Supporting Adaptation in Developing Countries at the National and Global Levels

by Jolene Lin*

Introduction

International climate change negotiations and treaty-making have historically focused on the mitigation of greenhouse gas (GHG) emissions.[1] This is not surprising given the significant social, economic and political challenges of addressing climate change on a global scale. There was also the concern during the Kyoto Protocol negotiations that too much discussion about adaptation to climate change would send the wrong signal of fatalistic acceptance of the impacts of climate change and detract attention from efforts to create legally binding emission reduction obligations amongst developed countries.[2] However, in the face of irrefutable evidence that climatic changes are already underway, adaptation to the impacts of climate change has become an equally important issue within climate change discourse.[3] The United Nations Framework Convention on Climate Change (UNFCCC) Secretariat has devoted significant resources towards promoting and supporting adaptation activities in developing and least developed countries; development agencies are beginning to "mainstream" adaptation within their existing agendas; non-governmental organizations are spearheading local capacity-building initiatives and developing projects to help vulnerable communities adapt to climate change.[4]

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[1] For purposes of our discussion, adaptation refers to the process by which societies prepare for and minimize the negative effects of a variety of future environmental stresses on society; Daniel Sarewitz, quoted in "Adaptation to Global Climate Change is an Essential Response to a Warming Planet", 7 Ferbuary 2007, Earth Observatory, online: http://earthobservatory.nasa.gov/Newsroom/MediaAlerts/2007/2007020724272.html. Mitigation is the effort to slow and reduce the negative impacts of climate change by slowing the accumulation of greenhouse gases in the atmosphere.

[2] Policy discussion on climate change in the 1980s did include adaptation as an important aspect of dealing with climate change. Over the years, however, mitigation became favoured as the global response and adaptation appeared to be relegated to local responses to specific changes brought upon by climate change. This focus on mitigation efforts was concretized by the Kyoto Protocol which created legally binding mitigation targets for developed countries. Another reason why adaptation received less attention than mitigation of greenhouse gases in earlier international negotiations is that there was insufficient knowledge on differentiating between the impact of human-induced climate change and natural climate change variability; Ancha Srinivasan, Adaptation to Climate Change: A Critical Challenge for Asian Development", What's New from IGES?, November 2005, online: www.iges.or.jp/en/cp/report12.html.

[3] The IPCC Fourth Assessment Report has highlighted the urgency of adaptation (IPCC Secretariat, Geneva, Switzerland, Fourth Assessment Report, online: <http://www.ipcc.ch/>). Under a business-as-usual scenario, the Earth's temperature could rise by 3 degrees Celsius this century. Even in the case of a 1 to 2.5 degree Celsius rise in global temperature, the IPCC predicts serious effects including reduced crop yields in tropical areas, spread of climate sensitive diseases like malaria, and sea level rises that could inundate entire island states.

[4] See Richard J.T. Klein, "Adaptation: Needs, Financing and Institutions", Breaking the Climate Deadlock Briefing Paper (2008), The Climate Group, for discussion about mainstreaming adaptation.

This paper examines the institutional and normative frameworks at the international and state level that support developing countries' adaptation efforts. At the international level, international financial institutions such as the World Bank, regional institutions and the United Nations (UN) agencies address adaptation issues in the course of carrying out their official functions. Every international body appears to have a finger in the adaptation pie, so to speak. As a result, the international response appears to be highly disparate, chaotic, potentially duplicative, and lacking proper coordination and focus on helping communities and peoples adapt to the impacts of climate change. This paper argues that, on the contrary, there is significant coherence in the international framework. There is a division of labour amongst various bodies, with the UNFCCC Secretariat serving as a focal point of all international negotiations pertaining to climate change negotiations, international adaptation policies, funding and information exchange amongst Member States.

At the state level, based on a broad survey that the author has conducted on countries in the Asia-Pacific region, most developing countries have inadequate institutional mechanisms and legal frameworks to address climate change adaptation largely because of resource constraints and the lack of expertise. Those countries that have more advanced or developed adaptation strategies generally do so because they are significant recipients of international donor assistance (and therefore support from the international community to carry out studies and projects). However, across the board, the countries surveyed lack proper institutional and normative frameworks that are important for coordinating and developing adaptation responses at the state level. This paper will examine 3 case studies (Vietnam, China and Laos) for their varying responses towards climate change and argue for the strengthening of institutional and normative frameworks within countries to carry out adaptation work.

