



CHATHAM HOUSE

Chatham House, 10 St James's Square, London SW1Y 4LE
T: +44 (0)20 7957 5700 E: contact@chathamhouse.org.uk
F: +44 (0)20 7957 5710 www.chathamhouse.org.uk

Charity Registration Number: 208223

Energy, Environment and Development Programme Paper: 2010/03

Aligning climate and development agendas in the Mekong region

Options for regional collaboration between Vietnam, Cambodia and Laos

Heike Baumüller

Senior Research Fellow, EEDP, Chatham House

June 2010

DFID Department for
International
Development

Chatham House would like to thank DFID for their generous support for the project *Trade, Finance and Climate Change: Building a Positive Agenda for Developing Countries*.

The views expressed in this document are the sole responsibility of the author and do not necessarily reflect the view of Chatham House, its staff, associates or Council. Chatham House is independent and owes no allegiance to any government or to any political body. It does not take institutional positions on policy issues. This document is issued on the understanding that if any extract is used, the author and Chatham House should be credited, preferably with the date of the publication.

Executive Summary

Climate change is a global threat that requires multilateral solutions. Using Vietnam, Cambodia and Laos as an example, this paper highlights opportunities and strategies for regional cooperation to jointly tackle climate change impacts and move towards low carbon development. Being part of the next wave of industrial development in Southeast Asia, the three Mekong countries are likely to face similar financial and technological challenges around industrial, agricultural and energy development. Significant opportunities lie in matching their shared development objectives with the climate change agenda. Climate change impacts are not and will not be confined to national boundaries and regional strategies will be needed to avoid undermining past and future development gains. At the same time, climate change funding through aid and investments could be an important source of external financing for economic and energy sector development, and a means of accessing mitigation and adaptation technologies. Vietnam – which is already economically and technologically more advanced than Cambodia and Laos – is well placed to play a leadership role in this trilateral cooperation.

Possible strategies that could be pursued by the three Mekong countries include:

- Cooperate in the development and deployment of **renewable energy technologies**, with a focus on building R&D and manufacturing capacities in Vietnam and supporting dissemination of the technologies in Laos and Cambodia.
- Promote **regional power generation and trade** from low carbon sources that can meet the countries' growing energy needs, reduce dependence on oil and coal imports and lower greenhouse gas emissions from power generation.
- Develop **regionally appropriate mechanisms to speed up the diffusion of energy efficiency standards and technologies** in particular as they relate to infrastructure, such as buildings.
- Explore the feasibility of setting up a **low carbon zone spanning the three countries** to attract investments and aid that can support research, testing and manufacturing of low carbon technologies and adaptation strategies.
- Advance the GMS agenda to establish **Carbon Neutral Transport Corridors** in the region through carbon sequestration and offsetting.
- Establish **regional research networks** to jointly develop climate change adaptation and mitigation strategies on agriculture and fisheries, building on Vietnam's R&D capacities and diverse climates, topography and ecosystems.
- Develop joint strategies to move from responding to short-term climatic emergencies towards preparing the countries to adapt to future climate change risks, drawing on Vietnam's experiences in **disaster preparedness**.
- Jointly model, monitor and manage changes in **crossborder migration** driven by climate change impacts and other factors.
- Undertake research into the impacts of climate change on the emergence and spread of **infectious diseases** and develop regional response mechanisms, building on Vietnam's experiences with responding to pandemics.
- Promote joint management strategies for **climate change adaptation and mitigation in transboundary ecosystems**, in particular the Mekong River Basin and high-value biodiversity conservation landscapes.
- Collaborate on sharing experiences with and implementing joint projects to reduce emissions from deforestation and forest degradation under the **REDD mechanism**.
- Integrate regional mitigation strategies into Vietnam's **nationally appropriate mitigation actions** under the United Nations Framework Convention on Climate Change.

Background¹

Climate change is clearly a global threat that requires multilateral solutions. Climate change impacts are not and will not be confined to national boundaries, but connect neighbouring countries through migration, impact on infrastructure, the spread of diseases, impact on shared ecosystems and the availability of natural resources through trade and investment. Thus, regional collaboration to strengthen adaptive capacities should not be only a humanitarian priority, but also a necessity to protect domestic economic and national security interests.

Regional cooperation can also provide important opportunities for jointly developing low carbon mitigation technologies and adaptation strategies that are suited to the regional context and therefore more easily transferable between countries. Less-developed countries in particular can benefit from the research and manufacturing capacities of their more advanced neighbours while providing a donor-supported market for climate change technologies.

The regional approach to climate change is recognised by a number of donor agencies, such as the Asia Development Bank (ADB), US AID and the United Nations Environment Programme. For example, the ADB has established the Regional Cooperation and Integration Fund (RCIF) and the Investment Climate Facilitation Fund (ICFF) under the Regional Cooperation and Integration Financing Partnership Facility. These help pool and provide financial and knowledge resources to support regional cooperation projects.

Using Vietnam, Cambodia and Laos as a case study, the paper assesses opportunities for intensifying regional collaboration to jointly tackle climate change impacts and move towards low carbon development.

Regional context

Vietnam, Cambodia and Laos are still at a relatively early stage in their industrial, technological and energy sector development compared to other countries in the East and Southeast Asian regions. Since opening up their economies in the 1980s, they have seen high rates of economic growth, largely driven by exports and foreign investments. However, poverty rates are still relatively high by regional standards, in particular in rural areas where the workforce continues to be engaged predominantly in agricultural production. All three rank low on the Human Development Index. Cambodia and Laos, both classified as least-developed countries (LDCs), lag particularly far behind their Asian neighbours in a number of global rankings (Table 1).

For all three countries, industrialisation, trade expansion, rural development and employment generation are key priorities. Laos and Cambodia are looking for low-tech assembly industries and services (in particular tourism) while Vietnam is seeking to move up the value chain, especially in the electronics sector. Achieving these objectives will require expanding energy generation and transmission and distribution capacities for reliable and affordable energy supply. The focus in Vietnam will be on significantly increasing energy supply to meet the projected demand growth of 15-18 percent annually between 2010 and 2030², especially in the rapidly developing industrial sector. For Laos and Cambodia, improving electrification rates will also be a priority, in particular in rural areas.

