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Social implications of climate change for land tenure and land policy

Case Studies from ASEAN, the European Union and NAFTA

- Executive Summary -

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"Social implications of climate change for land tenure and land policy

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Executive Summary

The research study is scheduled for 8 months starting at 01 October 2554 (2011). During the first 6 months the research was generally finished, and this is the final report on the findings of the study.

Background of the problem: Land Use and Climate Change

Climate change has impacts on various parts of life, such as health, agriculture, forestry, water security, food security, coastal areas and species, and natural reserves. ***Most of these factors are closely connected to land tenure and land usage as they affect the conditions for agricultural land use or threaten the livelihood of people and economic assets in coastal areas exposed to sea level rise.*** Effects on land usage do not have to be necessarily negative. The conditions for agricultural land usage, for example, are projected to improve in higher latitudes leading to potentially higher crop yields. But in most regions changing weather conditions are projected to place diminishing areas of land under greater pressure, for both productive use and human settlement.[1]

The effects on ecosystems and socioeconomic impacts for the society and their gravity will not only depend on the projected local temperature rise or weather conditions, but also on the vulnerability and the adaptation capacity of a certain region or community. Especially in poor regions, where this capacity is low, the projected changes might have enormous social implications due to constraints to basic needs. Therefore, in order to avoid economic and social costs, policy planning to deal with conflicts and support or implement adaptation measures is needed. This in turn will generate the need for different, regional, and case-specific policies, such as strengthening management capacities, establishing institutions, setting legal frameworks, etc. Thailand will be particularly affected through land degradation, with massive social implications in the long term, as Thailand is still highly dependent on agriculture and tourism. Another important aspect is that land use itself is, in turn, a

[1] Quan and Dyer, "Climate Change and land tenure", 9

source of climate change, since especially agriculture and – particularly in tropic regions – deforestation produce significant emissions of Greenhouse Gases (GHG).

The main issue, therefore, is that climate change adaption and mitigation are addressed and included in land policies to control long term costs and avoid negative social impacts. Acknowledging that adaptation has to be addressed at different levels of society – from autonomous adaptation by individuals at the local level up to the potential necessity for supranational cooperation – it has to be identified what measures have to implemented on what level and who is capable of doing that. The second aspect is the **economic problem**. Although climate change adaptation is much cheaper in the long run, adaptation and mitigation have to be financed. The main reason why the adaptation capacity of individuals and local communities in developing countries is considered as being very poor is that they are not able to conduct autonomous adaptation that is cost intensive. The third issue is the **balance of economic interests in land use and the needs of adaptation and mitigation**. (e.g. forest protection vs. livelihood of rural communities). This could also just mean that market chances for certain products are better than for those considered more sustainable. It has to be asked, what possibilities do the authorities have to enhance economic behavior that is in accordance with adaptation and mitigation needs? This leads to a fourth issue: the **political management**. Since the impacts of climate change as well as adaptation and mitigation measures cause social impacts, adaptation and mitigation planning has to cope with that. Balancing the economic interests along with adaptation and mitigation demands such political management to avoid conflicts and gain public support. Also, the concrete implementation of adaptation measures potentially raises challenges that have to be managed.

The last issue can be named as a **legal and institutional** one. Since it also affects the other aspects it can be seen as a comprehensive one. The possibility to effectively implement any measures of adaptation or mitigation as well as the effectiveness of political management is directly linked to the implementation capacity at each of the different levels. This capacity is mainly constrained by two factors: weak institutions and insufficient legislation. The best adaptation plan written on the national or supranational level will fail if state institutions are not capable of implementing measures or enforcing regulations. The legal aspect particularly affects one crucial point: the question of land tenure and land ownership rights. In many affected regions in developing countries the legal situation is not defined, especially in vulnerable areas such as in tropical forest regions or habitats of the urban poor in coastal regions. But if land tenure is not defined, it will be difficult to identify the beneficiaries of adaptation measures or financial incentives.

Hypothesis and Objectives

Against this backdrop, the research study is designed to deliver a contribution to the management of the land-related climate change issues. Effective climate change counter-measures will have a deep influence on land usage and land tenure in ASEAN and will cause significant social impacts. ***The key hypothesis is that there should be legal and implementation arrangements under which the contrary effects of climate change mitigation and social benefits for citizens can be balanced and negative impacts can be mitigated in a participatory approach, thus setting precedence for successful planning in the future.*** The key research questions referring to this are how climate change is affecting countries in general in land tenure and land usage and what lessons from other countries/ regions (Germany/EU and United States of America /NAFTA) can be drawn. To answer the key research question, the study will focused on two objectives:

1. **To analyze the existing situation in ASEAN, the EU, NAFTA, as well as selected national states referring to climate change impacts and respective social, economic, and legal mitigation measures.**

2. **Issue policy recommendations for coping with climate change and land tenure under consideration of social provisions.**

In order to achieve these objectives, the study analyzed potential climate change impacts, vulnerabilities as well as existing frameworks and policies of the named regions and countries. The analysis was designed to identify strengths and weaknesses of the different approaches related to the institutional setting as well as the concrete policies. Therefore, the study analyzed the situation in three different regions and selected single countries located in these areas. Land use issues and climate change vulnerabilities of the regions and countries were identified, the institutional and legal framework was analyzed, and concrete policies examined.

Findings from the regional analysis

ASEAN and Thailand

For the ASEAN region (Chapter 3), it became evident that **Southeast Asia is highly vulnerable to climate change impacts**, relative to other regions. This is particularly true for the impacts of natural disasters like floods, tropical storms, and regionally droughts. Coastal areas with a high population density, including the Chao Praya and the Mekong Delta as well as parts of Java, also represent high vulnerability from sea level rise. Due to limited economic capacity, **states like Laos, Cambodia, and Indonesia also have a very low adaptation capacity**.