Part I of this paper sets out the normative framework governing adaptation to climate change. The UNFCCC and Kyoto Protocol contain a number of provisions on adaptation which create the legal basis on which much of the international community's work, especially that of the UNFCCC Secretariat, rests. **Part II** then broadly surveys some of the international organizations involved in adaptation work. It is argued that far from a chaotic and disorganized array of agencies involved in adaptation work, the picture that emerges is one of division of labour amongst different bodies, with the UNFCCC Secretariat serving as a key focal point. **Part III** argues that many developing countries have not put in place proper institutional arrangements to coordinate adaptation policies and projects, which may lead to "maladaptation". Countries are urged to develop these local institutional structures to coordinate with and leverage on the support of the international institutional framework. In this way, developing countries will be better placed to adapt to the impacts of climate change effectively. **Part IV** concludes.

Part I: The Normative Framework

The UNFCCC does not contain one provision addressing adaptation in a comprehensive manner. Instead, many articles bear upon the issue, creating a web of inter-related responsibilities, approaches and mechanisms for addressing adaptation needs.[5] Further, the term "adaptation" is not defined in the UNFCCC and therefore must be understood in relation to defined terms such as "climate change" and the "adverse effects of climate change".[6]

The principle of common but differentiated responsibility guides the allocation of responsibilities and obligations amongst signatory parties to the UNFCCC, both in the context of GHG mitigation as well as adaptation.[7] Broadly speaking, the UNFCCC seeks to ensure that the needs of "vulnerable" countries (which often also have less adaptive capacity because of financial constraints and heavy reliance on climate-sensitive economic activities such as agriculture) are adequately identified and addressed, and the costs of doing so are borne by those who are most financially able and most responsible for causing climate change. As a result, the convention draws the distinction amongst "developed", "developing" and "least developed countries", and between countries that are "vulnerable" and "particularly vulnerable" to the impacts of climate change. The UNFCCC further distinguishes countries with different physical characteristics; Article 4(8) highlights the needs of small island countries, countries with low-lying coastal areas, countries prone to floods, droughts, and desertification and those with fragile eco-systems.

Articles in the UNFCCC and the Kyoto Protocol on Adaptation

Article 4(1) of the UNFCCC requires signatory Parties to formulate national and, where appropriate, regional programs to address adaptation to climate change, as well as to mainstream adaptation concerns into domestic policy-making.[8] Article 4(4) embodies the international community's recognition of the disparity in the adaptive needs and capacities between developed and developing countries and the urgent need to provide assistance to the latter. It states "The developed country Parties and other developed Parties included in

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[5] M.J. Mace, "Adaptation under the UNFCCC" in W. Neil Adger et al (eds.), Fairness in Adaptation to Climate Change", MIT Press, 2006.

[6] Ibid.

[7] For discussion about the principle of common but differentiated responsibility, see, for example, Philippe Cullet, Differential Treatment in International Environmental Law, Ashgate Publishing Co., 2003; Christopher D. Stone, "Common but Differentiated Responsibilities in International Law" (2004) 98 American Journal of International Law 276.

[8] For discussion about Article 4(1), see Lorelyn Hall, "Technology Transfers Under the United Nations Framework Convention on Climate Change" (2005) Colorado Journal of International Environmental Law and Policy 59.

Annex II shall also assist the developing country Parties that are particularly vulnerable to the adverse effects of climate change in meeting costs of adaptation to those adverse effects" and serves as an important legal basis for securing funding from developed country parties for adaptation work in developing countries. Article 4(8) reinforces this recognition of the unique position of developing countries by requiring Parties to the UNFCCC to "give full consideration to what actions are necessary under the Convention, including actions related to funding, insurance and the transfer of technology, to meet the specific needs and concerns of developing country Parties arising from the adverse effects of climate change…". Finally, Article 4(9) responds to the difficulties that Least Developed Countries face in adapting to climate change by providing that "[t]he Parties shall take full account of the specific needs and special situations of the least developed countries in their actions with regard to funding and transfer of technology".

While GHG mitigation is the focus of the Kyoto Protocol, this international agreement contains two important provisions relating to adaptation to climate change. Article 10(b) requires all Parties to "…[f]ormulate, implement, publish and regularly update national and, where appropriate, regional programmes containing…measures to facilitate adequate adaptation to climate change". Importantly, Article 12(8) provides the funding mechanism of the Adaptation Fund which becomes operational in 2012 and is expected to become a significant source of financial assistance, not least because it may prove to be a more reliable source of funding due to its non-reliance on pledged contributions from donor countries, unlike the Special Climate Change Fund and the Least Developed Countries Fund which were created under the UNFCCC and the Kyoto Protocol to provide financing for adaptation.[9]

One might suggest that, ideally, there should be an "Adaptation Protocol" or a set of treaty provisions that clarify the rights and obligations of various