¹ The author would like to thank Jonathan Cook, Tim Eaton, Antony Froggatt, Kate Lazarus, Felix Preston and Benjamin Zala for their useful comments on draft versions of this paper

² Nguyen and Ha-Duong (2009).

Already existing linkages between the three countries through trade and investments will play an important part in this strategy. Vietnam is becoming a major importer of raw materials (including fruits, vegetables, tobacco and rubber) and investor (including hydropower, mining and rubber cultivation) in Cambodia and Laos (to varying degrees). Greater integration in regional supply chains is also a priority for all three countries to move away from their current position as suppliers of raw materials (with the exception of garments in Vietnam and Cambodia). In this context, the three countries can build on their increasingly close ties with China which is emerging as a key investor, donor and trading partner in the region.³

All three countries will need external financing (through foreign investment and aid) to develop their energy, industrial and other sectors. Vietnam has succeeded in attracting significantly more foreign investment than the other two countries, in particular in the last two years, but overall FDI remains low compared to many others in the region.⁴ Investment needs for Vietnam's energy sector alone are estimated at US\$ 3 billion annually, half of which will have to come from foreign sources.⁵ FDI in Cambodia and Laos remains small and donor funding continues to play an important role. Efforts will also focus on diversifying sources of foreign investments which currently come mainly from other Asian countries.⁶

Table 1: Global rankings of selected Asian countries

Country	Human Development Index (of 179)	Global Competitiveness (of 133)	Ease of Doing Business (of 183)	FDI Inflows 1998-2008 (millions of US\$)
Korea	25	19	19	66,993
Singapore	28	3	1	190,034
Malaysia	63	24	23	47,829
Thailand	81	36	12	75,261
PR China	94	29	89	677,205
Indonesia	109	54	122	20,252
Philippines	102	87	144	17,366
Vietnam	114	75	93	29,243
Cambodia	136	110	145	3,680
Laos	133	Not available	167	983

Sources: UNDP (2008); WEF (2009); World Bank (2009); UNCTAD (2009)

Towards low carbon, climate resilient growth

Climate change impacts and strategies present both challenges and opportunities for the three Mekong countries. All three countries are highly vulnerable to possible impacts due, to varying degrees, to low adaptive capacities, high exposure to climate hazards and population density in the areas likely to be most seriously affected. Thus, climate change impacts could substantially undermine past and future development gains. At the same time, climate change funding through aid, loans and investments could be an important source of external financing for economic and energy sector development, and a means of accessing mitigation and adaptation technologies.

³ Rutherford et al. (2008)

⁴ Based on data from UNCTAD (2009).

⁵ World Bank (n.d.)

⁶ Vietnam, China and Thailand are the leading investors in Laos while the main investors in Cambodia are China, Thailand, Korea and Japan (Rutherford et al., 2008). Vietnam attracts FDI mainly from Korea, Hong Kong, Singapore and Taiwan (Vietpartners, n.d.).

A number of international funding mechanisms already exist to support mitigation and adaptation measure in the three countries. The Copenhagen Green Climate Fund agreed in December 2009 aims to provide US\$ 30 billion to developing countries between 2010 and 2012 and countries have set themselves the goal of raising US\$ 100 billion dollars by 2020. Other funding sources include the Clean Development Mechanism under the UNFCCC and support provided by international agencies (e.g. the World Bank, the UN and the Asian Development Bank). Bilateral donors are also increasingly targeting their funding to climate change projects. Japan and the US, for instance, each held their first summits with the Lower Mekong countries in 2009 where they pledged closer cooperation and funding for climate change-related activities in the region.⁷

The ability of Vietnam, Cambodia and Laos to tap into and harness climate change funds for domestic policy priorities will hinge on a credible strategy towards building a low carbon, climate resilient economy. The focus is likely to be on adaptation given high vulnerability to climate change impacts in the three countries. At the same time, climate change mitigation financing can provide opportunities for all three countries to expand their energy sector through both large-scale and off-grid renewable energy technologies. In addition to increasing energy supply and distribution, greater use of renewables will also reduce dependence on imports of fossil fuels and lower the associated fiscal burden.

Given Vietnam's ambition to become a developed nation by 2020, it is likely that the country will have to take on some form of greenhouse gas (GHG) emissions reduction commitments under any future international agreement. In the Bali Roadmap agreed in 2007 and in the 2009 Copenhagen Accord, developing countries (other than LDCs and small island states) committed themselves to implementing nationally appropriate mitigation actions. These can comprise a range of measures, including specific investments and policies on energy efficiency and renewable energy. Countries may also consider following China's approach which focuses on a carbon intensity improvement (in terms of GHG/per unit of GDP). Vietnam now has the opportunity to promote low carbon development early on and as an integral part of the development process, thereby preventing lock-in into a high-carbon growth model. While Cambodia and Laos are unlikely to be required to reduce emissions in the near future, these considerations will nevertheless become important in the long term.

Moreover, export interests could be impacted by climate change-related trade and market-based measures in some of the Mekong countries' key trading partners. This would be a particular concern for Vietnam (as a major exporter of rice, garments, footwear and increasingly electronics), but also Cambodia and Laos where trade expansion is an important part of the development strategies. Countries subject to emissions reduction commitments may impose penalties (e.g. a tariff or an obligation to purchase carbon credits) on imports from countries that do not require their industry to cut emissions. Discussions also continue around the introduction of private 'carbon labels' to show the GHG emissions footprint of a product which could put high-carbon exports at a competitive disadvantage.

Low carbon agricultural practices that use less energy and fertilisers could also be of interest to the three Mekong countries where the agriculture sector continues to play an important role for economic growth and employment generation. In Cambodia and Laos in particular, where electrification rates in rural areas are still very low and access to and the ability to purchase synthetic fertilisers are limited, low carbon practices could prove useful for rural

⁷ US Secretary of State Hillary Clinton led the first US-Lower Mekong Ministerial Meeting in July 2009 involving Cambodia, Laos, Thailand and Vietnam. She stressed that addressing climate change in the lower Mekong would be a priority of US involvement in Southeast Asia. Japan hosted leaders from the four Mekong countries plus Myanmar in early November at the first Japan-Mekong summit. At the meeting, Japan pledged at least 500 billion yen (US\$5.5 billion) in aid to the five countries over the next three years to promote economic development and deal with climate change.

agricultural development. At the same time, certain mitigation strategies in the agriculture sector, such as sustainable agricultural and land management practices, can help strengthen resilience of agricultural production systems against the impacts of climate change.⁸

Options for regional collaboration between Vietnam, Cambodia and Laos

As outlined above, Vietnam, Cambodia and Laos share certain commonalities and mutual interests that could drive and inform trilateral cooperation in their climate change response. Being part of the next wave of industrial development in Southeast Asia, the three countries are likely to see greater integration into regional supply chains and relocation of industries from some of their regional neighbours (such as Thailand, Malaysia and China) as these countries move up the value chain towards higher-end, domestically developed goods. Thus, the three Mekong countries can be expected to face similar financial and technological challenges around industrial, agricultural and energy sector development.

