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Summary of Implications for the APHDR on Climate Change

Priority Issues from Asia

Human development

- Climate change is a human development challenge although, historically, it has been treated as an environment/scientific issue. Existing climate change reports tend to focus on sectors (e.g., health, water and forestry) and less attention has been paid to a people-centred bottom up approach.
- Climate change manifests itself at local level through climate variability to people on the ground by impacting health, livelihoods and choices.
- An increase in greenhouse gas (GHG) emissions is expected to coincide with continued economic growth, especially for the larger economies in the region such as India and China. While economic growth is important to reduce poverty and bolster human development, the nature and distribution of the growth thus far has revealed stark inequalities and left many groups vulnerable to additional environmental stresses such as climate change.

Transboundary

- Climate change as a regional and global phenomenon is one of the strongest reasons to push for greater regional cooperation to protect the environment by empowering people. Rivers, mountains, plains and deserts, transcend political borders making the issue of climate change less a rich country versus poor country issue and more an issue of rich people with unsustainable consumption patterns vs. poor people.
- The key areas which lend themselves strongly to transboundary analysis and cooperation are water and rivers, energy sources, migration and conflict.
- Most official data and policies are national which can make setting up and implementing regional cooperation a challenge.

Aggravating factors

- Climate change exacerbates horizontal inequalities through compounding stress on existing socio-economic disparities. For example, different groups within a single society are affected disproportionately, e.g., indigenous[1] peoples, women, rural-urban peoples, etc.

[1] Note that the definition for "indigenous" is problematic in Asia and does not have full acceptability.

- Climate change-related natural hazards and disasters can push people who are already vulnerable beyond their coping capacities, leading to forced adaptation rather than the more favourable planned adaptation.

Opportunities

- New economic opportunities such as "green jobs" and investment areas for countries embracing green technology. Countries in the region who are at the forefront of a green economy today will be in a stronger position in the future to whether the financial costs of climate stresses. Asia-Pacific countries have made important strides in using green technology and energy such as harnessing wind power and producing electric-powered bicycles. Policies have made important contributions to these successes.
- Strengthening low carbon and climate resilient societies in the region will help to ensure citizen safety and provide democratic dividends through popular support for clean air and water and stronger livelihood strategies, especially for the poor in the agricultural sector.
- Traditional knowledge can play an important role in bolstering coping capacities and also with South-South cooperation in the region.

Complex issues

- Attempts at solutions can lead to new or 'second generation' problems that affect people's lives.
- "Vulnerability" is not a static concept and can many different dimensions. For example, migration from coastal regions to inland areas creates new vulnerabilities inland. There is no concrete measure or definition of vulnerability.

Map and Measure Human Development (HD), taking account of Climate Change (CC)

- By attempting to map and measure climate change more concretely, it can increase visibility of the challenges as well as provide entry points to policy and programmatic responses which target critical barriers to change. The effects of climate change are complex and less visible unlike, say, pollution. The latter gets much more attention due to its visibility.
- Capture emerging good practices of climate change adaptation, mitigation and local wisdom from communities at the forefront of the phenomenon.

- Explore vulnerability mapping by expounding on disaster risk reduction hazard mapping and Geographic Information System (GIS) instruments in order to get assist in forming action-oriented solutions.
- Build on the existing work of other indices, Human Development Index (HDI), Happy Planet Index (HPI), etc., to reflect on CC vulnerability indicators and indices which may aid policies in addressing climate change impacts to vulnerable groups.

Barriers to change

- Lack of knowledge and awareness on the human impacts of climate change and on existing good practices in the region to combat the problem.
- Prevailing work on the subject of climate change does not factor in the on the ground realities of disadvantaged and marginalized communities, who are often the most vulnerable to its effects. Lack of focus on "vulnerability" as a dimension of analysis when planning and implementing climate change related policies and programmes.
- A country's internal political circumstances and conditioning can have an adverse effect on efforts to tackle climate change. Often politicians have short-term horizons of 5 years or less election timelines, thus, priority is often placed on getting short-term results for political gains. Climate change has to be mainstreamed as part of the public administration through institutional capacity development.
- Attitudinal barriers are important to recognize in action plans. There is a sense of helplessness among people, especially those who are the forefront or most vulnerable to climate change such as the poor, as the gravity of the phenomenon seems insurmountable.