Furthermore, **effective environmental regulations are not in place** in the majority of the ASEAN countries or the enforcement capability is not sufficient. Therefore, counterproductive trends are still visible, especially through deforestation (e.g. in Indonesia). Another example is the destruction of mangroves. Experiences during the 2004 Tsunami disaster have proven the ecological and environmental importance of mangroves. **Public awareness of the role of mangrove forests in coastal protection has therefore increased greatly**. Nevertheless, the pressure on land and mangrove forests remains. Poaching (i.e. the illegally collecting of wild plants or animals) in natural forest areas continues despite the high investment made to ensure protection, which has resulted in a slight drop in the number of poaching incidents. Providing protection to land and (mangrove) forests therefore remains a huge task for the legislative bodies and authorities. Nevertheless, **positive examples can be identified**, such as Thailand's efforts to stop deforestation which stabilized the forested areas in the country.

One shortcoming that was identified looking on the legal frameworks is that often, the needs and interests of local communities were not included in planning and implementation processes in most of the countries examined. In contrast, the discussed case studies have shown that often, **local initiatives proved to be more effective than government actions**. Therefore, the inclusion and participation of local communities remains a task for legislation. The case studies have further shown that **the legal framework has to be strengthened.** This especially refers to land titles, since land ownership is unclear or completely undefined in many areas. The legal issue constrains projects, such as if it comes to the ownership of carbon rights and provides economic and social insecurity.

Generally, it has to be stated, that there is **a lack of available data** regarding climate change impacts, the intensity and possible impacts of natural disasters, and also the distribution of the population and economic assets. This hinders effective planning of counter measures. A detailed analysis of the

situation in the greater Bangkok area for example, followed by the implementation of flood mitigation measures as well as strong communication and coordination could reduce the impact of further floods in Bangkok. Regarding this, the Manila case study could provide some valuable lessons learned for Thailand. Informal community warning systems, improved water diversion channels, a functioning drainage system and dikes have protected local communities as well as businesses from more severe flooding impacts.

Thailand nevertheless has fully and actively participated in addressing climate change to fulfill its obligations. Economic difficulties and political instability during the last 20 years required policies and measures, which, if sufficiently supported by technical and financial resources, could have turned the crises into opportunities to harmonize economic and social development through the use of clean technologies. Nevertheless, **Thailand has demonstrated its commitment and has fully mobilized national resources to combat climate change**. Also, in some areas, concrete action plans already exist such as the Bangkok Metropolitan Administration action plan

Accumulated experiences in different areas of climate change, as summarized in section 3.3., indicate **Thailand's need for technical know-how and technologies** in different areas of climate change, to enable it to effectively address climate change. These needs are in broad areas and fall under different categories which may require more detailed and systematic assessment, especially in the case of climate-friendly technologies. Below are some areas where technical and financial support will most likely be needed.

The European Union and Germany

The analysis of the European Union (EU) and Germany (Chapter 4 of the Study) has shown that they are in the comfortable situation that their **vulnerability to climate change is relatively low, while their capacity for mitigative and adaptive implementation is comparably high**. Various adaptation measures are in place, and it seems realistic that the EU as well as Germany will reach their Kyoto targets. One might argue that this depends first of all on the economic wealth of (western) Europe, which allows it to finance costly and extensive adaptation and mitigation measures (e.g. coastal protection).

But beyond this advantage, other aspects are even more important to explain the situation: On the institutional level, the EU's strength is its **high implementation capacity**. Legislation that comes from the EU is binding for national legislatures, and the bodies of the Union have the institutional power to enforce the rules and treaty provisions that the member states agreed on. **The legal framework defining land ownership, land rights, etc. is well established and also enforced**. Another factor is

that the EU and the member states have a broad and very detailed knowledge of land use and land conditions. Although designed for other purposes, the CAP not only influenced the Union's agricultural production, but led to a complete and comprehensive overview of land ownership, agricultural production, market prices, and the shape of forests and dry lands. Based on state-financed research and assessments, the EU and Germany also have a **solid knowledge of vulnerabilities (e.g. the shape of coastlines) and potential impacts**. This knowledge base allows it to design action plans and adaptation measures that are addressing the aimed targets precisely.

Furthermore, in the formulation of concrete actions, two techniques are favorable for the effectiveness of measures. The first is **climate change mainstreaming**, meaning that European and German strategies have always defined climate change mitigation and adaptation as overarching issues that cannot be addressed merely by a single law or regulation, but have to be included in the consideration process of wider policy areas that affect land use and environmental issues. Secondly, examples like the ICZM demonstrate that effectiveness as well as acceptance of adaptation measures can be increased if **relevant stakeholders are included in the planning and implementation process**.

Of course it is in generally facilitating implementation **that Europe has a strong commitment to the combat against climate change** and that this is also widely accepted and supported in European public. Therefore, policymakers have more flexibility in pursuing publically-funded climate change mitigation and adaptation measures, even despite some higher costs for the European public. Although, it can be understood that such public acceptance is limited when it comes to high increases in personal expenses (e.g. higher fuel prices). At this point, there are still open questions, especially regarding the **social balance of increasing costs for energy or fuel that were not addressed properly yet.**

A shortcoming of the EU's climate change policy is that the Union has not yet agreed on common strategies in some relevant fields. This particularly refers to the field of energy policy where a common approach and effective action is hindered due to contrasting national interests. The examples discussed for Germany, furthermore, show that the public demand for extensive participation and a tendency to oppose against concrete infrastructure projects might also hinder the implementation of effective policies. Although public support is evident as said**, it has not been proven yet, if the (western) European societies can manage the implementation of measures that demand painful decisions.**

NAFTA

Throughout the analysis of NAFTA and its member states (Chapter 5) it became evident that NAFTA, as a regional organization with a rather loose environmental structure, is facing challenges referring to climate change effects and mitigation measures. This is even more obvious in the **land sector, which lacks clear regional policies and subsequently institutional structures**. Ideally, NAFTA policy should be providing tenure security, improved land and natural resource information and strengthening land administration. In this context experts agree that considering and implementing untraditional practices such as prohibitions on development or the elimination of counterproductive subsidies is paramount. Even more importantly, the **roots of incentives need to be identified**, examining domestic economic, financial and legal mechanisms to support conservation and sustainable use, despite setbacks in non tariff trading.