The case for joint adaptation strategies is also strong. Many of the climate change impacts will be felt regionally and require regional solutions, including managing climate-induced migration, preventing the spread of infectious diseases, addressing impacts on shared ecosystems (in particular the Mekong River) and cooperating on climate change adaptation research and technologies. Moreover, the countries' interconnectedness through trade and investment, especially in agriculture, means that impacts in one country will have a bearing on the availability of resources in the others.

Vietnam – which is already economically and technologically more advanced than Cambodia and Laos – is well placed to play a leadership role in this trilateral cooperation. With its more advanced research and development (R&D) capacities, Vietnam can take the lead in developing and testing locally appropriate adaptation and mitigation technologies and strategies. It can also share its experience with and help build capacity to address climate-related risks, such as responding to weather-related disasters and preventing the spread of infectious diseases.

The three countries are already working together in existing regional institutional mechanisms through which collaborative strategies could be facilitated, including:

- The *Greater Mekong Subregion (GMS) programme*, which is an initiative supported by the Asian Development Bank that brings together Laos, Cambodia, Vietnam, Thailand, Myanmar and Yunnan province of China to promote subregional economic cooperation. The programme includes activities in a range of sectors, including transport, energy, agriculture, environment, trade, investment, tourism and telecommunications.
- The *Mekong River Commission (MRC)*, which was formed in 1995 by the Agreement on the Cooperation for the Sustainable Development of the Mekong River Basin between the governments of Cambodia, Laos, Thailand and Vietnam. The MRC provides the institutional framework to promote regional cooperation in order to implement the 1995 Agreement. China and Myanmar are Dialogue Partners of the MRC.
- The *Association of Southeast Asian Nations (ASEAN)*, a regional inter-governmental organisation of ten countries located in Southeast Asia with a particular focus on economic relations. ASEAN is progressively moving towards lowering barriers to investments and trade in goods and services in the region. The trading bloc is also negotiating bilateral agreements with a number of countries in the region (e.g. China, Korea, Japan) and beyond.

⁸ FAO (2009).

Possible areas of common strategic interest where Vietnam, Cambodia and Laos could consider opportunities for jointly mitigating and adapting to climate change include:

1. Technology cooperation to scale up renewable energy technologies

With the exception of large-scale hydropower (mainly in Vietnam and more recently in Laos and Cambodia), energy generation from renewable sources remains limited in the three Mekong countries. There are opportunities for Vietnam, Cambodia and Laos to cooperate in scaling up the use of renewable energy, in particular small-scale technologies to supply energy to rural areas. Vietnam is already implementing a number of small-scale initiatives in this regard, including the promotion of solar water heaters, biomass, and small hydro and wind energy systems.⁹

Most technologies are currently imported. Vietnam has some capacity to manufacture micro-hydro and wind energy technologies, but these tend to be of poor quality and produced on a small scale.¹⁰ Strengthening existing research and manufacturing capacities could provide an important business opportunity for Vietnam to produce low-cost renewable energy technologies suitable for domestic needs and those of other developing countries with similar conditions. These technologies could be shared with Cambodia and Laos to support rural electrification. Technology sharing could be supported by international aid agencies, for instance through advance market commitments to help create a viable market for Vietnamese renewables technologies in the two Mekong countries (and others).

2. Low carbon zone to attract foreign investments and stimulate domestic R&D

Building on the model of special economic zones (SEZ), Vietnam, Cambodia and Laos could consider setting up a low carbon zone spanning the three countries. Such a zone would be developed around a coherent low carbon strategy that could help attract and focus investments into R&D for adaptation and mitigation technologies. It could also provide a channel for acquiring, adapting and disseminating related technologies, in particular from China which is expanding its manufacturing capacity for cost-effective low-carbon technologies. The zone could also serve as a testing ground for new technologies and economic policies that could then be transferred to other parts of the three countries and beyond.

Cambodia and Laos, where FDI remains small and SEZs are still at an early stage, could benefit from their collaboration with Vietnam by drawing on its experience with managing SEZs, attracting FDI and undertaking research in related fields. At the same time, as least-developed countries, Cambodia and Laos (as LDCs) are in a good position to tap into overseas development assistance that is increasingly linked to climate change which could at least partly be channelled through the zone.

High-level talks are already underway between the three countries to develop a Cambodia-Laos-Vietnam Development Triangle. The zone would span ten provinces and is supported by a US\$ 20 million grant from the Japan-ASEAN Integration Fund.¹¹ Since the three countries adopted the Vientiane Declaration on the Establishment of the Cambodia-Laos-Vietnam Development Triangle and the Master Plan in November 2004, limited progress has been made to move the idea forward. The three countries could explore opportunities for using a low carbon strategy to promote the Triangle and attract additional funding.

⁹ See Baumüller (2010) for the status of and future potential for renewable energy in Vietnam.

¹⁰ Ibid.

¹¹ Bernama (2008a).

The three Mekong countries could draw on experiences of China in developing and implementing the concept of low carbon zones.¹² China is currently looking into the feasibility of and options for setting up such zones as part of its broader strategy to move towards a low carbon economy.¹³

3. Regional power trade to mitigate GHG emissions

Regional power trade from hydro sources could provide an avenue for the Mekong countries to increase access to electricity while mitigating GHG emissions. Integrated energy grids could also help improve efficiencies and reduce investment needs. Vietnam is already investing in hydropower developments in Laos and exploring opportunities in Cambodia to provide electricity for its domestic energy users.¹⁴ China is also playing an important role with significant investments in dam building in the Mekong River Basin, including Yunnan province, Cambodia and Laos. Such hydropower developments will have to be carefully planned, however, to address serious concerns that have been raised regarding their environmental and social impacts.¹⁵ Further research will also be needed to assess how climate change-related impacts on water availability and flows might affect hydropower generation and other water uses.