[9] The share of the proceeds from CDM projects to finance the Adaptation Fund has been specified as 2% of the Certified Emission Reductions (CERs) issued for a CDM project activity (Decision 17/CP. 7, FCCC/CP/2001/13/Add.1, Modalities and procedures for a clean development mechanism as defined in Article 12 of the Kyoto Protocol). The revenues that will be generated from the sale of the 2% CER levy until 2012 are projected to be between $160 to $950 million, while funding presently given to or pledged by donor countries to the LDC Fund and the SCCF is about $170 million; Benito Muller, "The Nairobi Climate Change Conference: A breakthrough for adaptation funding", Oxford Energy & Environment Comment, January 2007. It should be noted that financing for the Adaptation Fund is not limited to the revenues from the 2% CDM levy. Paragraph 2 of Decision 10/CP. 7 states that "…the adaptation fund shall be financed from the share of proceeds on the clean development mechanism project activities and other sources of funding". The Global Environmental Facility (GEF) operates the Special Climate Change Fund and the Least Developed Countries Fund, and the bureaucratic nature of the GEF's administration has created much unhappiness amongst developing countries, prompting the creation of a separate administrative structure for the Adaptation Fund; Benito Müller, "Nairobi 2006: Trust and the Future of Adaptation Funding", Oxford Institute for Energy Studies, EV38, January 2007, online: <http://www.oxfordclimatepolicy.org/publications/EV3825Jan.pdf>.

Member States in relation to climate change adaptation, just as there are specific treaty provisions relating to mitigation in the Kyoto Protocol. Underlying such a proposal would be the assumption that the existing treaty provisions on adaptation do not provide an adequate and clear basis in international law to justify the imposition of a legal obligation on the developed countries to bear the financial costs of adaptation measures. The provisions lack teeth because of the absence of timetable/monetary targets and sanctions for non-action. In short, the treaty provisions on adaptation found in the UNFCCC and the Kyoto Protocol are merely hortatory, and naively idealistic in their assumption of the good-will and charitable giving of developed countries. This would explain the lack of action on the adaptation front and the remedy would therefore be clarification of the burden-sharing agreement between the developed and developing countries.

First of all, it must be clarified that action on adaptation measures have increased significantly in the past few years, particularly because of greater understanding of the science behind climate change and more expertise which in turn have caused more policy attention to be turned towards adaptation needs. This leads to the second reason why action on the adaptation front may have been rather sluggish till recent times, simply, the lack of expertise. While some countries may have experience with adapting their social and physical infrastructure to climatic variables, such as housing in the Netherlands which is prone to flooding, much of the rest of the world do not possess such experience to tap upon in face of the new challenges posed by a changing climate. The lack of expertise and knowledge is an issue that the UN system has been attempting to address through its capacity-building efforts and provision of knowledge and consultancy services. Putting aside these reasons, we then come to the funding issue which has been the major bone of contention. Simply put, adaptation policies and measures are very costly and developing countries do not have the resources to do so, which then leads to the next logical step in the chain of reasoning that there should therefore be transfer of resources from the rich to the poor so that the poor can adapt their societies. What then are the justifications for the resource transfer? Arguments based on equity, fairness, the principle of common but differentiated responsibility, the polluter pays principle, have all been put forward.[10] Nonetheless, the reluctance of developed countries to take on the massive financial obligations which are likely to be required has obstructed fair resolution of the funding issue, and would also make concluding an "Adaptation Protocol" or specific treaty obligations an arduous and difficult task, a process that might take many years of negotiation and eventually lead to a watered-down treaty text that was hardly worth the time and effort.

Thus, adaptation policy on the international level has developed and evolved within a less than satisfactory normative framework supplemented by

[10] See, for example, J. Paavola & W.N. Adger, "Fair Adaptation to Climate Change" (2006) 56 Ecological Economics 594-609.

creative pragmatic measures such as taxing Clean Development Mechanism projects to fund adaptation, and quiet assumptions about the responsibilities that developed countries ought to bear which are not, or cannot, be stated explicitly. In this way, the existing web of responsibilities and mechanisms created by the UNFCCC and the Kyoto Protocol have provided a sufficient basis for action on adaptation issues though a clearer normative framework would be desirable.

Part II: International Institutional Framework Supporting Adaptation

There are a number of reasons why a strong international framework is important for supporting countries' efforts to adapt to the impacts of climate change. First, international organizations facilitate cooperation and information exchange amongst policymakers, local stakeholders and experts by hosting workshops, meetings, and establishing information databases. These initiatives are important for increasing our shared knowledge about adaptation, which is still at the embryonic stage, and building capacity. Secondly, vulnerable communities require significant financial and technical support to carry out adaptation activities. International organizations play a crucial role in providing financial support for adaptation activities. Thirdly, international legal obligations reinforce political commitment and executive action amongst Member States to address adaptation concerns. Fourthly, organizations at the international and regional levels can and do facilitate more work on adaptation at the local level by providing platforms for the development of local adaptation policies and strategies.