Draw relevant links across previous APHDRs to inform the work on Climate Change

- *Trade on Human Terms*: concerns around using climate change to strengthen non-tariff barriers - protectionism to restrict exports from poor countries; barriers to technology transfer through strong IP regimes; issues around worker migration necessitated by climate change.
- *Tackling Corruption, Transforming Lives*: aggravating unsustainable use of natural resources with implications for sustainability, equity and long-term efficiency; conflicts.
- *Power, Voice and Rights (Gender):* women as actors, not just lists of vulnerable persons; women are managers and users of natural resources; of traditional knowledge.

Big Messages

- Put human development centre stage so that when addressing climate change, people are positioned at the centre of any policy or programme response.
- The most vulnerable to the adverse impacts of climate change are the poor, the disadvantaged and the marginalized groups of people, in particular, the old, women and children.
- Climate change aggravates existing stresses and pushes people beyond their coping capacities. Climate-related disasters are increasing in frequency and intensity, leaving little time for planned adaptation.
- Climate change has traditionally been worked on by policymakers as a technical subject in the realm of environmental science, however, it should be looked at as a development issue as issues of governance, socio-economic conditions, transboundary issues such as migration and livelihoods, affect people, especially the most vulnerable.
- CC impacts and vulnerability are often location specific.
- There is a need to qualify the debate on growth vs. addressing climate change by using the human development lens as a bridge to address concerns over the long term sustainability of current growth patterns.
- As climate change impacts do not respect national borders, recognizing and understanding the interconnectedness in the region is critical to catalyze regional cooperation
- There is a need for specific indicators to measure climate change as it relates to human vulnerability.

Recommendations for the AP HDR

- The human development perspective and APHDR provides an innovative niche to bring divergent perspectives together through evidence-based research and analysis, focusing on the human impacts and vulnerabilities resulting from climate change and their corresponding implications for policy, programmes and advocacy.
- Given the fact that most climate change issues are transboundary in nature, it is important that regional cooperation is strengthened to adequately address its impacts. Thus, the APHDR should engage with regional organizations such as the Association of Southeast Asian Nations (ASEAN) and South Asian Association for Regional Cooperation (SAARC).

- By applying a human development perspective to climate change it can refocus the debate from an exclusive technical/environmental to a 'people issue'.
- Avoid presenting only technical related arguments only. Consider also
  - Moral, physical, existential perspectives.
  - Intergenerational issues i.e. what will we bequeath to our children?
  - Faith and values can be important tools to support and explain complex issues.

East Asia Consultation

26-27 April, 2010, Bangkok, Thailand

Summary of Main Issues and Key Suggestions

Priority Issues

- Mitigating the effects of climate change in the region require focusing on the two major sources of carbon emissions - energy and transportation. These two areas are and have been some of the most powerful drivers of economic development in the region, which demonstrates a central trade-off between solely pursuing growth and mitigating the effects of climate change in the region.
- Many of these countries' systems and processes have gone down a road of 'path dependence' when it comes to using such 'climate unfriendly' energy and transportation systems, making it increasingly difficult to shift to new energy and transportation models which are more low carbon in nature. Changing to more 'green' methods can also mean greater capital investment is required initially, as many of these technologies are newer than and not as efficient as coal or other high carbon energy sources.
- Vulnerable groups of people are often those who lack the capabilities, freedoms and opportunities in life such as capital, knowledge and technology.
- Women in rural areas are especially vulnerable to climate change, as users and managers of natural resources, and it is becoming difficult for them to secure local natural resources for which they are highly dependent on for cooking and heating, key activities in the unpaid care economy.
- Women and children are particularly vulnerable when key sectors such as water and sanitation are affected. Negative impacts in these sectors often act as an additional stress to vulnerable groups being forced to migrate and relocate, often affecting access to regular education, which can decreases capabilities for future generations contributing to a cycle of poverty and vulnerability.
- Adverse climate impacts on agriculture, fisheries and livestock due to drought and fluctuation of water cycles would affect the entire household income of farmers, fisher folks and other communities which thrive on such natural resources for livelihoods and health (nutrition).