In addition to reducing GHG emissions, hydropower can strengthen energy security by reducing reliance on oil and coal. Vietnam is predicted to become a net importer of coal and oil by 2015.¹⁶ This shift can be expected to impact the cost and supply of inputs into electricity generation in Vietnam. At the same time, this development could have broader regional impacts on the availability coal and oil by eliminating exports from one of Asia's main coal exporters and further reducing the already declining amount of light sweet Asian crude grade on international markets.

Regional power trade will be facilitated by improved transmission systems being built and upgraded as part of the Greater Mekong Subregion Program. In 2003, the GMS governments signed an Intergovernmental Agreement on Power Interconnection and Trade. A Regional Power Trade Coordination Committee was set up to oversee the establishment of the regulatory, institutional and commercial framework for power trade in the GMS. An integrated regional master plan for power development in the GMS is currently under development.

4. Climate change mitigation along the GMS transport corridors

A network of nine economic corridors that are currently being developed to link the GMS countries is at the heart of the GMS strategy to facilitate and stimulate trade throughout the region (**Figure 1**). Three flagship corridors have been identified, including the North-South Corridor (China, Laos, Myanmar, Thailand, and Vietnam), the East-West Corridor (Laos, Myanmar, Thailand, and Vietnam) and the Southern Corridor (Cambodia, Thailand, and Vietnam). The GMS Environment Operations Center is looking into options for setting up Carbon Neutral Transport Corridors, including feasibility studies on offsetting carbon emissions from freight traffic and increasing carbon sequestration through maintenance and expansion of forest cover along the corridors.

¹² Findlay and Preston (2009).

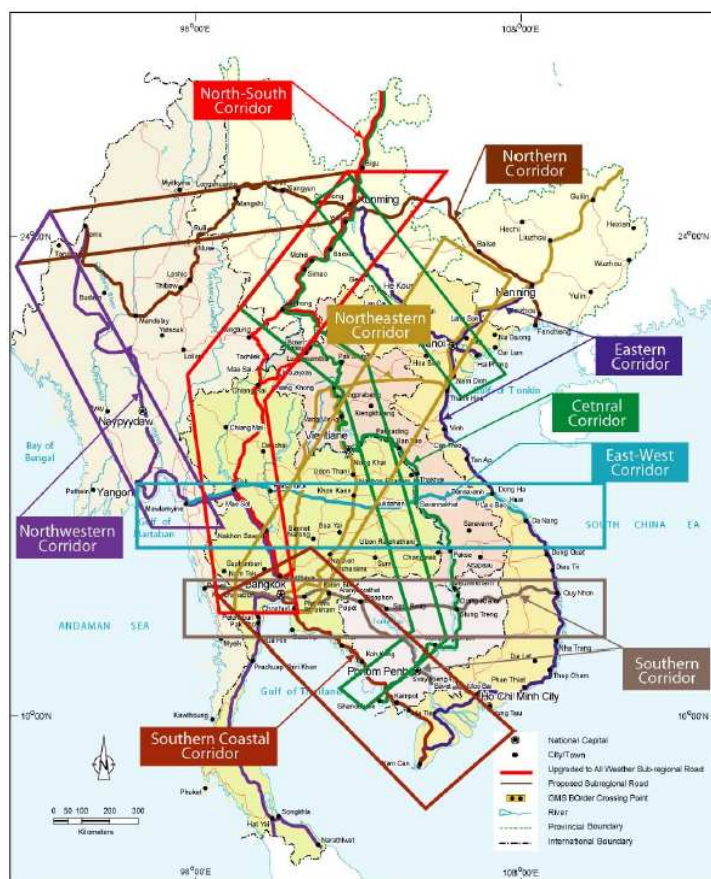
¹³ See for instance Chatham House et al. (2010) which outlines a possible roadmap for setting up a low carbon zone for Jilin City.

¹⁴ IR (2008).

¹⁵ See, for example, Bable and Wahid (2009) and Molle et al. (2009).

¹⁶ Dow Jones (2007)

Figure 1: Economic corridors in the GMS



Source: Stone and Strutt (2009).

To date little progress has been made in developing this idea further.¹⁷ Given that many of the economic corridors cross Vietnam, Cambodia and Laos, there are opportunities for taking a more active role in moving this initiative forward as part of regional and national mitigation strategies. Cambodia and Laos in particular could benefit from funding and expertise associated with this project.

5. Regional networks for climate change R&D on agriculture and fisheries

In all three countries, research into the likely impacts of climate change on agricultural and fisheries production and how to cope with these impacts is still very limited. Agricultural research could focus on developing new varieties (e.g. salt-, flood- and drought-resistant), management techniques (including in relation to pests and diseases) and alternative crops. These efforts could benefit from extensive research being undertaken in China to assess and address impacts of climate change on Chinese agriculture.¹⁸ At the same time, agricultural R&D for adaptation should be integrated with research into mitigation opportunities for reducing GHG emissions from agricultural production to ensure that the measures developed under both research streams complement rather than undermine each other.

Significant knowledge gaps also exist in the fisheries sector where further research is needed to better understand the impacts of climate change-induced variations in river and marine ecosystems on different species and how to redesign management schemes to take into account these climate impacts. Also, research will be needed regarding climate change

¹⁷ ADB (2009a)

¹⁸ See www.china-climate-adapt.org for further information.

impacts on aquaculture production in particular in coastal regions, the potential of aquaculture production to offset some of the negative impacts on inland and capture fisheries, and the development of aquaculture systems that are adapted to changing climate realities.