As a regional structure, NAFTA has the responsibility to set the precedent in environmental regulation to avoid negative implications of its policies, such as shown in the Mexico's Popular Revolutionary Army case study. Additionally, **climate change initiatives should prepare to offset the implications trade blocs may have on land use and societies**. This includes resettlement planning for populations at risk of displacement and loss of livelihoods, further integrated land and water resource management, special programs for land and natural resource tenure in areas subject to climate change. Additionally, **there should be more effective regulatory frameworks, standards and liberalization schemes** which protect land access and use rights of poor and vulnerable groups. However, as the NAAEC / CEC have little political and legal power to require the parties implement more effective laws, only to encourage facilitation, domestic reform may be the key to environmental reform in North America. As a result, the national policies and institutional frameworks need to carry some of the regional responsibilities.

In the United States, there needs to be more of a balance of the major feedback and interactions between climatic, socioeconomic, and ecological influences, considering the current emphasis on economic repercussions and industrial success. In light of the implications of climate change on land use, the United States should judge how development affects the nation’s ability to produce sufficient resources, support citizens, and encourage economic feasibility in the long term**. There also needs to be more secure partnerships with state and regional action, to ensure comparability between national/global and state/regional models**. Reform will require the development of new models linking the geophysics of climate with spatial and temporal dynamics of land-use change and the socioeconomic drivers of land use. Evolving public and private land management questions call for new data and information. There is an **overall need for the scientific understanding of the**

process of land-use change, the impacts of different land-use decisions, and the ways that decisions are affected by a changing climate and increasing climate variability are priority areas.

A lesson learned from Canada's experience is that **even in the absence of robust federal policies aimed at climate change mitigation or adaptation, communities and provincial governments are actively responding to the advent of climate change**. This is perhaps born of the urgencies of local conditions that compel people to act, such as in the case of Toronto designing and implementing a city-wide climate change adaptation plan after experiencing many negative effects of climate change. However, more needs to be done, and, as the Toronto experience shows, continual engagement on the issue is necessary in order to protect communities from climate change and reduce impacts.

In Mexico, it has to be stated, that the pro-market reforms and the entry into the North American Free Trade Agreement (NAFTA) led to increasing reliance on the United States to supply its food and worsening poverty for small rural farmers. Adding to this, academic studies and news reports suggest that Mexican migration and emigration patterns are correlated with environmental factors. Researchers at Yale University estimate that 1 to 6 million adults will emigrate from Mexico by 2080 because of climate change's deleterious effect on agriculture. It can thus be argued that increased temperatures as a result of climate change's effect on an already-fragile environment would be destabilizing for Mexico's economy and society. Decreased agricultural output as a result of climate change would widen Mexico's dependency on American agricultural imports and worsen its trade balance. The resulting higher unemployment would likely encourage more migration and exacerbate inequality. This, along with higher food prices, and possible water shortages, would cause many to suffer and could spark conflict.

As one of the most water-stressed countries in the western hemisphere and faced with the prospect of rising temperatures, a program such as the **Payment for Environmental Services (PES) has the potential to positively affect many climate change-related issues pertinent to Mexico**, such as deforestation, desertification, and water scarcity. Available research on the program, however, showed that **payments were not well-targeted**, and due to the absence of technical assistance and an unclear understanding of the terms of the program among landowners, there was **little behavioral change in forestry management** observed as a result of the payments. A re-design of its selection methods, clearer articulation of the program's goals and its expectations of landowners, and provisions for technical assistance, could vastly improve the program's results. Yet despite its early shortcomings, there has been considerable interest in Mexico's pioneering efforts with PES programs, which led the World Bank to finance Mexico's PES-related activities for another 20 years.

General Conclusions

By assessing the vulnerability of the three examined regions, it has been shown that climate change impacts related to land use are extremely varied and potentially severe. In conclusion, it can be stated that all examined regions have to deal with three major issues (varying in their intensity):

- **Climate change impacts on agriculture**
- **Impacts of natural disasters and extreme weather events (floods, storms, droughts, heat spells, changes in precipitation)**
- **Threats to coastal areas due to sea level rise**

Nevertheless, based on the climate change related issues outlined in Chapter 2 of the study, it can be seen that some of them were **only barely or not even at all addressed** in ASEAN, EU or NAFTA. **This especially concerns adaptation measures with real severe impacts**. One example is the question of the possible resettlements in Low Elevation Coastal Zones (LECZ).

In Europe this might not be a broad issue, but it also concerns selected regions (such as islands in the North Sea or loss of coastal edges in Great Britain). Protecting hotspots like Venice incur enormous costs, but so far it seems that society is still willing and able to absorb them. It remains to be seen how this will develop in the future and if governments would be able to implement more drastic measures if necessary. One constraint for consequent adaptation planning in Western Europe is also that societies – as in Germany – might **see adaptation as an act of surrender towards climate change**. In North-America however, more extensive measures might be necessary, for example in Louisiana. In the ASEAN region however, **resettlements in LECZ and delta areas might be inevitable in the future**. Beyond the environmental dimension, this will be also a social issue in order to recognize and to improve the situation of the urban poor. Living in wild settlements and slum areas, often they also have no legal status or rights, including their land rights. A comprehensive approach to tackle economic, social, and environmental problems of these marginalized groups to empower them to adapt to and cope with climate change and particular disaster impacts, has not been developed so far in the ASEAN region.

As outlined in the study more detailed, **proper adaptation and mitigation measures are cost extensive**. While Western Europe and North America can or at least could finance appropriate policies, there remain **doubts that all ASEAN members have the economic capacity** to do so. Especially technical protection, e.g. coastal protection, is expensive, and even if one can project that the costs of inaction are higher, it does not mean that states can take on the adaptation costs in the

first place. In contrast, most likely the costs of later impacts have to be carried by the affected socially vulnerable groups, worsening the negative social impacts of climate change in the future.

