challenges in the years ahead.

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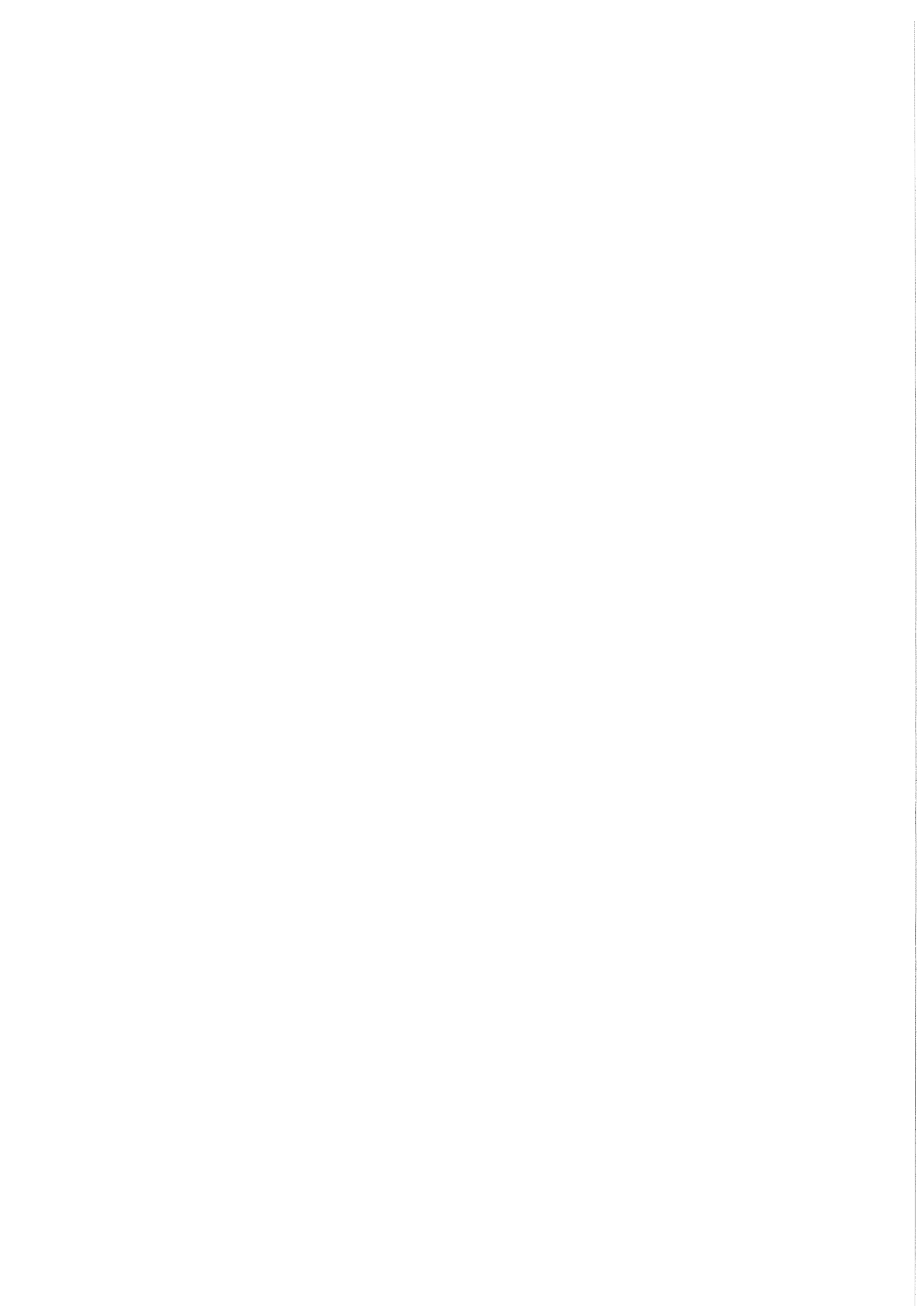
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Biography