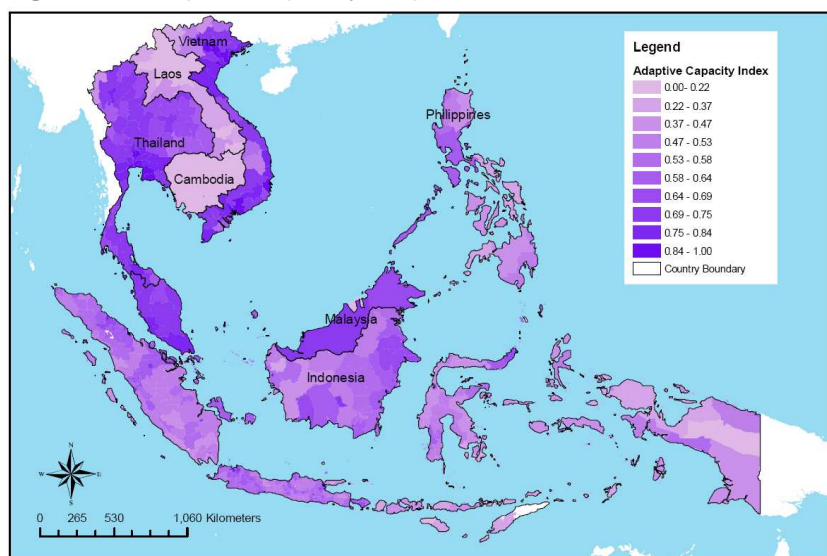
Vietnam is comparatively further advanced in its research capacities than Laos and Cambodia. The country's diverse climates, topography and ecosystems can provide a useful testing ground for piloting new mitigation and adaptation approaches that can then be applied in the other two countries and beyond. Vietnam could take the lead in setting up regional networks of research institutes to jointly undertake research, exchange research outputs and strengthen the capacity of farmers and fishers to employ new tools.

6. Joint strategies for disaster preparedness

The three countries are already highly vulnerable to natural disasters and increasingly so in the past several decades which have seen more extreme weather events across Southeast Asia. Climate change is expected to further exacerbate these and add additional stresses. A recent mapping of climate change vulnerability for Southeast Asia identified Northwestern Vietnam (droughts), Vietnam's Eastern coastal areas (cyclones and droughts) and the Mekong River delta (sea level rises) among the top climate hazard hotspots in the region.¹⁹ Taking into account human and ecological sensitivity as well as adaptive capacities, the Mekong River Delta was found to be among the most vulnerable areas in Southeast Asia.

While capacities to adapt to climate change impacts were judged to be relatively high in Vietnam, in Cambodia and Laos they were found to be particularly low by regional standards (due to low levels of economic development and poorly developed infrastructure, irrigation systems and electricity coverage). As a result, almost the whole of Cambodia as well as Northern and Eastern Laos are thought to be among the most vulnerable regions in Southeast Asia even though exposure to climate hazards is relatively low (with the exception of areas in Cambodia sharing borders with the Mekong River Delta in northern Vietnam). Droughts and floods are a particular concern in this context.

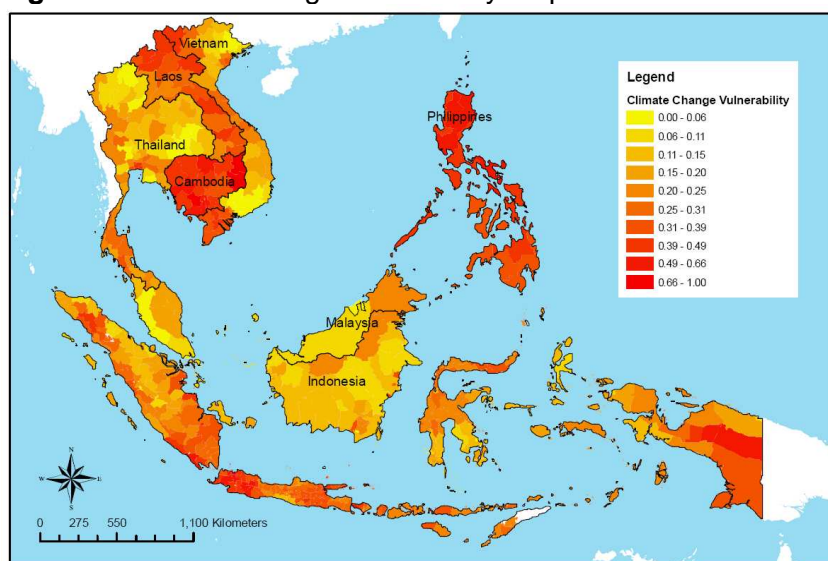
Figure 2: Adaptive capacity map of Southeast Asia



Source: Yusuf and Francisco (2009)

¹⁹ The study assessed *exposure*, i.e. "the nature and degree to which a system is exposed to significant climatic variations", *sensitivity*, i.e. "the degree to which a system is affected, either adversely or beneficially, by climate-related stimuli", and *adaptive capacity*, i.e. "the ability of a system to adjust to climate change (including climate variability and extremes), to moderate the potential damage from it, to take advantage of its opportunities, or to cope with its consequences" (Yusuf and Francisco, 2009).

Figure 3: Climate change vulnerability map of Southeast Asia



Source: Yusuf and Francisco (2009)

Given its high exposure to disaster events, Vietnam already has a fairly well-developed disaster response mechanism in place that it can build on for its climate change response. This includes a disaster early warning system (e.g. climatological observation stations and river level monitoring) and institutions and strategies to implement disaster response and mitigation measures. In contrast, Laos' and Cambodia's capacity to predict and respond to disaster events remains limited. Also, there is a need in all three countries to move from a strategy of responding to short-term climatic emergencies towards preparing the countries to adapt to future climate change risks.

Trilateral cooperation could focus on joint strategies to predict and respond to disasters (factoring in implications of climate change on the frequency and severity of disasters), and deal with the fallouts of disasters that may go beyond national boundaries (such as disaster refugees, migration or the spread of diseases). Vietnam could help strengthen capacities in Cambodia and Laos by sharing its experiences with disaster response, integrating its early warning system with those of the two countries, and taking the lead on research to better understand the impacts of climate change on the frequency and severity of disaster events.

A number of initiatives are already underway that could provide a forum for such trilateral cooperation and integrating climate change considerations into disaster response strategies. For instance, a GMS project was launched in 2009 to improve the ability of communities and governments in Cambodia, Laos, Vietnam and Thailand to prepare for, respond to, and recover from the negative impact of floods and droughts.²⁰ Among the activities, the project will develop regional and national roadmaps for flood and drought risk management and will assess possible investment projects for flood management in Cambodia, Laos and Vietnam. Trilateral cooperation can also be supported through the MRC's Regional Flood Management and Mitigation Centre in Phnom Penh which, in addition to providing daily flood forecasts, is tasked with supporting joint land management and land use planning, infrastructure development and cross-border emergency management of floods.²¹

²⁰ ADB (2008).