Table I. Overview of the finding for the three regions

Climate Change Impacts	EU	ASEAN	NAFTA
General Vulnerability	low	high	medium
Main impacts	River flooding Droughts (Mediterranean area) Sea level rise/Land loss (North Sea area)	- More and intensified natural Disasters (storms, droughts, extreme weather events) Sea level rise, flooding in megadeltas	Natural disasters (floodings, wildfires) Droughts (Mexico)
Main social implications	Rising costs for insurances and protection land loss Impacts on Tourism	threats to urban poor and inhabitants of LECZs High costs through disaster damages (regional) water ability Impacts on agricultural production land loss	Stressed food and water ability (Mexico) Worse conditions for agricultural production (Mexico) land loss
Adaption and Mitigation			
General (technical and economic) Adaptation Capacity	high	medium to low (depending on the region)	High in the US and Canada, low in Mexico
A&M inclusion in supranational framework	Integrated and comprehensive EU policies	Addressed in ASEAN, but not effectively enforced Space for improvement Establishment of common basic standards	Not addressed in the NAFTA framework
Levels dealing mainly with A&M	EU, member states, regional, local	ASEAN (partly), Member states	Regional, local
Biggest constrains	Social acceptance of A&M measures	Costs of effective measures Lack of data and information	Political resistance on national level (US, CAN)
Most important issues	Define common policies in relevant fields (energy)	Stopping Deforestation Protection of coastal areas and mega deltas Gathering of data Intensifying local participation Reinforce existing	Balance social outcomes within NAFTA (currently Mexico Net loser) Define common policies

		treaties and laws	
Land rights and land ownership			
Land rights situation	Land tenure rights defined and administered	Regionally lack of clearly defined land ownership and land rights	Problems with land rights and social and economic standards in Mexico
Data on land use, production etc.	Detailed data available	General lack of data concerning land ownership, forms of land use etc.	Gap between US/Canada and Mexico
Social implications related to land	Income of farmers only secured by subsidies, setting wrong incentives	Threats to livelihood of local and rural communities Economic unsecurity for farmers Food security	Mexico net-looser of NAFTA integration – ecologic and social standards Food price increases hit vulnerable Mexican market
A&M Actions related to land	Subsidies through CAP and rural development policy, incentives for eco-friendly investments,	Introduction of new seeds and technologies, local projects regarding disaster prevention and production improvement	Payment schemes (PES), local initiatives in US and Canada

Source: HDFF, 2012

As also described throughout the chapters, this table demonstrates that the European Union and its member states seem to be prepared best in comparison. While in NAFTA, the main obstacle to effective policy are the resistance of two member states and therefore the lack of common policies, ASEAN has to deal with the huge economic challenges related to climate change impacts and to strengthen its enforcement capacities.

One solution that is already on the table is provided by the CDM KP (Clean Development Mechanism - Kyoto Protocol) mechanism. So far however, ASEAN states are only rarely using these opportunities. At the moment, the most projects are carried out in China, Brazil, and India, while ASEAN's share is only marginal. Therefore, one recommendation would be, to **intensify the use of the CDM mechanism** to implement appropriate measures. In order to support the efforts of the economically weakest ASEAN member states, an appropriate path could also be the idea of trilateral cooperation, bringing together e.g. the EU, Thailand, and a developing country for a common project.

In order to tackle the particular problem of deforestation in Southeast Asia, the discussion has to be continued on **how existing forests and reforestation projects can be effectively included into the CDM schemes and a potential carbon trade mechanism**. Still, many sensitive questions regarding this are unsolved. The ASEAN states, however, could fulfill the preconditions by following the recommendations given, especially through defining land ownership and strengthening capacities.

Furthermore, ASEAN can play another important role beyond its internal policy making. Behind the backdrop of international climate negotiations that are still ongoing, the role of supranational organizations is important for gathering and representing national (regional) interests more effectively in climate negotiations in a way no single country could do, especially towards the key players such as the USA, China, and the EU. Therefore, **a strong regional mandate would be potentially helpful to address Southeast Asia's position on the international level in order to achieve a post-Kyoto agreement.**

Generally despite the political dispute concerning climate change it has to be underlined, that **adaption measures** such as disaster prevention, in terms of research, warning systems, protection etc., **will pay off in any case for the ASEAN states** because these issues have not been addressed sufficiently so far. This is also true for addressing the situation of the urban poor in LECZ. Also, measures like improving technology in the agricultural sector, have **positive impacts far beyond the pure climate change related targets**, contributing to food security and the protection of natural resources such as ground water. Therefore, the improvement of land-related policies and rural development are important and ongoing tasks that will have to be addressed intensively on different levels of society.

Therefore, the Royal Thai Government should in any case **continue and intensify its environmental protection efforts and take an active role in supranational negotiations**. Then, Thailand will be, despite its vulnerability, in a very good position to deal with future disaster and climate impacts and mitigate its economic and social consequences.

Policy recommendations

Recommendation one:

Establish common environmental standards on supranational level

As shown for NAFTA and already discussed above, liberalization within a free trade area or further going economic integration scheme bears the danger, that member states try to attract foreign investment through undercutting standards of the other countries within the integration area since tariffs and other trade barriers are not longer in place. This competition potentially does not only affect environmental standards, but also social standards, wages, labor laws, workers rights, tax regimes, etc. Even in the European Union disputes occur regularly if single member states try to gain economic advantages by undercutting the Unions average. Slovakia was criticized a few years ago for establishing a flat tax much below the tax level of other member states and in the current economic crisis in Germany, neighbors argue that Germanys gained its strong position in the EURO zone only because of strict wage policies and an export policy that harmed partners.

Therefore, in order to profit from economic liberalization within integration schemes while mitigating negative effects at the same time, rules need to be established in which the states agree on common standards. For the environmental dimension this means that economic liberalization agreements should be flanked by common agreements on minimum environmental protection standards that cannot be undercut by any member state without some kind of sanction mechanism from the others. Such a framework could, for example, address forest protection as one major issue for climate change mitigation in Southeast Asia.