Dr. Nguyen Huu Ninh is Chairman of the Center for Environment Research, Education and Development (CERED) – Vietnam Union of Science and Technology Associations, and Lecturer of Vietnam National University, Hanoi. He is Professor, Doctor (Hon.) of University of Pécs (Hungary), Doctor of Science (Hon.) of University of East Anglia (U.K.), Lead Author Member of the Fourth Assessment Report of Intergovernmental Panel on Climate Change (IPCC): Climate Change 2007, which was awarded by Nobel Peace Prize in 2007. He is a Co-Founder of International Program on Climate Change and Variability Risk Reduction based in the Pacific Disaster Center (Hawaii, USA), and Adjunct Faculty of San Diego State University (California, USA). He is also the Honorary Member of the Vietnam Business Council for Sustainable Development (VBCSD). He has conducted a series of projects on environment and climate change in Vietnam and a wider Southeast Asia region during 25 years, contributed to many international programmes, and published articles and books in various environmental fields. He was the author of article on Flooding in Mekong River Delta, Vietnam in UNDP Human Development Report 2007/2008; co-authors of Living with Environmental Change: Social vulnerability, adaptation and resilience in Vietnam, Routledge, London, 2001 & Environmental Protection and Sustainable Development in Vietnam, National Political Publishing House, Hanoi, 2003. His education background can be found at:

<http://english.pte.hu/pdf.php?id=392&type=contents>.



**POLICIES FOR ENVIRONMENTALLY SUSTAINABLE DEVELOPMENT:
COMPARATIVE PERSPECTIVES FROM 7 ASIAN COUNTRIES**

Concept Note

The re-emergence of Asia has been written and commented upon extensively. Several observers have postulated the current century as the 'Asian century' when the Asian continent regains its primacy in the world economy, a position it has occupied for much of human history (certainly from 1 AD) barring the last 300 years. Within Asia, Singapore and China in recent times have witnessed the most dramatic rise in per capita incomes in human history with the former going from a third world to a first world nation in the span of one generation.

On the flip side, it is questionable whether the resurgence of Asia and of Asian countries is environmentally sustainable. Unlike the mature economies of the west that are hardly growing, Asian economies especially the large economies of China and India are on the move clocking nearly double-digit growth. As a consequence, they are also witnessing large-scale environmental impacts in various sectors ranging from forests and fishing to mining and manufacturing. In addition, massive and rapid urbanization across Asia is causing serious concern about air and water pollution and congestion in its cities. The fact, that economic activity generates an environmental footprint and that it is concentrated in urban areas is well known, if not always well internalized in policy making.

In particular, the point is whether unaccounted costs of environmental degradation (air and water pollution, soil erosion and deforestation to name some key problems) are negating economic growth to a significant extent. For example, early estimates of the cost of environmental degradation in China ranged from 3.5 to 8 percent of gross domestic product or GDP (World Bank 1997). More recent studies continue to highlight significant health and other costs of air and water pollution in China (World Bank 2007). Similar figures have also been arrived at for India. Subtracting the median estimate of these costs, i.e., 4-5% of GDP, from a growth rate of 9-10% approximately halves the latter figure. Further, netting out population growth at the rate of 1-2% per annum implies that after adjusting for the cost of environmental degradation and population growth, environmentally sustainable per capita incomes in the fast growing economies of Asia may be growing much more slowly than commonly perceived, perhaps by as little as 3-4% per annum. More broadly, the concern is

whether Asia is 'eating up' its natural capital (forests, mineral wealth, water resources, etc) and converting it into GDP growth that will not sustain into the future¹.

At the same time policy interventions to improve the environment across Asia offer win-win opportunities and are likely to yield positive net benefits. For example, investments in improving air and water quality (controlling air and water pollution) lead to significant health benefits (reduced mortality and morbidity) and also improve productivity of the labor force.

In this context, this research project will focus on the environmental challenges and opportunities in key Asian powers (current and emerging), namely, China, India, Japan, Indonesia, Malaysia and Vietnam representing major regions of Asia (South, Southeast, East and Northeast). It will also include Singapore as an 'influential' power that provides a bridge between the four Asian regions. A key feature of this exercise is its pan Asian character—to the best of our knowledge there is no extant work of comparative nature on environmental problems and policies for Asian countries.