- Ethnic minorities face issues of land rights from forced migration and resettlement due to lack of recognition and control to such productive resources.
- The elderly and disabled are also vulnerable as they are prone to health risk and lack access to quality social services without additional support.

Barriers to change

- There is an absence of institutions dedicated to tackling climate change as a development issue across many different sectors meaningful for human life (health, education, livelihoods, etc.). Institutions which typically deal more directly with such human development sectors do not have the capacity to integrate climate concerns which are often considered an additional burden on existing workloads. The subject is still handled at ministry level in a compartmentalized manner relating to climate science and meteorology.
- Lack of financing to address development impacts of climate change, especially adaptation.
- Lack of incentives for pursuing renewable resources over existing carbon intensive resources.
- Addressing climate change often needs a longer term horizon of action. Lack of political will to implement long-term programmes on climate change as politicians are interested in short-term or immediate results within their time in power.
- Adoptions of new technologies is key however they require not just the purchase and transfer of technology but the technical know-how as well
- Asia and the Pacific contain countries at different development levels and trajectories (LDCs, middle income countries, OECD members, etc.) Lack of or different levels of knowledge and awareness throughout countries and communities in the region often hinder intra- and intercountry collaboration on climate issues.
- Weak or non-existing cross-border cooperation, both at the regional and subregional level (SAARC, ASEAN, APEC, PIFS, etc.) is a barrier to change.

Measures

- Apply a human development approach to mapping and measuring climate change through identification of appropriate indicators for human vulnerability and risk assessment linked to climate change, such as loss of land due to desertification/salinization and loss of important 'carbon sinks' such as forest cover.
- Use of an appropriate aggregative climate-HD index could be explored.

- Map human vulnerabilities and asses national statistical capacities of countries in order to monitor and to help design capacity development programmes in such areas.

Solutions

- Improve adaptive capacities through domestic and cross border policies, international capital, know-how and technology transfers while also exploring the resulting development opportunities which they may yield for livelihoods ('green jobs' for example), health and education.
- Integrate and harmonize existing knowledge on disaster risk reduction (DRR) and climate change adaptation (CCA) for example, use of GIS maps to see human vulnerabilities to climate change.
- Establish clear institutional structure by mainstreaming climate in all public works, from infrastructure to social protection. Regional institutions also require a stronger institutional structure and mandate to address climate change. The current ASEAN structure is weak to deal with climate change.
- Invest in capacity development of people, communities and institutions through knowledge, training and physical resources to equip them with the skills and information to address climate change in their respective areas.
- Promote advocacy to divulge information and foster communication between important climate change stakeholders.
- Encourage attitude change amongst the general public when as it relates to sustainable lifestyles and unsustainable aspirations.
- Political will needs to be generated to support high level policy activities which promote energy efficiency, reduce subsidies for fossil fuels, and subsidize renewable energies
- Finance reforestation programmes (REDD) as these are important 'carbon sinks' for the region which are being depleted.
- Respect indigenous people's rights to harvest forest and other natural resources in a sustainable way.
- Improve legal frameworks and administration instruments to handle migrant cases in both sending and receiving countries and within countries (rural-urban) which have resulted from climate variability and disasters.
- Conduct R&D on climate issues which affect human beings, e.g., for new technologies to breed new crop varieties which are drought resistant, and design techniques for water storage

- Transfer of technologies (North-South; South-South), including the use of existing technologies which have proven to be successful, is an important strategy as long as it is accompanied by capacity development on the 'know-how' of such technology and ability to address change in that technology.
- Harvest and share indigenous knowledge and coping mechanisms which have been proven successful in adapting to climate change.
- Include climate change issues in school curricula in order to progressively influence future change.
- Sign and enforce international regulations and treaties aimed at addressing the effects of climate change on people.