²¹ MRC (n.d.).

7. Managing crossborder migration from climate change-affected areas

Climate change could speed up intra-regional migration which is already widespread in the Mekong region.²² Currently, the main destinations for mobile workers are Thailand (by a clear margin), Cambodia and the Yunnan province of China. The scale and direction of climate change-induced migration is difficult to predict. Climate change is expected to exacerbate the main drivers for migration in the future, including a breakdown of ecosystem-dependent livelihoods, disasters, glacier melts and sea level rises.²³ In the Mekong region, populations in low-lying coastal areas are likely to be most affected, in particular the Mekong River Delta.²⁴ Increased frequency of cyclones could also contribute to displacement on a temporary or permanent basis, with the eastern coasts of Vietnam and Cambodia particularly at risk.

Migration can have a number of negative impacts on affected areas, including social tensions among local and migrant populations, changes in family structures, spread of diseases, human trafficking, environmental degradation and exploitation of natural resources. At the same time, migration could offer opportunities for climate change adaptation by providing additional income in the form of remittances to climate change affected areas. Trilateral cooperation could focus on issues such as integrating migration considerations into regional disaster response strategies, collecting and sharing data on migrant recruitment and settlement, modelling of climate-induced migration in the Mekong region, and joint initiatives to manage informal migration.

8. Regional monitoring and response mechanism for infectious diseases

Climate change-induced changes in weather patterns and disaster events may increase the prevalence of infectious diseases in humans, plants and animals. The increasingly close economic integration of the Mekong region through infrastructure development, trade facilitation, labour migration and trade expansion further enhances the risk of the diseases spreading across borders. Thus, it will be in the interest of all three countries (and others in the region) to not only tackle diseases in-country, but also to put in place regional monitoring systems, collaborate with their trading partners on border controls, and shift the policy focus from emergency response to prevention. Vietnam can play an important leadership role in this regard by sharing its experiences with responding to pandemics (such as the avian influenza in 2004) and helping combat the emergence of infectious diseases in Cambodia and Laos.

A number of initiatives are already underway to promote collaboration. The GMS Regional Communicable Diseases Control Project, for instance, aims to strengthen national surveillance and response systems in the three countries, improve disease control for vulnerable groups, and strengthen regional collaboration.²⁵ A second phase of the project is planned for 2010. These initiatives could be expanded to integrate climate change considerations into prevention and control strategies.

²² Actual numbers can be difficult to estimate given that the majority of migration is through informal channels. Conservative estimates in 2005 ranged from 1.8 to 4 million intra-regional cross border migrants in the GMS (Caouette *et al.*, 2006).

²³ Warner *et al.* (2009)

²⁴ ADB (2009b).

²⁵ ADB (n.d.).

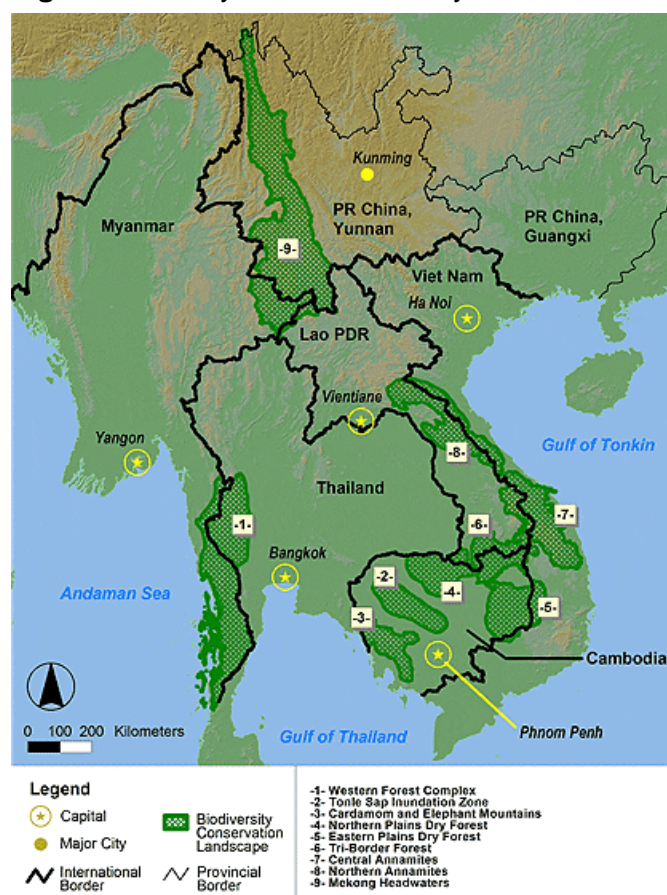
9. Transboundary ecosystem management for adaptation and mitigation

Vietnam, Cambodia and Laos share a number of important terrestrial and marine ecosystems that will require collaborative adaptation strategies to address transboundary climate change impacts and integrate adaptation strategies with other development plans that impact these ecosystems. Collaborative ecosystem management could also provide opportunities for mitigating GHG emissions from land use change, such as deforestation for timber production or conversion of natural landscape to agricultural land (see also below).

The Mekong River Basin is one such ecosystem that stretches across – and beyond – all three countries. As noted above, the Mekong river delta has been rated as one of the climate change hotspots in Southeast Asia. Predicted climate change impacts along the Mekong River include threats to fisheries resources, water availability and agricultural production for local consumption and export. Impacts will vary between the Mekong countries. Vietnam (along with Thailand) is likely to see water shortages, while water availability is less of a concern in Cambodia and Laos. Cooperation on water distribution, including when planning of hydropower projects, is therefore likely to become increasingly important in the basin.²⁶

Regarding other shared ecosystems, the ADB has identified a number of biodiversity conservation landscapes, i.e. areas of high biodiversity conservation value that will be affected by regional development plans under the GMS (**Figure 4**). Most of the priority landscapes are located in one or several of the three countries. Shared areas include the Northern and Eastern Plains Dry Forests (Vietnam, Cambodia, Laos), the Tri-Border Forest (Vietnam, Cambodia, Laos) and the Northern and Central Annamites (Laos, Vietnam).