In our view, this group of countries is representative and captures the essence of Asia with regard to its growing economic clout, population and its environmental and natural resources-- between them, these seven countries account for approximately 30% of world GDP (in PPP) and 44% of world population. Four of them (China, Japan, India and Indonesia) rank 2nd, 3rd, 4th and 15th, respectively, in the world in terms of size of their economies and are also among the world's ten most populous countries—ranking 1st, 2nd, 10th and 4th, respectively.

With regard to environmental and natural resource endowments and policy challenges, these countries are again highly representative of Asia. They encompass a wide range of unique ecosystems and biodiversity and of mineral wealth. Indonesia and Malaysia, for example, are 'megadiverse' countries (a select group of 17 countries that harbour the majority of the world's plant and animal species)—about two thirds of Malaysia (and about 60% of Indonesia) is forested. It is estimated Malaysian forests contain 20% of the world's animal species, notable since it has only 0.002% of the world landmass, a little smaller than Germany (Alexander 2006). The rainforests of Indonesia and Malaysia date back to 130 million years and are the oldest in the world. On the island of Borneo, shared between these two countries and Brunei, a 25-acre plot of rainforest can contain more than 700 species of trees - a number equal to the total tree diversity of North America.

¹ Partha Dasgupta and Karl-Goran Mäler (1994) were among the first economists to forcefully propound this view: "The quality of the environment is part of our capital stock, just like bridges and buildings. There is every reason to treat the environment along with other capital as a relevant input in a firm's production function."

What this suggests is that planners and policymakers in Asia (as represented by these 7 countries) face a number of challenges as the continent undergoes rapid economic growth. Under this project, experts from these countries will deliberate upon the environmental challenges Asia faces. They will focus on common and cross-cutting themes such as air and water pollution, deforestation and biodiversity loss, and trans-boundary issues such as water resources, maritime resources and haze. They will also examine environmental policy regimes in place, identify gaps and shortcomings and suggest a way forward for environmentally sustainable development in Asia.

The output of these efforts will be about a dozen commissioned papers with more than one contribution from larger countries that confront a wider range of environmental challenges. The papers will focus on key policy and governance challenges with regard to the environment in each of these countries especially against the backdrop of rapid economic growth and transformation. Detailed outlines of the papers will be finalized by the Principal Investigators (PIs) of the project (Huang and Gupta) in consultation with country experts.

Drafts of these papers will be presented at a conference for invited participants hosted by the Centre on Asia and Globalization, LKY School of Public Policy, Singapore in May 2012. Each paper will be reviewed and commented upon by a discussant along with floor discussion following which the papers will be revised. These will then be published as book chapters in an edited volume by a reputed publisher (to be identified). It is expected that this will be a pioneering contribution to comparative environmental policy in Asia.

Timeframe:

Title of project	PIs	Project Value	Duration	Budget	Deliverable
Policies for Environmentally sustainable development: Comparative perspectives for 7 Asian Countries	Huang Jing & Shreekant Gupta	\$80,000	Jan 2012 to Aug 2012	1. Publication-20,000 2. Workshop- 60,000	Edited volume

Detailed Budget for workshop:

Workshop Budget for 10 participants

Airfare	\$ 20,000.00
Accommodation	\$ 6,000.00
Honorarium	\$ 30,000.00
Miscellaneous	\$ 4,000.00

References:

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World Bank (1997). *Clear Water, Blue Skies: China's Environment in the New Century* (China 2020 Series). The World Bank, Washington, D.C.

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Table 1: Basic national statistics (data for the year(s) indicated).