Messages

- Recognize the need for research into new 'green' technologies for emission reduction which should be made affordable to developing countries in the region.
- Push for an adaptation fund for least development countries (LDCs) which could be linked to DRR.
- Attitude change in people is very important when it comes to lifestyle change.
- ACT NOW as cost will be lower today than tomorrow.
- Climate change is not gender neutral, hence, the need to focus on women's specific vulnerabilities.
- Ratify and comply with international treaties aimed at addressing climate change.
- Integrate climate change issues into national development plans and institutions.

Other recommendations

- There is a need for institutional structure; policy regulation; and capacity incentives to address climate change.
- The human development angle touches the core human impacts and vulnerabilities to climate change and she should be the main lens by which action is taken.
- Climate change should be treated as a development issue, not only an environmental / climate science-related topic.

COUNTRY EXPERIENCES (Cambodia; Indonesia; Lao PDR; Malaysia; Mongolia; Myanmar; Philippines; Thailand; Viet Nam)

Cambodia

ISSUES	BARRIERS
▪ CC stakeholder dialogue has yet to refocus on vulnerable groups (VGs) i.e. the poor, marginalized, etc. ▪ Vulnerability to disasters leading to water and livelihoods insecurity ▪ Food insecurity, seasonal unemployment, affecting most the vulnerable groups ▪ Land use and land rights are uncertain for many of the VGs; CC adds to the insecurity	▪ Political commitment does not translate to action on the ground ▪ Broader development actions has not yet integrated CC ▪ Low adaptive capacity. Communities are not involved in efforts to strengthen capacity. ▪ Limited private sector involvement which is ironic as many activities which aggravate CC impact involve private companies ▪ CC is not recognized as a cross-cutting issue by the many different sectors

Indonesia

ISSUES	BARRIERS
▪ Vulnerability to CC is among others types that inhabitants in developing countries face i.e. poverty, social exclusion, justice, etc. ▪ A need for targeted support strategies and programmes which are based on observed trends in vulnerability over time and place ▪ CC strategies and programmes can affect human development both in positive and negative ways, and must therefore be monitored in this dual way ▪ Poor populations are highly dependent on CC sensitive sectors such as agriculture, increasing vulnerability ▪ Plans to reduce fossil fuel and electricity subsidies are met with enormous opposition from industry and the public (60% of population has little/no access to electricity, and is using very little fuel)	▪ CC is not incorporated into prevailing measurement systems of development progress (MDG monitoring systems and HDI) ▪ Systems are not in place to quantify vulnerability and track it over time ▪ Absence of effective mechanism proposed to provide targeted support to the poor vulnerable to CC ▪ Limited action taken on adaptation ▪ A middle-income country with very little access to global funds to address adaptation i.e. a significant issue, especially in rural areas and coastal communities ▪ Lack of communication to inform the general public how everyday people can address the CC issue

Lao PDR

ISSUES	BARRIERS
▪ Flood and drought occurrences, linked to CC, are increasing in both frequency and intensity ▪ Many sectors central to human existence are at risk i.e. agriculture; water; health; transportation; scientific data/information system/technology	▪ Lack of understanding of CC by people in the position to bring about change. Likewise the general public ▪ Strong focus on economic growth can compromise actions to address CC ▪ Weak coordination of actions to address CC, especially across different sectors (water, agriculture, transport, etc.)