Because climate change affects almost every aspect of social and economic life, and adaptation in particular cuts across various policy issues, such as sanitation and health care, disaster relief, food security, poverty eradication and sustainable development, many international organizations which specifically address these issues have also had to address climate change adaptation, or in the jargon, to mainstream adaptation in their working agendas and policy-making. These organizations include the Food and Agriculture Organization of the United Nations (FAO), the World Health Organization (WHO), Asian Development Bank and the World Bank. Let us take a closer look at what some of these organizations do in relation to climate change.

The FAO is dedicated to eradicating hunger. Apart from providing a forum for countries to discuss food security issues, the FAO conducts research and assists countries to improve agriculture, forestry and fisheries practices. Agriculture, forestry and fisheries are some of the most climate-sensitive economic sectors and climate change is likely to have serious impact on food production.[11] While there is considerable uncertainty about how projected

[11] In a rather unexpected way, the increased demand for biofuels as a fossil fuel substitute to reduce GHG emissions has had untoward consequences for food security as food crops are being diverted towards biofuel production, causing food prices to soar.

climatic changes will play out locally, adaptation strategies that increase preparedness and resilience are necessary. The FAO carries out considerable research on climate change and food security, and contributes to adaptation by providing data and analyses on soil and water conditions, biomass and crop systems, monitoring climate variability, providing technical advice to member countries through consultations, participating in technical meetings and technical services to donor programmes, and cooperating with the UNFCCC Secretariat and other agencies.[12]

The WHO is the directing and coordinating body on health issues within the United Nations system. As part of its responsibility for providing leadership on global health issues, the WHO has had to address climate change as it has the potential to affect human health in a number of ways, for example, by altering the geographic range and seasonality of certain infectious diseases.[13] Apart from serving as a source of information and expertise, the WHO has also been instrumental in harnessing regional cooperation towards addressing climate change and health issues. For example, the WHO and the governments of countries including Bangladesh, Cambodia, Fiji, Indonesia, Laos, New Zealand, Korea, Sri Lanka and the Philippines, have developed a "Regional Framework for action to protect human health from effects of climate change in South East Asia and Pacific Region", which could serve as a template for action in other parts of the world.[14] The significance of the impact of climate change on human health and the international public health policy was underscored by the passing of the "Climate Change and Health" resolution by the World Health Assembly in May 2008.[15] Amongst other things, the resolution calls on the WHO to strengthen its work in raising awareness of the health implications of climate change, and supporting capacity-building and research in health protection from climate change. The resolution also calls upon Member States to develop health measures to be integrated into adaptation plans.

As an international development bank, the World Bank is actively involved in climate change mitigation and adaptation because of the impact of climate change on its mission of reducing poverty in developing countries. Climate change also has the potential to hamper the achievement of many of the Millennium Development Goals as well as the Bank's advisory work in climate-sensitive sectors such as agriculture, energy, and water. The World Bank has therefore recognized climate change to be both an environmental and

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[12] FAO homepage "Policy Framework" http://www.fao.org/climatechange/49372/en/. Also see "Food Security" homepage http://www.fao.org/climatechange/49357/en/ for list of publication on climate change and food security.

[13] World Health Organization, "Climate Change and Human Health: Impact and Adaptation", WHO/SDE/OEH/00.4, May 2000.

[14] WHO website, "Regional Framework for action to protect human health from effects of climate change in South East Asia and Pacific Region", online: <http://www.searo.who.int/en/Section260/Section2468_14335.htm>.

[15] Sixty-first World Health Assembly, WHA61.19, Agenda item 11.11, 24 May 2008. The resolution can be found online at <http://www.who.int/gb/ebwha/pdf_files/A61/A61_R19-en.pdf>.

development issue.[16] Some of the ways in which the Bank seeks to contribute to adaptation efforts include the mainstreaming of adaptation issues in the Country Assistance Strategies, developing climate risk insurance models and products, working with the Global Facility for Disaster Risk Reduction and Recovery, and providing technical assistance to adaptation projects.[17]