It is obvious, that such a commitment can only be achieved in cooperation with all member states. Nevertheless, since Thailand is one of the founding and key members of ASEAN and in a comparably strong economic position, the Royal Thai Government (RTG) does have the potential to play a key role in establishing a reliable framework and giving a direction.

Beyond the social and environmental dimension, for Thailand, this is also a matter of economic interests. Undermining standards in weaker countries could lead to a loss of industrial production. Therefore it is in the interest of the RTG to maintain high standards that at least match the existing national protection laws in order to compensate non existing ASEAN and AFAT regulations.

Recommendation two:

Empower supranational institutions to be capable to act

One of the biggest challenges for all kinds of international and supranational agreements are that they might fill papers and reports, but that it is not primarily ensured that they are effectively implemented on the national level. One has just to think about all the UN human rights documents that have been signed from Stalin's Soviet Union in 1945 up to Assad's Syria today. Therefore, international agreements need a mechanism to be enforced effectively. To achieve real environmental protection, ASEAN would have to install institutions that ensure that environmental standards are kept in the member states. This would have to include the capacity to monitor the national law enforcement, to identify violations, and to put mechanisms into service to sanction misbehavior. Such institutional capacity will not only bring a benefit in environmental issues, it is also useful in ensuring that all member states stick to their commitments regarding tariff regimes, the abolishment of trade barriers, etc.

Although the huge debts of some members of the EURO zone demonstrate that even the respective European agreements on economic and financial discipline were undermined by many member states, the EU generally shows how an effective supranational framework can work. In many fields, EU legislation has a huge impact on national laws and the Union has the capacity and the tools to enforce its legislation. Especially from the commission, but also the European court and other bodies like the cartel, authorities provide the necessary tools. While taking the EU as a positive example, however, it should be added that one does not have to agree on the intensity of integration that is equivalent to the EU. The import point here is only that a supranational authority needs to be capable to enforce the given standards – no matter if they are few or many.

Therefore, the RTG, as well as the other ASEAN governments need to demonstrate a strong commitment to ASEAN institutions and treaty obligations. It has to be ensured that misbehavior and violations of common standards can be effectively panelized within the ASEAN bodies. One weakness of the European framework for the common currency was, however, that the monitoring system was designed dysfunctional. Because the states were left to monitor themselves and there is no single, unified monitoring entity observing themselves among each other, the question of sanction mechanism, although clearly defined on paper, became a matter of bargain among the states. Therefore, safeguards and sanction mechanisms should be designed as independent institutions. From the perspective of the government this might look inconvenient but it will strengthen the framework in the long run.

Of course it has to be considered (and respected), that ASEAN integration has not a level comparable to the EU yet and this might also not be in accordance with the political will of its members. Nevertheless it has to be kept in mind that the political will to establish a common market (which is obviously expressed through AFTA), somehow automatically raise the demand for certain common structures and regulations. Otherwise either the common market will not function or the economic and social outcomes cannot be properly addressed within a common framework.

Recommendation three:

Establish land tenure legislation and ensure land ownership rights

As stated, on major challenge in many regions is the lack of defined land ownership. This is true for farmers in rural areas but also for urban poor in slum areas. If land ownership is not defined however, climate change impacts on the respective communities cannot be tackled effectively. Who should receive compensation or state support for destroyed property or harvest lost? How should adaptation and mitigation measures to be addressed effectively? And how could any kind of carbon trade system work, if the sellers of trade certificates cannot be identified?

Therefore, states should improve their land legislation and strengthen the responsible authorities, especially in rural areas where registries of deeds might not be even exist at present. The objective should be to provide reliable land titles that are also enforceable towards courts and communities. Sometimes it is argued that some local communities do not know or even understand the concept of individual land ownership and that their economic model bases on collaborative assets. In this cases land ownership could also be granted to a certain community as a whole. This would at least also define one specific group as owner and a target group. As mentioned in Chapter 2, land ownership might support local communities beyond environmental issues, advancing self responsibility, and facilitate access to loans for investments. Defining land ownership in rural areas is furthermore a mandatory precondition to have a chance at all to include forest protection into emission trading schemes. In urban areas, granting land ownership titles to marginalized groups would not only secure their legal status or entitle them to receive access to support measures in cases of natural disasters, but also force local authorities to deal with urbanization generally and also think of broader adaptation which might include the retention from some areas (as described in 6.1.).

Beyond that, land ownership has also a supranational dimension. In the study “Research project about AFTA and its social implications for the Kingdom of Thailand”, conducted by HDFF 2010-2011

for the Thai Research Fund, the issue of land liberalization in economic integration schemes was examined. It was discussed how far interim agreements could help to adjust to social and economic inequalities among the members. Since the free flow of goods and capital allow it to invest and buy land where it is cheap, a lack of defined land ownership in rural areas favors the exploration of natural resources by foreign investors at cost of local communities. Along with a stronger maintenance of economic standards as outlined in recommendation one, land ownership rights would help the affected communities and individuals to represent their interests and profit from economic gains in their region. On the supranational level however, the question of land ownership rights and the possibility of investments should be dealt with care and sensitivity as outlined in HDFFs last research study.

For the Thai government this involves analyzing in detail the status of land ownership, especially in rural areas and among marginalized communities. A database should be built to whom parcels are belonging. In the cities, particularly in Bangkok, the urban poor and their properties have to be registered and properly ensured. Towards the international level (ASEAN but also beyond), the RTG has to make sure that land rights and social standards apply also for foreign land buyers. As long as AFTA does not an effective framework for land related issues, the national legalization needs to find a suitable compromise to attract FDIs but also maintain national standards.

Such standards might seem as a disadvantage towards competitors within the free trade area, but this can be outbalanced either by other incentives (e.g. tax facilitations) and also through the advantage, that e.g. clear defined land ownership titles, defendable land rights and overall a functioning legal and regulatory framework is even more favoring investment, than additional cost for such provisions might hinder.