Malaysia

ISSUES	BARRIERS
▪ Prioritizing economic development vs. CC actions ▪ CC impacts are not too convincing ▪ Middle-income countries have challenges of their own	▪ Difficult to get buy-in for CC actions as they are seen as compromising growth ▪ Lack of data may be attributable to lack of immediate concern and need to act fast on CC

Mongolia

ISSUES	BARRIERS
▪ Landlocked/remote/plains/ mountainous, thus the distinct CC issues ▪ CC is already happening and seriously affecting people's health, education and livelihoods ▪ Depends heavily on coal mining to run the economy. How to adopt low carbon climate-resilient growth? ▪ Pastoralism/livestock keeping is increasingly vulnerable to CC. Yet, it is a key livelihood means for more than 1/3 households. Problem is compounded by overpopulation, leading to land degradation ▪ Heating is critical for people's daily existence due to long and extreme winters with sub-zero temperatures. People resort to 'climate unfriendly' use of coal, firewood and wastes and disposables (plastics, tires) when other (energy efficient) means of	▪ Limited institutional capacity ▪ Lacking public support for CC action and a need for development of incentive mechanisms, consumer education, more green market or quasi-market mechanisms, etc. ▪ Inaction, apathy or sense of helplessness amongst the general public as CC is seen to be something beyond anyone's control ▪ Despite CC negative impact on people's lives, the state regulatory capacity, especially in key sectors such as energy, remains inadequate ▪ Inadequate and inaccurate knowledge amongst actors who can make a difference. E.g., there is a tendency to consider CC as an issue for rural economy; CC relevance to society and sectors is poorly understood. E.g., how to articulate other aggravating issues like

heating are unavailable ▪ Energy policies are not implemented in tandem with CC mitigation strategies to achieve essential energy security. The private sector is attracted to available energy that is reliable, affordable and also environmentally-friendly	increasing food prices, increasing rural to urban migration and climate refugees, to impoverishment in the countryside?

Myanmar

ISSUES	**BARRIERS**
▪ 75% of the population depends on forest resources. CC impact on the latter causes additional stress to existing livelihoods coping mechanisms ▪ High vulnerability to climate change natural hazards, specifically water - related ▪ Unpredictable monsoons, strong cyclones and changing rainfall patterns cause more frequent and intense heat waves, droughts and floods, affecting agriculture and rural livelihood ▪ Need to connect climate science to vulnerability assessments, adaptation practices and mitigation technology	▪ Limited access to technology to address mitigation- adaptation ▪ Lack of coordination among agencies. Only a few agencies are involved in CC and they tend to work in silos ▪ Lack of knowledge e.g., CC impacts on agriculture ▪ Short-term planning horizons of policymakers. They focus more on economic growth

The Philippines

ISSUES	BARRIERS
▪ Disaster prone. Significant increases in climate-related disasters over the last 7 years ▪ Poor communities with highest vulnerability are the least prepared to cope with CC effects. An estimated 215 million people are affected yearly ▪ CC exacerbates pre-existing development problems, particularly persistently high poverty and a widely degraded natural and man-made resource base ▪ Competition for limited resources leading to "crowding out" i.e. CC adaptation and mitigation have to compete with economic and sectoral growth (e.g., health, education and infrastructure)	▪ Capacity gaps at the national and local level ▪ Adaptation practices and technology are not location specific enough, especially relating to marine environment and resources ▪ Policies and instruments are not enabling a more effective public-private sector partnership in managing risks ▪ Weak collaboration among development stakeholders - the government, the private sector, the science community ▪ Low level of public awareness of CC factual issues and solutions ▪ Lack of quantitative assessments of the effects, consequences, and sustainability of policy and investment options on CC adaptation

Thailand

ISSUES	BARRIERS
▪ CC is expected to affect export of agricultural product and food industry, and broader natural resources but better assessments are needed.	▪ Economic development is prioritized over CC in the framework of sustainable poverty alleviation ▪ Baseline issues for forestry management that already exist for decades are, perhaps, not properly addressed. For example, REDD pilot does not fully acknowledge these but such piloting may thus also provide an opportunity to address them. ▪ Participation of public in policy / decision-making process is still weak