Figure 4: Priority GMS Biodiversity Conservation Landscapes



Source: ADB (2007)

²⁶ Hinkel and Menniken (2007).

Regional initiatives are already underway that could be expanded to include a climate change considerations. For the Mekong River Basin, the MRC is the main political forum for collaboration, including through the Climate Change and Adaptation Initiative currently being formulated. In this context, joint efforts could also focus on strengthening the MRC as a regional river management body, given the MRC's still limited capacity to resolve transboundary conflicts which has been identified as one of the factors contributing to increasing water-related vulnerability in the river basin.²⁷ Engaging China, which is not a full member of the Commission although the Mekong originates in Yunnan province, will be of particular importance in this regard.

The ADB-supported GMS initiative, under its Core Environment Programme and in collaboration with its other sector activities (such as on transport, agriculture and energy) could provide the venue for collaboration on joint environmental management of shared biodiversity conservation landscapes. Pilot activities are already underway on five sites²⁸, including two projects in Vietnam and Laos that are located in the shared biodiversity conservation landscapes (Central Annamite and the Tri-Border Forest)

10. Carbon credits for shared forest resources

Vietnam, Laos and Cambodia could explore opportunities for jointly tapping into climate change funds through the REDD (Reducing Emissions from Deforestation and Forest Degradation) mechanism. REDD projects may become part of carbon offset options under the successor to the Kyoto Protocol. International donors have highlighted the need for considerable funds to prepare developing countries for such projects. Vietnam has been most successful in attracting some of these funds. It was one of the few countries to obtain approval for a small-scale forestation project under the United Nations Clean Development Mechanism²⁹ and is receiving a US\$ 4.4 million grant through the UN-REDD Programme. Vietnam, Laos and (more recently) Cambodia have all been selected for REDD projects from the World Bank's Forest Carbon Partnership Facility. In addition, private investors are starting to show an interest in REDD projects. Cambodia, for instance, has signed an agreement with the San Francisco-based firm Terra Global Capital. The project is estimated to reduce emissions from deforestation by 8.5 million tons of carbon dioxide over 30 years.³⁰

Vietnam would be well placed to share its experience on the implementation of REDD projects with Laos and Cambodia, including associated institutional and legal reforms. The three countries could also explore opportunities for jointly developing REDD projects in shared forest areas, such as the dry forests and the Tri-Border Forest. In addition, collaboration on border controls would help to ensure that REDD projects are not undermined by illegal activities. Vietnam has a particularly important role to play in this context as an important destination for illegal timber from Laos and Cambodia.³¹

²⁷ Bable and Wahid (2009)

²⁸ See www.adb.org/Projects/core-environment-program/pilot.asp

²⁹ JICA (2009).

³⁰ Mongabay (2009).

³¹ EIA/Telapak (2008).

Conclusions

This analysis has highlighted a number of areas where Vietnam, Cambodia and Laos could benefit from collaborative activities to promote climate change mitigation and adaptation:

- Cooperate in the development and deployment of **renewable energy technologies**, with a focus on building R&D and manufacturing capacities in Vietnam and supporting dissemination of the technologies in Laos and Cambodia.
- Promote **regional power generation and trade** from low carbon sources that can meet the countries' growing energy needs, reduce dependence on oil and coal imports and lower GHG emissions from power generation.
- Develop **regionally appropriate mechanisms to speed up the diffusion of energy efficiency standards and technologies** in particular as they relate to infrastructure, such as buildings.
- Explore the feasibility of setting up a **low carbon zone spanning the three countries** to attract investments and aid that can support research, testing and manufacturing of low carbon technologies and adaptation strategies.
- Advance the GMS agenda to establish **Carbon Neutral Transport Corridors** in the region through carbon sequestration and offsetting.
- Establish **regional research networks** to jointly develop climate change adaptation and mitigation strategies on agriculture and fisheries, building on Vietnam's R&D capacities and diverse climates, topography and ecosystems.
- Develop joint strategies to move from responding to short-term climatic emergencies towards preparing the countries to adapt to future climate change risks, drawing on Vietnam's experiences in **disaster preparedness**.
- Jointly model, monitor and manage changes in **crossborder migration** driven by climate change impacts and other factors.
- Undertake research into the impacts of climate change on the emergence and spread of **infectious diseases** and develop regional response mechanisms, building on Vietnam's experiences with responding to pandemics.
- Promote joint management strategies for **climate change adaptation and mitigation in transboundary ecosystems**, in particular the Mekong River Basin and high-value biodiversity conservation landscapes.
- Collaborate on sharing experiences with and implementing joint projects to reduce emissions from deforestation and forest degradation under the **REDD mechanism**.
- Integrate regional mitigation strategies into Vietnam's **nationally appropriate mitigation actions** under the Copenhagen Accord.
- Integrate regional mitigation strategies into Vietnam's **nationally appropriate mitigation actions** under the United Nations Framework Convention on Climate Change.

Implementation of these activities may not necessarily require establishing new institutional or political arrangements between the three countries. Rather, the focus here is on areas for practical collaboration on specific activities, centred on shared policy priorities. Strategies can include jointly promoting existing climate change projects (such as carbon neutral transport corridors), mainstreaming climate change considerations in related activities (such as migration or disaster response) and initiating new collaborative activities (such as joint REDD projects).

Many of the activities can be implemented at the trilateral level, but at times will also benefit from collaboration with other countries. Joint management of ecosystems that extend beyond the three countries' boundaries, such as the Mekong river, is an obvious example. Access to technologies from other countries within the region (such as China) and beyond (including the countries' development and trading partners) is another. The three Mekong countries can also pursue the collaborative strategies through regional mechanisms, notably the GMS and the MRC which have started to consider climate change concerns in their programmes.

Various funding opportunities exist that the three Mekong countries could tap into to implement these activities. The ADB, through the GMS programme and other projects, is already financing various related activities. Bilateral donors – in particular the US and Japan – have also recently expressed interest in expanding support in the region. Other funding sources also exist in the context of the UNFCCC, including the CDM and the REDD schemes. Additional funding is also likely to become available through the fast track funding scheme agreed in Copenhagen in December 2009.