Recommendation four:

Seek supranational cooperation for supranational problems

It is impossible to generally define which issue should be addressed on what level (supranational, national, regional, local or individual). As the coastal protection example in Europe show, the states differ in how they distribute responsibility for dealing with environmental protection. In the Netherlands, it is completely a national task, in Great Britain it is completely regional and in Germany it is regional with national financial support. It is possible that different systems work efficiently in the same way. Furthermore it depends on factors like the organization and political system of the

state (federalized or centralized), the distribution of the budget, etc. It can be said, however, as a basic directive, that an issue should be addressed on the level that is affected. That means, for example, that supranational action, cooperation, and legislation are needed where environmental challenges affect more than one member state. For ASEAN that would mean, for example, that disaster prevention (tsunami warning e.g.) or coping with floods in transnational river basins are suitable cases for transborder cooperation, such as it is done in Europe concerning the Rhine, whose floods affect potentially affect five countries. To go deeper, this would also mean that flood prevention in Thailand in the Chao Praya River goes beyond the responsibility and capacity of one province.

On the national level, the Royal Thai Government should not only address the national issues but could also function as a focal point for the exchange of lessons learned. Concerning the recurring river flooding in the Chao Praya area and its economic impacts, the issue of flood protection should be a nationally coordinated issue, not limited to the provinces. In the bigger picture, despite the question of responsibility, the RTG should establish channels were stakeholders can exchange best practices and lessons learned. The ICZM approach has demonstrated how such a system can help not only to bring together relevant stakeholders but also to share experiences for local projects and implementations.

Recommendation five:

Gather more data and intensify research

Looking at ASEAN, it was mentioned that research on climate change's effects and the vulnerability of certain regions has not been examined in detail so far. As seen for Thailand, the potential impacts of sea level rise are only rarely investigated. Therefore research has to be intensified to get a clearer image what to expect and what effects might lead to which impacts. Even if the result can only be projections they will allow a more precise planning of adaptation and mitigation measures (e.g. defining flood prone areas and to develop long term strategies).

Furthermore, ASEAN states need much more and extremely more accurate data on population, population distribution, inhabitants of rural areas and LECZ, economic assets in threatened areas and land use related data on agricultural production, crops, the exact distribution of forests and their development, etc. One strength of the often-criticized European bureaucracy is that these kinds of data are gathered know for decades through authorities, registration offices and statistical offices. In Europe for example, the Common agricultural policy that was designed under complete different circumstances for completely different purposes other than land use and climate change allows one

to draw a very detailed picture of the European agricultural sector. This made it possible to implement adaptation measures and link them to support policies (particularly subsidies), because the bureaucracy have clear data, what is planted where, how many livestock exist, how fertilizers are used and how high the estimated agricultural emission are. Furthermore (see recommendation one), the EU schemes are effective to enforce mechanisms of control and sanctions.

That does not mean that ASEAN should copy the Common Agricultural Policy (CAP), as it has caused a lot of problems in other fields as described in the EU chapter. CAP is only an example on how knowledge based on reliable data is facilitating the design of suitable policies, instead of just guessing or believing that just doing "something" might be good enough. In combination with more detailed climate change research, defining vulnerabilities, and potential impacts more clearly, such a database will allow the design and implementation of more effective adaptation and mitigation programs. Such data gathering is also interlinked with other recommendations here, for example, with the issue of land ownership. (Data on the status quo has to be gathered to define land ownership, while later clearly defined land ownership will help to gather further data on production, emissions.)

The proposed building of a database referring to land ownership could also form the basis to examine the concrete land usage in different areas. Although over bureaucratization should be avoided, this database could be used to register agricultural and economic land use activities, GHG emissions, etc. In order to examine possible climate change impacts and to develop long term adaptation strategies, the Royal Thai Government has to intensify its research activities, especially in coastal areas as a preparation for an integrated coastal zone/shoreline management system. Since ASEAN seems not to be in a leading role here, particularly since a common agricultural policy seems not reasonable, such kind a agricultural data collection should be done on the national and the regional levels. ASEANs role could be however to invest in and coordinate specific research activities on climate change and climate change outcomes.

Recommendation six:

Intensify local participation and include relevant stakeholders in planning processes

The case studies have shown that the support and the involvement of the affected people play an important role for the success of the concrete implementation of measures. This is true for a climate change adaptation project in the case of Vietnam, but could also be seen in Germany. Somehow in Western Europe it might be even harder to manage the political process, because the demand for participation and involvement is strongly addressed by the affected people themselves who already

have forums that are missing on the coast of Vietnam. Anyway, in both cases, gaining the acceptance and support of the target group will have benefits beyond just the facilitation of the adaptation process. The target groups have to understand who they can benefit from a certain measure (e.g. a new crop sort). On the other hand, local communities are a valuable source of information (e.g. on seeding practices, rainfall patterns etc.). Therefore, the inclusion might even improve the outcome of a policy.

But inclusion is also an issue of political management. Especially against the backdrop that climate change adaptation and mitigation also always is in the area of conflict between environmental needs and social impacts, it makes sense to include all relevant stakeholders in the planning and implementation process to achieve an optimized balance between the different needs. In addition to the local people, stakeholders also include economic interests (that can never be completely denied). The establishment of a natural reserve in order to protect forests, for example, might affect the local communities in terms of their livelihood but also the tourism sector. Bringing these stakeholders together would allow them to find a solution where the natural reserve establishment is flanked by a concept of eco-tourism. This also opens the possibility of new income sources for the local community that in turn might ensure their economic security and lead to acceptance of the natural reserve and forest protection. Thus, it is a part of their own interests to ensure their new economic perspective.

Projects like this already exist in development cooperation but they are often limited in time and resources. Therefore, stakeholder involvement should become an integrated part of national policy planning methods. How this can work in an institutionalized setting can be seen with the ICZM projects and implementations that were presented in the EU chapter. From the examples given it can also be concluded that bringing stakeholders together can lead to suitable compromises where additional harmful costs are inevitable. The agreement between the UK government and the British insurers association demonstrate how shared responsibility (guaranteeing maximum coastal protection efforts in exchange to ongoing insurance coverage), can help to mitigate social impacts on the affected people and communities.