Viet Nam

ISSUES	BARRIERS
▪ Vulnerability to climate –related natural hazards is extensive but there is some realization that the country has	▪ Delayed action resulting from enormous financing needs and very complex mechanisms

substantial capacities to respond and take advantage of CC opportunities ▪ Sea level rise, enhanced saline water intrusion, drought, river floods, enhanced typhoons and storm surges, heavy rainfall and heat waves in deltas and coastal lowlands, highlands, rural and urban areas are some of the CC affected areas ▪ Women, children, the elderly, ethnic minorities, migrants and poorer urban dwellers are most vulnerable ▪ CC affect key sectors for economic growth and poverty reduction such as agriculture, transport, industry, education and health care ▪ Resettlement and migration, especially cross-borders, is a major concern ▪ Financial needs are enormous; partly for climate proofing of essential infrastructure	▪ The government does not expect substantial financial international support and feels no obligation to finance reduction of GHG emissions from national budget ▪ Difficulty mainstreaming CC in key social services ▪ Inadequate climate models to produce concrete data on weather extremes i.e. intensity? how much worse? when? where? Disasters caused both by extreme weather and slow-onset phenomenon aggravate stresses of people affected ▪ Low awareness level amongst the general public, thus the uncertainty about actions to take to address the problems before they spiral out of control

South Asia Consultation

29-30 April, 2010, Kathmandu, Nepal

Summary of Main Issues and Key Suggestions

Priority Issues

- By and large, climate change is not integrated into existing economic and social development plans, which hinders institutional and policy action to address its impacts.
- Poverty is widespread and its reduction is easier in the presence of growth, which often contradicts with strategies to mitigate the effects of climate change.
- Human security is highly dependent on natural resources, which makes the latter a sector highly relevant for climate action.
- Livelihood and food security are linked to:
  - High sensitivity and vulnerability of natural resources to climate change
  - Threatened ecosystem services will adversely affect human life in areas such as, water quality and quantity, food, air, energy and regulatory services such as waste decomposition
  - Biodiversity loss impacts people's health, livelihoods and overall well-being
- Health risks related to climate change are often linked to:
  - Water and vector-borne diseases
  - Injuries or disabilities/casualties
  - Malnutrition/hunger/famine
  - Rapid deteriorating natural systems increase dependency and exposure to artificial products which may give rise to new diseases
  - Reduced life expectancy
- Relocation and migration due to climate occur in mountains, plains, coastal regions, rural and urban areas with the following impacts:
  - Increased pressure and stress on natural ecosystems and socio-economic conditions
  - Decreased coping ability beyond subsistence or threshold level
- Four highly prone areas to climate change are coastal areas, islands, arid zones and mountains

- The whole spectrum of climate stress is represented often through drought, flood, coastal degradation, sea level rise, deforestation, land degradation and biodiversity loss.
- *Weak upstream and downstream linkages*: Climate change issues show strong interrelations, particularly of those in high land and low land areas. People in uplands and lowlands are often dependent on the same resources. The linkages between the upstream and downstream are often very weak however the negative effects of climate change makes any response to one dependent on action in the other.
- *Poverty and poor adaptive capacity*: Vulnerability is high due to high poverty and low adaptive capacity to increased climate variability and intensity. Data analysis which is representative at national level is lacking, hence the number and dimension of the most vulnerable groups remains inconclusive.
- Farmers bear the brunt of climate change, which can have its impact on small and big, highland and lowland farms.
- Herders and shifting cultivators are more vulnerable to climate change with decreasing capacity to adapt over time with increased climate variability. They are changing their risk aversion practices due to the climatic variability and, in turn, becoming more vulnerable. These communities are found giving up agriculture and migrating to other sources for their livelihoods.
- The degree of vulnerability differs among different groups of people, geographic location, ecological zones, etc. Vulnerability has to be contextualized, like linking mountain ecosystem to lowlands or coastal ecosystems. In coastal areas, vulnerability to food security is due to salinity and inundation, risk of shelter and livelihoods, food sovereignty, river bank erosion etc. The urban poor are another vulnerable group which has not been studied adequately in the context of climate vulnerability.
- Mountain specificity: Mountain areas such as Bhutan and Nepal share similar landscapes - except for the low lands (terai belt) of Nepal - and have common issues related to climate change. Pressing use of water resources has become an issue in both countries. For instance, 50% of Bhutanese mountain revenue comes from water resources. The rising cost of delivering good health services to people and minimizing vector-borne diseases has been compounded with rising temperature in higher altitudes. Some opportunities like rice planting in higher altitudes are increasing and, with the rise in temperature, local inhabitants have started changing cropping and eating patterns as well. These changes could be associated with health risks that farmers are not yet aware of.