The Asian Development Bank (ADB) is the only regional development bank based in Asia. Apart from pursuing its mandate of fighting poverty in Asia and the Pacific, the ADB also actively supports environmental management efforts in these countries. Climate change mitigation and adaptation have become key areas of ADB's work program because climate change risks "present a real threat to ongoing poverty reduction and economic development efforts".[18] The ADB has therefore put an adaptation program in place. This program operates on three fronts: (1) promoting national adaptation planning through better analysis of the impacts of climate change at the local and national levels as well as the identification of cost-effective "climate proofing" options;[19] (2) providing technical assistance for project level "climate proofing" of existing infrastructure and future project designs; (3) supporting specific adaptation investment as defensive measures against anticipated climate change impacts. Both the ADB and the World Bank are executing and implementing agencies of the GEF respectively and therefore have direct access to GEF climate change funding.[20] The adaptation activities undertaken by the development banks so far are on a project basis and focus on practical measures rather than institutional capacity-building.

The discussion above provides a sample of the numerous international organizations who are involved in climate change adaptation. At first glance, there may appear to be significant overlap and there is no "framework", so to speak, as these activities appear to be highly disparate, chaotic, potentially duplicative, and lacking proper coordination and focus. However, this is not really the case. Each agency, such as the FAO and the WHO, is carrying out some

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[16] "Climate Change and Development", online: <http://go.worldbank.org/VRETHAGHE0>. See also James Warren Evans, "Climate Change is a Development Issue: Towards Climate-Resilient Development", *Annual Review* (July 2006-June 2007), World Bank, Washington D.C.

[17] The Global Facility for Disaster Reduction and Recovery (GFDRR) is a partnership of the International Strategy for Disaster Reduction (ISDR) system to support the implementation of the Hyogo Framework for Action (HFA). The HFA, endorsed by the United Nations General Assembly in Resolution 60/195 is the primary international agreement for disaster reduction; see GFDRR homepage <http://gfdrr.org/index.cfm?Page=About%20the%20GFDRR&ItemID=2>.

[18] ADB, "Climate Change: ADB Programs – Strengthening Mitigation and Adaptation in Asia and the Pacific" (Manila: ADB, 2007) at pp. 22.

[19] There are 13 countries in the Asia and Pacific region eligible for financial support for adaptation activities through the Least Developed Countries Fund, which is administered by the GEF. As a GEF agency, ADB can assist with the implementation of National Adaptation Programs of Action (NAPAs); ibid.

[20] See the list of UNEP executing and implementing agencies, online: <http://www.gefweb.org/Partners/Exe_Agencies/exe_agencies.htm> and <http://www.gefweb.org/participants/Implementing_Agencies/implementing_agencies.html>.

form of adaptation program in relation to their core area of work and expertise. In this way, each agency brings to the table highly specialized knowledge about climate change in a specific area (for example, cropping practices and public health), which together create a comprehensive response towards climate change. The role of the UNFCCC in all this has been to provide a focal point for all climate change-related issues, by serving as the forum for all international climate change negotiations, developing international adaptation policies, funding and information exchange amongst Member States. The UNFCCC also actively establishes dialogue with the other UN agencies and invite these agencies to share their research findings and experience.[21] We may summarize the contribution of the UNFCCC Secretariat as (1) serving as a knowledge hub that assists communities and countries that may not have the resources to attain information which is crucial for carrying out adaptation (by collecting, generating and disseminating information and know-how), and (2) a key driving force behind adaptation initiatives at the state level through its programmes such as the National Adaptation Programmes of Action (NAPAs) and the Nairobi Work Programme (as well as through its capacity-building programmes and promotion of regional and international cooperation).

Part III: Institutional and legal frameworks at the state level

International institutions necessarily have to work with governments at the state and local levels in order to develop country-specific adaptation policies and to carry out adaptation projects "on the ground". The "country-driven" approach that is advocated by the UNFCCC reinforces the role that countries are expected to play, especially in relation to integrating adaptation into national sustainable development and poverty reduction strategies.[22] Legal and institutional frameworks to facilitate the integration of adaptation strategies across all sectors of national policy-making are therefore necessary. However, as will be seen below from the case studies of Vietnam, China and Laos, most developing countries do not have adequate institutional arrangements to facilitate bottom-up stakeholder participation and inter-agency cooperation. This may lead to maladaptation whereby the adaptation strategy is poorly selected or is unsuitable because of unforeseen consequences, poor use of available resources, or even governance gaps because various institutions at the state level are not communicating/coordinating their actions which will have a negative impact on policy implementation. Countries ought to develop these local structures to coordinate with and leverage on the support of the international institutional framework. In this regard, it can be argued that imposing a legal obligation (under the UNFCCC) on Member States to establish a focal point for adaptation issues within their governments may be necessary.