	Vietnam	Lao PDR	Cambodia
Land area (square kilometres)	331,114	236,800	181,035
Population (millions) (2009)	87.2	6.3	14.8
Urban population (%) (2009)	28	32	22
Annual population growth (%) (2009)	1.2	1.8	1.7
Population below national poverty line (%) (2008)	14.5	27.6	30.1 (2009)
Population below \$2 a day (PPP) at 2005 international prices (%) (2008)	38.5	66.0	56.5 (2007)
Gross National Income <i>per capita</i> , Atlas Method (US\$) (2009)	1000	880	650
Growth in Gross Domestic Product (GDP) (%) (2008/9)	6.3/5.3	7.3/6.4	6.7/-1.9
Role of agriculture (value added, % of GDP) (2009)	21	35 (2008)	35
Role of industry (value added, % of GDP) (2009)	40	28 (2008)	23

Source: World Bank Data at <http://data.worldbank.org/indicator>

Table 2: Key development indicators of the Lower Mekong nations and other selected nations in Southeast Asia

Indicators	Cambodia	Lao PDR	Vietnam	Thailand	Myanmar
Human Development Index Rank (2010)	124	122	113	92	132
Human Development Index value (2010)	0.494	0.497	0.572	0.654	0.451
Gender Inequality Index (updated) Rank (2008)	124	122	113	92	n/a
Gender Inequality Index (updated) Value (2008)	0.641	0.644	0.464	0.536	n/a
Ratio of income share of richest 10% to poorest 10% (2007)	11.5	7.3	9.7	13.1	n/a
Education index (2007)	0.704	0.68	0.81	0.88	0.78
Education index rank (2007)	137	133	116	87	138
Life expectancy at birth (years) (2010)	62.2	65.9	74.5	69.3	62.7
Population using an improved drinking water source (%) (2008)	61	57	94	98	71
People living with HIV, ages 15-49 (%) (2007)	0.80	0.20	0.50	1.40	0.70

Key: n/a, not available.

Sources: United Nations Development Programme (hdrstats.undp.org), Millennium Development Goals Indicators (unstats.un.org/unsd/mdg), World Bank's "World Development Indicators" (2009).

Table 3: Disasters in different geographic areas and economic zones

Disaster	Geographic Areas and Economic Zones							
	<i>North East and North West</i>	<i>Red River Delta</i>	<i>North central coast</i>	<i>South central coast</i>	<i>Central highlands</i>	<i>Southern North East</i>	<i>Mekong River Delta</i>	<i>Coastal Economic Zone</i>
Storm	***	****	****	****	**	***	***	****
Flood	-	****	****	***	***	***	****	****
Flash flood	***	-	***	***	***	***	*	***
Whirlwind	**	**	**	**	*	**	**	**
Drought	***	*	**	***	**	***	*	***
Desertification	-	-	*	**	**	**	*	**
Saline intrusion	-	*	**	**	*	**	***	**
Inundation	-	***	**	**	-	**	***	***
Landslide	**	**	**	**	*	**	***	**
Storm surge	-	**	**	**	**	**	***	**
Fire	**	*	**	***	-	***	***	***
Industrial and environmental hazard	-	**	**	**	***	***	**	***

Key: Very severe (****), Severe (***), Medium (**), Light (*), None (-)

Source: Ministry of Agriculture and Rural Development and CCFSC (2005).