Moving quickly on developing a credible low carbon strategy would enable Vietnam, Cambodia and Laos to benefit from these funding opportunities. It would also allow the Mekong countries to channel climate change-related funds to promote broader development priorities, such as strengthening education systems and R&D capacities, creating employment, improving access to energy and creating a more attractive investment environment through infrastructure development (irrigation, roads and communication). Trilateral collaboration will support this effort by providing a space for sharing experiences, research and technologies and ensuring that climate change impacts in other countries do not undermine domestic development priorities.

References

- ADB (2009a) *The Economics of Climate Change in Southeast Asia: A Regional Review*, Manila: Asian Development Bank.
- ADB (2009b) *Climate Change and Migration in Asia and the Pacific*, Manila: Asian Development Bank
- ADB (2008) *Preparing the Greater Mekong Subregion Flood and Drought Risk Management and Mitigation Project*, Regional Technical Assistance Report, Manila: Asian Development Bank.
- ADB (2007) *Greater Mekong Subregion Biodiversity Conservation Corridors Initiative*, Manila: Asian Development Bank, www.adb.org/Projects/core-environment-program/gms-biodiversity.asp, accessed 7-11-09.
- ADB (n.d.) *Greater Mekong Subregion (GMS) Regional Communicable Diseases Control (CDC) Project: Cambodia, Lao PDR and Viet Nam*, Asian Development Bank, www.adb.org/Documents/IndigenousPeoples/VIE/38017-VIE-IPDP.asp, accessed 7-11-09.
- Bable, M.S. and Wahid, S.M. (2009) *Freshwater under Threat South East Asia: Vulnerability Assessment of Freshwater Resources to Environmental Change Mekong River Basin*, Nairobi and Bangkok: United Nations Environment Programme and Asian Institute of Technology.
- Baumüller, H. (2010) *Building a Low Carbon Future for Vietnam: Technological and other needs for climate change mitigation and adaptation*, London: Chatham House/ Royal Institute for International Affairs.
- Bernama (2008a) "Trade Triangle Planned For Cambodia, Vietnam, Laos", *Malaysian National News Agency*, 26 August.
- Caouette, T., Sciortino, R., Guest, P. and Feinstein, A. (2006) *Labor Migration in the Greater Mekong Sub-region*, Bangkok: Rockefeller Foundation
- Chatham House et al. (2010) *Low Carbon Development Roadmap for Jilin City*, Chatham House/The Royal Institute of International Affairs, Chinese Academy of Social Sciences, Energy Research Institute, Jilin University, E3G.
- Dow Jones (2007) "Vietnam to become coal importer on power demand", *Dow Jones*, 15 October.
- EIA/Telapak (2008) *Borderlines: Vietnam's Booming Furniture Industry and Timber Smuggling in the Mekong Region*, London and Bogor: Environmental Investigation Agency and Telapak.
- FAO (2009) *Anchoring Agriculture within a Copenhagen Agreement – A Policy brief for UNFCCC parties by FAO*, Rome: UN Food and Agriculture Organization.
- Findlay, M. and Preston, F. (2009) *Low Carbon Zones: A Transformational Agenda for China and Europe*, London: Chatham House/the Royal Institute of International Affairs.
- Hinkel, J. and Menniken, T. (2007) *Climate Change and Institutional Adaptation in Transboundary River Basins*, paper presented at the International Conference on Adaptive & Integrated Water Management, 12-15 November 2007, Basel, Switzerland
- IR (2008) *New Financiers and the Environment: Ten Perspectives on How Financial Institutions can Protect the Environment*, Berkeley: International Rivers.

- JICA (2009) *Reforestation project supported by Technical Cooperation Registered as CDM Project*, Press release, Japan International Cooperation Agency, 15 May
- Molle, F., Foran, T. and Kakonen, M. (2009) *Contested Waterscapes in the Mekong Region: Hydropower, Livelihoods and Governance*, M-POWER Book 2, London: Earthscan Publications.
- Mongabay (2009) "Cambodia signs REDD agreement", *mongabay.com*, 24 June.
- MRC (n.d.) Flood Management and Mitigation, Mekong River Commission, www.mrcmekong.org/programmes/flood.htm, accessed 7-11-09.
- Nguyen, T.N. and Ha-Duong, M. (2009) "Economic Potential of Renewable Energy in Vietnam's Power Sector", *Energy Policy* 37(5): 1601–1613.
- Resurreccion, B.P., Edsel, E.S. and Fajber, E. (2008) *Climate Adaptation in Asia: Knowledge Gaps and Research Issues in South East Asia*, Boulder and Kathmandu: ISET-International and ISET-Nepal.
- Rutherford, J., Lazarus, K. and Kelley, S. (2008) *Rethinking Investments in Natural Resources: China's Emerging Role in the Mekong Region*, Phnom Penh, Gland and Winnipeg: Heinrich Böll Stiftung Cambodia, WWF and International Institute for Sustainable Development.
- Stone, S. and Strutt, A. (2009) *Transport Infrastructure and Trade Facilitation in the Greater Mekong Subregion*, ADBI Working Paper 130, Tokyo: Asian Development Bank Institute.
- UNCTAD (2009). *World Investment Report 2009*. Geneva: United Nations Conference on Trade and Development.
- UNDP (2008) *Human Development Indices - A statistical update 2008*, New York: United Nations Development Programme.
- Vietpartners (n.d.) Vietnam Economy Highlights - Foreign Investment, Vietpartners, www.vietpartners.com/statistic-fdi.htm, accessed 7-11-09
- Warner, K., Ehrhart, C., de Sherbinin, A., Adamo, S. and Chai-Onn, T. (2009) *In Search of Shelter: Mapping the Effects of Climate Change on Human Migration and Displacement*, CARE International, Columbia University, UN Refugee Agency, United Nations University Institute for Environment and the World Bank.
- WEF (2009). *Global Competitiveness Report 2009-2010*. Geneva: World Economic Forum.
- World Bank (2009) *Doing business in 2010: Reforming Through Difficult Times*. Washington, D.C.: World Bank.
- World Bank (n.d.) *Vietnam and Energy*, Washington D.C.: The World Bank, go.worldbank.org/J25FRKU830, accessed on 20 July 2009.
- Yusuf, A.A. and Francisco, H. (2009) *Climate Change Vulnerability Mapping for Southeast Asia*, Singapore: Economy and Environment Program for Southeast Asia