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[21] See, for example, "Information on methods and tools for impact, vulnerability and adaptation assessments: Submissions from relevant organizations", Subsidiary Body for Scientific and Technological Advice, 27th Session, Bali, 3-11 December 2007, FCCC/SBSTA/2007/MISC.13.

[22] See, for example, Decision 5/CP.7, Decision 6/CP. 9 and Decision 3/CP.11 which refer to the importance of a "country-driven approach".

Vietnam

Located in Southeast Asia, Vietnam is one of the most disaster-prone countries in the world, especially concerning water-related disasters. Vietnam is primarily a rice-based agricultural economy, with agriculture contributing about 24% to the country's Gross Domestic Product (GDP).[23] Currently, over 70% of the population lives in rural and low-lying coastal areas that are susceptible to water-related natural disasters.[24] Vietnam is highly vulnerable to the impacts of a sea level rise. A recent World Bank study on the potential impacts of sea level rise on 84 coastal developing countries demonstrates that a 1-meter increase in sea level would affect about 5% of Vietnam's land area, affect 11% of the population, have a negative impact on 7% of its agriculture sector, and reduce GDP by 10%.[25]

Institutional Framework[26]

The Ministry of Natural Resources and Environment (MoNRE) is the national focal agency for climate change-related activities in Vietnam. The National Office for Climate Change and Ozone Protection was established within the MoNRE to serve as the "National Focal Point" for the implementation of the UNFCCC and the Vienna Convention on the Protection of the Ozone Layer (and the Montreal Protocol). Technical expert teams, including one for vulnerability and adaptation to climate change, have been established to assist in the implementation of climate change projects.[27]

There is also a National Team on Climate Change which includes representatives of the various ministries including the Ministry of Planning and Investment, Ministry of Justice, Ministry of Finance and Ministry of Industry. In terms of policy development, the National Programme to implement the UNFCCC addresses adaptation issues in terms of the broad national strategy and policy recommendations. In addition, the "National Environment Protection Strategy for the Period 2001-2010" addresses many issues that are linked to climate change, for example, rational resources utilization, waste management,

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[23] United Nations Asian and Pacific Centre for Agricultural Engineering and Machinery, online: <http://www.unapcaem.org/ppt/vn-01.htm>.

[24] UNDP Viet Nam, "Viet Nam at a Glance: Human Development Overview", online: <http://www.undp.org.vn/undpLive/Content/UNDP/About-Viet-Nam/Viet-Nam-at-a-Glance?languageId=1>.

[25] S. Dasgupta et al (2007), "The Impact of Sea Level Rise on Developing Countries: A Comparative Analysis" (World Bank Policy Research Working Paper 4136).

[26] Information in this section relies heavily on Vietnam's Initial National Communication at p. 84-87; Socialist Republic of Viet Nam, Ministry of Natural Resources and Environment, "Viet Nam Initial National Communication under the United Nations Framework Convention on Climate Change" (2003).

[27] More information about the National Office for Climate Change and Ozone Protection is available on its website http://www.noccop.org.vn/index.html.

controlling air, land and water pollution, promoting forestation in watershed areas, and mitigating the emission of greenhouse gases and ozone-depleting substances. Many climate change-related policies and programs have therefore been introduced or launched as part of the National Environmental Protection Strategy.

While there are inter-agency mechanisms in place to promote policy coordination, it is clear that the Vietnamese institutional framework does not engage with local communities and non-governmental organizations to promote bottom-up approaches to address adaptation. Also, the framework is highly geared towards policy coordination at the level of central government, and does not address the involvement of local and regional governments.

The Lao People's Democratic Republic (Lao PDR)

Lao PDR is classified as a Land-Locked Least Developed Country (LLDC) within the UNFCCC.[28] In Laos' First National Communication submitted to the UNFCCC in accordance to its legal obligations under Articles 4.1 and 12 of the Convention, no assessment of the country's vulnerability to the impacts of climate change was conducted. General observations about Lao PDR's high economic dependency on its natural resources and agriculture, and the country's consequent vulnerability to the impacts of climate change were made.[29] Further, Laos has not submitted its National Adaptation Program of Action (NAPA) to the UNFCCC, and there is no information in the public domain indicating the development of a national program of action to the best of the author's knowledge.[30] As recognized in Laos' First National Communication, conducting a vulnerability and impact assessment is vital in order for appropriate adaptation measures to be developed and taken. As a LLDC, Laos is likely to be at high risk to certain impacts of climate change, particularly on water and forest resources.[31]

Institutional Framework

Usually, the process of developing a NAPA helps to raise awareness about the importance of climate change adaptation, and brings together

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[28] See "List of Least Developed Countries", UNFCCC website, <http://unfccc.int/cooperation_and_support/ldc/items/2666.php>. The country's 2004 GDP per capita stood at US$378 (Source:IPCC Fourth Assessment Report: Asia, Table 10.1).