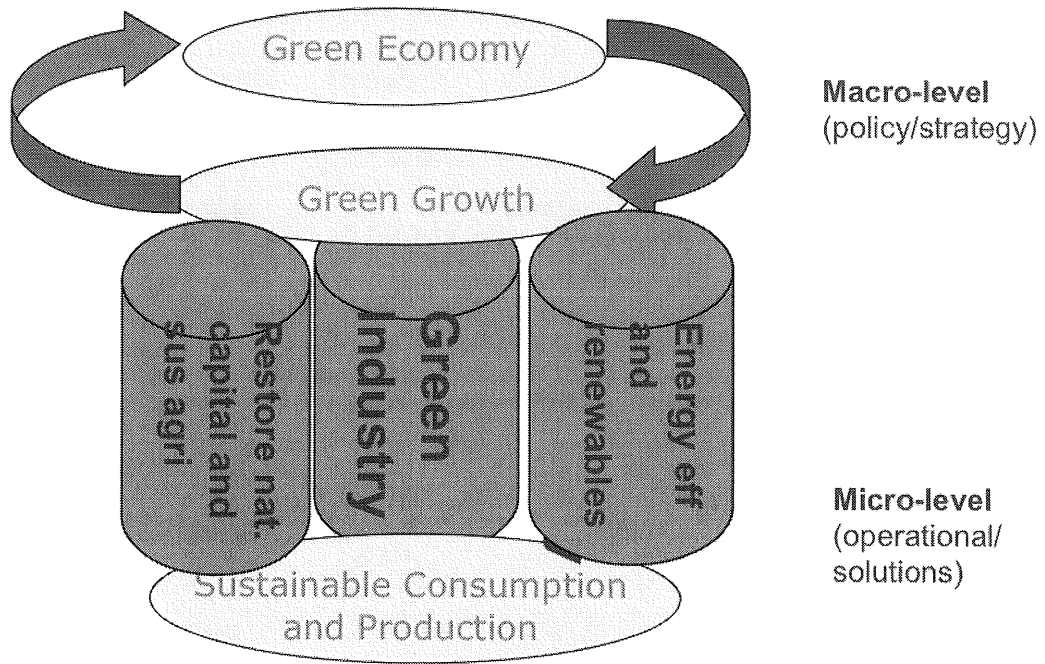


Figure 1: Green growth is driven by sector-strategy realization of Green Growth and Green Economy in related sectors (Source: MPI, 2012)

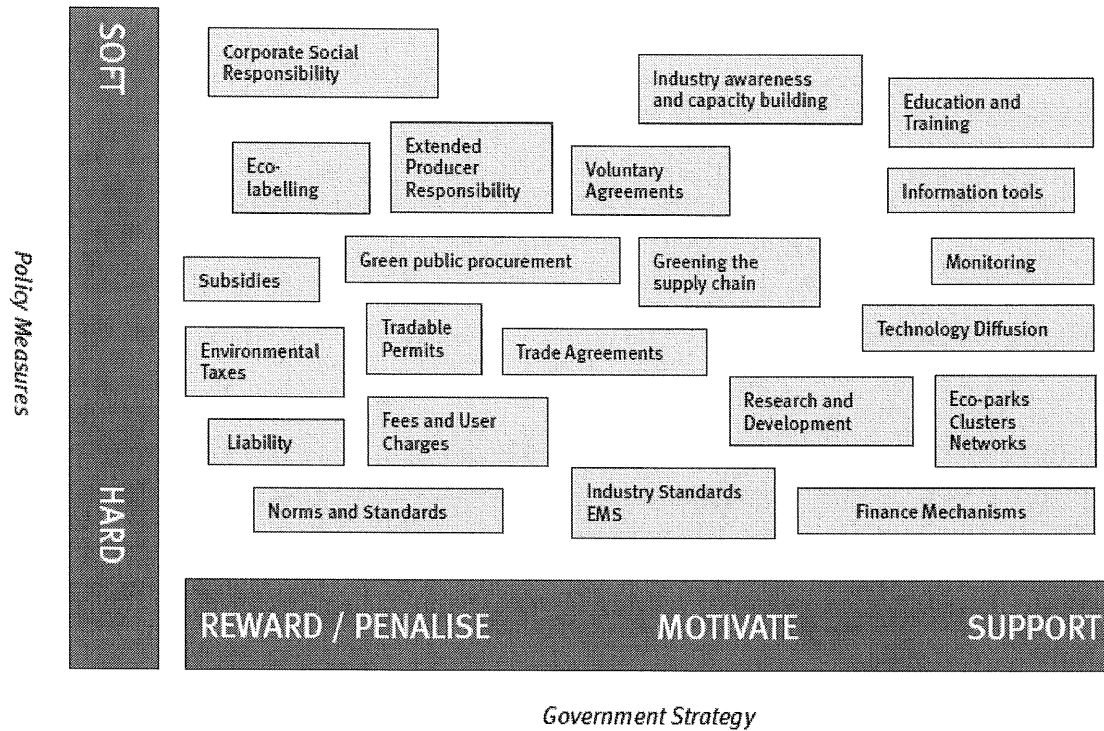


Figure 2: Green Policy Matrix for Greening of Sectors
 (Source: MPI, 2012)