Therefore, the Royal Thai Government should – where possible – institutionalize local participation. A good example were this has already being recognized is the mitigation plan of the ministry of agriculture as well as the Bangkok Metropolitan Administration plan that explicitly included the private sector. On the legal and institutional level, formalized participation measures might include mechanisms like the formal right to submit petitions and amendments to running planning processes or public hearings regarding the project implementations. Although potentially inconvenient, this

would also include an effective right to appeal to local and national courts effectively. The baseline of this approach should be the model of action that insures that decisions are taken as "close to the citizen" as possible. This would also mean to strengthen the provinces and local communities, granting them a certain local autonomy and strengthen their administrative and financial responsibility in environmental issues.

Recommendation seven:

Address adaptation and mitigation through a comprehensive approach

To ensure, that climate change adaptation and mitigation is properly addressed it is not only sufficient to actualize environmental legislation or to put particular climate change related laws into force. Climate change adaptation and mitigation are crosscutting issues that affect a broad range of policy areas, especially energy policy, rural planning, industry and building laws, etc. Therefore it is also important for policy making to interpret climate change policy as a crosscutting issue and to include climate change related issues in the respective legislation. The legislation in Europe gives a good example by already demanding the inclusion of climate change issues in other policy areas in its basic treaties.

The advantage of this comprehensive approach is that it is at least ensured that awareness of climate change issues is institutionalized in policy debates and that relevant and potential fields can be identified. In order to do so, the Royal Thai Government should include a "climate change clause" in new land related laws. Furthermore existing laws related to environmental issues, rural and urban planning, energy, and buildings should be amended by such a clause.

Recommendation eight:

Ensure capability of institutions and law enforcement

This recommendation can be generalized for many problems beyond the issue of this study and is in accordance to general research on development. It is known and it has also been mentioned in this study, that in many cases, even if suitable legislation is in place and rights and regulations are clearly defined, the practical worth of them depends on the capacity of the authorities to enforce them. This has already been discussed for the supranational level, but it is also true for the national level. Also national legislation and policy can only be successful if national institutions are capable of carrying them out, if rights and titles (land ownership) can be enforced towards police and court, and if decisions of authorities are accepted and enforced. Therefore it is an ongoing task for the Royal Thai

Government to work at the provincial level to improve the capacity of their institutions, fight corruption, educate state officials and stick to the principles of good governance. The positive are of this affect the success of all policies, not only regarding climate change and land. Since ASEAN enfolds states with very different political systems, it is unclear if it can be always the right institution to foster this process. Therefore the RTG should take these actions independently from ASEAN and function as an engine within the supranational structures.

Management model

Following these policy recommendations, the next step is to consider how an effective adaptation and mitigation policy can be implemented concretely. Based on the recommendations, that stakeholder should be involved and issues should be addressed on the responsible and capable level, this management model proposes a subsidiary approach:

Step	Action	Hypothetical example of forest protection in a certain area
1	Identify the problem *(-> Intensify research and gather data)*	In the considered province, during the last 50 years, 30% of natural forests were destroyed due to slash and-burn agriculture which is still ongoing.
2	Identify impacts relevant for climate change adaptation and mitigation *(-> Intensify research and gather data)*	• Deforestation raises emissions. • The carbon storage capacity decreases. • Land use change (forest to agricultural land) increase vulnerability to soil erosion and disaster damages (it is assumed that the region is threatened by storms).
3	Define the overall objective of the measure	• The remaining forest area in the region should be maintained.
3a	Define the specific objective of the measure	• Establishment of a natural reserve
4	Identify the relevant stakeholders	• National government -> Wants to protect the forest area but also to mitigate social impacts • Local communities who burn forests for agriculture -> Natural reserve threaten their economic livelihood • Regional government -> Represents the social and economic interests of the region. Fears social problems, if livelihood is threatened;

		Agricultural production is important for the food security of the region. • Private sector -> Is interested in the exploration of the area and use its economic potential
5	Bringing the stakeholders together to examine and to find a solution	• A natural reserve will be established. • The region will however be accessible for eco-tourism, financed by private investments or PPP. • The local communities will be included in the implementation and jobs will be created. Economic gains stay in the region • To ensure food security and maintain/increase agricultural production, the existing farms are supported via introduction of new technologies, consultancy etc.
6	Identify responsibility and capabilities	• Parks will be administered by the regional/local authorities. • Where necessary, support from a higher level is granted (e.g. promotion via the national tourism board, investments in eco friendly infrastructure, financing of flanking agricultural measures, etc.)
7	Implement legislation and ensure enforcement	• Define land titles in the region and the shares of the local communities • Release national and regional laws to establish the reserve • Empower local authorities to control and enforce the non-violation of the park borders

Concrete issues for Thailand

Despite the general conclusions and recommendations, the examination of Thailand has shown specific tasks for future climate change adaptation and measures on the national level. Conclusively, the following issues are relevant for Thailand:

Greenhouse Gas Inventory (GHG)

Thailand's greenhouse gas inventory (1994, 2000) followed the UNFCCC guidelines as well as the IPCC technical guidelines and handbooks and other supplementary materials. Experiences gained while working on the inventories have developed a learning curve for Thailand, leading to its recognition of

areas that need further technical support to improve inventory activities. Below are Thailand's priority needs concerning the greenhouse gas inventory:

- Develop appropriate activity data to support the estimation of greenhouse gas inventory The sectors that should be given special attention are agriculture and forestry.
- Train relevant officials and agencies to carry out the estimation regularly
- Develop techniques in greenhouse gas emission forecasting

Impact, Vulnerability, and Adaptation

Studies on impact, vulnerability, and adaptation to climate change, climate vulnerability, and extreme events have evolved rapidly. Nevertheless, research has so far not been able to reach policy making levels in a meaningful way. There are various constraints, problems, and gaps that need to adequately addressed, as described below.