[29] Lao PDR's First National Communication at p. 95.

[30] NAPAs were initiated with Decision 28/CP. 7 as part of the Marrakesh Accords of 2001. The purpose of NAPAs is to provide a process for LDCs to identify current climatic risks and priority activities to address urgent and immediate adaptation needs. Rather than focusing on scenario-based modelling to assess future vulnerabilities, the NAPAs focus on existing coping strategies at the community level and build upon them in the formulation of priority projects.

[31] Droughts normally associated with ENSO years have occurred in Laos, and the droughts in 1997 to 1998 caused massive crop failures and water shortages and forest fires in various parts of Laos, the Philippines and Indonesia; see Table 10.3 *Summary of observed changes in extreme events and severe climate anomalies*, IPCC Fourth Assessment Report: Asia at p. 476.

community, national and international stakeholders to develop adaptation programs and policies. This will also be accompanied by the establishment of certain legal and institutional arrangements to support adaptation strategies. It is not surprising that these arrangements are not well established in Laos given that the country has not embarked on developing a NAPA. Broadly, the Science Technology and Environment Agency (STEA) is responsible for managing and protecting the environment.[32] Climate change-related activities also fall within the responsibility of the STEA. The National Greenhouse Gas Inventory Committee (NGIC) is chaired by the STEA chairman and provides overall guidance on climate change policy. The Technical Working Group (TWG), which consists of representatives from each government ministry, is responsible for preparing the country's greenhouse gas inventory and exploring actions to address climate change.[33] The lack of information in the public domain made it difficult for the author to ascertain the exact functions and nature of the work of these bodies. However, from the National Communication, it is clear that adaptation was not directly addressed by the STEA and its associated bodies.

China

China is home to the world's largest population, which was 126.743 million at the end of the year 2000 (about 21% of global population). Observations of past and present climate trends and variability show that China is already experiencing the impacts of climate change. Briefly, annual rainfall has declined in the past decade in the northern regions, and average temperatures have risen over the past 50 years (more pronounced in winter than in summer). There have been increasingly frequent short-duration heatwaves in the past 10 years, as well as increasing warmer days and nights.[34] China is particularly vulnerable to the impacts of climate change on water supply, agriculture, and its coastal and marine systems.

Institutional Framework

Established in 1998, the National Coordination Committee on Climate Change (NCCCC) comprises of 17 ministries and agencies.[35] It formulates and coordinates China's climate change-related policies and measures, and provides guidance for central and local governments' response to climate change. From

[32] Lao PDR's First National Communication at p. 39.
[33] Figure 1.10 in Lao PDR's First National Communication.

[34] Cruz, R.V., H. Harasawa, M. Lal, S. Wu, Y. Anokhin, B. Punsalmaa, Y. Honda, M. Jafari, C. Li and N. Huu Ninh, 2007: Asia. "Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change", M.L. Parry, O.F. Canziani, J.P. Palutikof, P.J. van der Linden and C.E. Hanson, Eds., Cambridge University Press, Cambridge, UK at p. 469-506., Table 10.2 and Table 10.3.
[35] National Development and Reform Commission of the People's Republic of China, China's National Climate Change Programme (2007), at p. 12.

2001, the NCCCC organized the compilation of the Initial National Communication on Climate Change of the People's Republic of China, and presented the report to UNFCCC at the tenth session of the Conference of the Parties (COP10) in December 2004. In June 2007, an inter-ministerial leading group chaired by the Premier was established.[36] This group has external functions related to the UNFCCC and domestic functions related to the implementation of two mandatory domestic targets on energy intensity (20% reduction) and emissions reduction of major pollutants (10%) for 2006-2010.[37] The National Development and Reform Commission (NDRC) is the lead agency for external (UNFCCC) affairs, together with the foreign affairs, science and technology, environment and metrological agencies. The Ministry of Environmental Protection and NDRC are the leading agencies coordinating the implementation of the domestic energy intensity and emissions reduction targets.

Amongst the countries surveyed in this paper, China is the only one which has clear arrangements on local-level government involvement in climate change programs. Local governments have been tasked to enhance the organization and leadership on local responses to climate change, and to formulate and implement local climate change programs as a matter of priority.[38] There have been proposals to set up a regional administration system to coordinate climate-related work, build up local expertise, initiate proper climate change policy and measures according to local conditions such as geographical environment, climatic conditions and levels of economic development, and strengthen coordination between national and local governments to ensure the smooth implementation of policies and measures.[39] Nonetheless, challenges remain as to how such a regional system will work in tandem with the existing environmental protection bureaucracy which itself has difficulties achieving policy coordination between environmental protection bureaus at different levels of government.[40]

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[36] State Council Document [2007] No. 18, "Circular on the Establishment of National Climate Change Leading Group & National Energy Conservation and Emission Reduction Leading Group of the State Council".