- Climate Change

- Development of more climate change scenarios at the sub-regional level address uncertainties
- Development of advanced techniques to analyze impacts on major sectors, especially annual and perennial crops
- Development of public health warning systems in areas prone to the spread of diseases caused by climate change

Thailand needs to enhance the capacity of a large number of researchers, especially in applying new techniques to assess the vulnerability of cash crops.

- Climate variability and extreme events

In Thailand, research on vulnerability and adaptation to climate variability and extreme events is in its early stage. The need of support is seen in the following areas:

- Studies and research on the sea-level rise are vital for the future of Thailand
- Technologies to cope with coastal erosions and are appropriate for local conditions
- Technologies and policies to cope with massive flooding

- Technologies to develop plant species that are resistant to climate variation
- Public health and disease prevention management system in disaster-prone or climate change-risk areas

Greenhouse Gas Mitigation

Thailand has adopted strategies to conserve energy and to use renewable energy, with a view of achieving ambitious targets. To meet such targets, advanced and economically sound technologies are vital. Under the existing market system, many technologies are technically possible but are not economically viable. Improving their economic viability is critical for Thailand, in order to effectively mitigate GHGs and to fulfill its commitments to the Convention. Techniques, know-how and technologies to mitigate GHGs are needed as follows:

- Technologies to mitigate GHG from rice paddy fields
- Advanced technologies for energy conservation for electricity production and consumption
- Development of knowledge and infrastructure for innovation of clean technologies
- Technologies for biomass and biogas energy production appropriate for local conditions

Mitigation in the agricultural sector

The mitigation plan of the Ministry of agriculture has already outlined the strategies that needs to be followed in order to mitigate climate change effects in the Thai agricultural sector related to the five areas of Plants, Soil, Water, Livestock and fishery and the overall effect from climate change to agriculture:

- Strategy on knowledge management
- Strategy on prevention and solution of the climate change problems
- Strategy on campaign, information dissemination, public relation and personnel capacity development

The tools defined by the plan are: education, training, distribution of information. Furthermore it recognizes the necessity of participation of farmers as well as measures to monitor and evaluate the strategies and offers advice to the involved stakeholders (government units, staff and farmers). This plan should be implemented under the authority of the Ministry of Agriculture.

Others

There are other areas concerning climate change that require international support, in order to enhance the national capacity. These are the following:

- Development of regional information exchange and communication
- Capacity enhancement of meteorologists
- Capacity building for negotiators of the UNFCCC and the Kyoto Protocol
- Capacity building for short- and medium-term weather forecasts

Implementation of the Bangkok Metropolitan Action Plan

- Expand the Mass Transit Rail System within Bangkok Metropolitan Area
- Promote the Use of Renewable Energy
- Improve Building Electricity Consumption Efficiency
- Improve Solid Waste Management and Wastewater Treatment Efficiency
- Expand Park Area

After the last year of the action plan period, it has to be evaluated if the targets could be reached, which obstacles occurred and a on strategy for the next period needs to be defined

Suggested Action Table

What	Who	Remarks
Regional Policy		
Establish common environmental standards on supranational level	Prime Minister, Office of the Prime Minister, Ministry of Foreign Affairs, Ministry for Resource and Environment	1. Definition and establishment of common environmental standards
Empower supranational institutions to be capable to act	Prime Minister, Office of the Prime Minister, Ministry of Foreign Affairs	1. Clear competences and responsibilities 2. Effective sanction mechanisms
Intensify international cooperation under the CDM KP mechanism or trilateral cooperation	Prime Minister, Office of the Prime Minister, Ministry of Foreign Affairs, Ministry of Finance, Ministry of Trade and Commerce (Department for foreign trade)	

Domestic Policy		
Establish land tenure legislation and ensure land ownership rights	Ministry of Interior (Department of Land), Ministry of Justice, Ministry of agriculture and cooperatives	1. Defining land property rights 2. Ensure legal framework to enforce these rights
Address issues on the correct level (supranational, national, regional and local)	Prime Minister, Office of the Prime Minister, Ministry of the Interior, Provincial Authorities, Local authorities, ministry relevant for concrete policy (e.g. Tourism)	1. Subsidiary planning approach
Gather more data and intensify research	Ministry of Science and Technology, Ministry of Resource and Environment, Research Agencies (AIT, TRF, Universities)	1. Research on GHG emissions 2. Research on Climate Change impacts and their implications 3. Development of mitigation and adaption strategies
Intensify local participation and include relevant stakeholders in planning processes	Prime Minister, Office of the Prime Minister, Ministry of the Interior, Provincial Authorities, Local authorities, ministry relevant for concrete policy (e.g. Tourism)	1. Identification and Involvement of stakeholders
Address adaption and mitigation through a comprehensive approach	Prime Minister, Office of the Prime Minister, Ministry of Justice in a coordinating function – all branches for their fields	1. Mainstreaming of legal frameworks and adaptation of climate change clauses to new legislation
Ensure capability of institutions and law enforcement	Prime Minister, Office of the Prime Minister, Ministry of the Interior, Ministry of Justice, Royal Thai Police	1. Good Governance and Anti Corruption
Concrete Action Plans		
Implement the Bangkok Metropolitan Administration Action Plan	Bangkok Metropolitan Administration, 36 Signatories of the Action Plan	1. Expand the Mass Transit Rail System within Bangkok Metropolitan Area 2. Promote the Use of Renewable Energy 3. Improve Building Electricity Consumption Efficiency 4. Improve Solid Waste Management and Wastewater Treatment Efficiency 5. Expand Park Area - Review plan after 2012 and define further measures
Implement the action plan for the agricultural sector	Ministry of agriculture, local authorities	1. Improve knowledge management 2. Prevention of climate change effects 3. Information distribution,

		training, education
Develop action plans for other sectors and ministries	All Ministries and related government agencies	Adaption, mitigation and climate change mainstreaming plans.