[37] State Council Document [2006] No. 28, "Decision on Strengthening Energy Conservation Work".

[38] Ibid. at p. 56.

[39] Ibid.

[40] Local environmental protection agencies are accountable to two potential masters: the administratively higher levels of the national environmental protection regime and the local governments of the area in which they reside. City and county EPBs are provided with policy directives and guidelines by the SEPA and provincial EPBs and also receive guidance from local government organs. In all cases, however, it is the local governments, not the higher levels of the national environmental protection regime, which fund the environmental agencies. Thus, of the environmental agency's two administrative superiors, the local authority wields more power. There is an obvious potential conflict between the vertical line of authority (i.e., the EPB at each level, and the SEPA at the top) and the horizontal line of authority (i.e., the territorial government at the same level as the EPB). The former coordinates according to its function (i.e., environmental regulation) while the latter coordinates according to its local needs. Kenneth Lieberthal points out that one of the key reforms in the 1970s was to give the horizontal authority precedence over the vertical counterpart. As a result, the power of local government has

Observations

At the very least, all three countries surveyed above have institutional infrastructure that are capable of translating their international commitments under the UNFCCC and the Kyoto Protocol into domestic actions. This probably remains the primary function of the climate change institutional framework in most countries, though with the increasing need for concerted domestic action to tackle climate change, we may witness future adjustments in the institutional arrangements from the focus on external communications (with the UNFCCC) to domestic coordination (amongst agencies and between levels of government).

Amongst the selected countries, due to different domestic circumstances and international obligations, China possibly has more advanced institutional capacity than Vietnam and Laos. However, all three countries can benefit from the creation of more channels to involve various interest groups such as non-governmental organizations, academia, and even the private sector. NGOs can, for example, initiate campaigns to raise public consciousness on climate change, assist in monitoring policy implementation and provide assistance to vulnerable communities, while academia can provide the scientific information and know-how that policymakers require for domestic policy formation.

As the level of government that is closest to human activity, adaptation institutional frameworks should engage local governments much more closely than is evident at the moment. This is particularly important for successful adaptation as local governments are more likely to have the information and understanding of local conditions and needs.

Generally, climate change appears to be treated as a stand-alone development and environmental issue rather than being integrated into existing national sustainable development measures, structures and implementation plans. It is not difficult to see why this might be the case. Many developing countries do not have institutional structures and policy plans to address sustainable development per se, though they may seek to pursue sustainable development through existing bureaucratic arrangements for environmental management/protection, ie: the environmental ministry or agency and the related sectoral agencies such as those responsible for forestry, fisheries, and natural resources. As such, there are usually no existing sustainable development structures or plans into which adaptation might be integrated. On the other hand, countries have had to set up certain institutional mechanisms to fulfil their UNFCCC legal obligations and it would have been more expedient for

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increased at the expense of central-level functional units (such as the SEPA). See Kenneth Lieberthal, "China's Governing System and Its Impact on Environmental Policy" (1997) 1 China Environment Series 3.

policymakers to place adaptation under the overall climate change framework. However, it is arguable that as policymakers gain a more nuanced understanding of adaptation as a development issue as much as an environmental one, and as the international institutions continue to mainstream adaptation into poverty reduction and development programmes, we might witness greater integration between sustainable development and adaptation programmes.

Part IV: Conclusion

The need for communities to increase their adaptive resilience will become increasingly greater as we begin to experience more impacts of climate change. Successful adaptation, however, is a challenging process which takes long-term planning and cannot be achieved overnight. In this regard, proper institutional and normative frameworks have to be in place at the international and state levels to support the adaptation efforts of developing countries. While it appears that many international organizations are involved in adaptation work, and as the old saying goes, "too many cooks spoil the broth", this paper argued that there is actually a fairly coherent division of labour amongst the international agencies which all lend their specific expertise on climate change as experienced within their official mandate. The UNFCCC is an important focal point which has a coordinating role within the UN system. At the state level, the survey of three countries, Vietnam, Laos and China, show that they lack the institutional mechanisms and legal frameworks that are important for coordinating and developing adaptation responses at the state level. Countries are urged to develop these local institutional structures to coordinate with and leverage on the support of the international institutional framework. In this way, developing countries will be better placed to adapt to the impacts of climate change effectively.