- The tendency to focus exclusively on "adaptation options" may miss out on important mitigation threats and opportunities and long-term poverty reduction,
- Adaptation is considered to be more a local issue but mitigation is more market driven
- Mitigation programmes in the region need to be scaled up as existing ones are mostly at a pilot stage and, increase in emissions due to population growth will only compound the problem further.

Barriers to change

- Lack of awareness, knowledge and capacity to address climate change, especially as a human development issue.
- Lack of incentives for being a low carbon economy in the present and future.
- Lack of adequate and affordable green energy options and technology.
- High incidence of poverty makes compromising growth at the expense of climate change action politically difficult.
- Conflicting ideas from the donor / aid community and people's needs.
- Civil society advocacy for low carbon and other mitigation efforts is minimal.
- States are not politically committed to shifting to a low carbon society and development.
- Institutional inequity in decision-making at all levels, poor governance and limited capacity to respond and deal with climate induced change.
- Physical, particularly geographical remoteness, and poor infrastructure in many areas make operationalizing climate policies and programmes difficult.
- Financial barriers in terms of equitable access, efficiency and governance.
- Problems with technology transfer often result from inadequate capacity and infrastructure of the recipient community.
- Attitudes toward climate change and unsustainable lifestyles, especially of the new middle class, have been identified as the most challenging barrier of change over time.
- The vulnerable are at the fringe of political discussion and attention to climate change. Although current discussions have shed light on the poor, arguments on why states *need to act now* for the poor need to be strengthened.
- Lack of understanding and capacity at the community level on climate change issues need to be bridged by local, national and regional sources through knowledge and resource supplements.

- Policy constraints – planning has been poor in this region and an all inclusive regional policy with compliance mechanisms has not been drafted as yet to counter climate change challenges. Policy not yet available to address climate change at the community level.
- Corruption, especially in the natural resource sector and with the private sector aggravates climate change related issues.
- Donor projects are normally piecemeal and need to work better between sectors and local institutions.
- By and large, climate change is a not priority issue and not integrated into overall development challenges, hence, policies are not "climate driven".
- Lack of clarity about what it means to achieve low carbon growth.

Measures

- Vulnerability as a function of three factors:
    - Exposure (magnitude; frequency; location; temperature; precipitation);
    - Sensitivity (linked to poverty; gender; access to health and education; livelihood options (fewer options means more sensitive); social safety nets); and
    - Adaptive capacity (strategies; (traditional) knowledge; access to education, information and knowledge; financial capacity).
- Recognize that climate change is location specific, e.g., effects in the Maldives are different from those experienced in the mountains of Nepal. However ecosystems are still interconnected in the region.
- Recognize that vulnerability is unevenly distributed.
- Climate change models need to capture realities on the grounds which affect people's lives.
- Problem of attribution i.e. how do we know that CC is the driver of certain disaster?
- Per capita income relates to:
- Per capita emission reduction (carbon footprint); and
- Per capita carbon sequestration
- Consider reactive and proactive adaptive capacity of communities.
- Relevance of local knowledge to measure climate change, e.g., identifying simple measurement indicators such as recording trends in increase/decline of species.
- Community based monitoring systems for tracking impact of climate change would help bring in the human development perspective in action.

- Energy intensity i.e. growth in consumption vs. GDP growth has been an observed trend which is contributing to lack of action in climate change mitigation.
- Government spending on renewable energy is low.
- Assess employment opportunities resulting from mitigation opportunities i.e., green growth jobs for youths.
- Well-being indicators, such as Gross National Happiness (GNH) in Bhutan, are important to look at when trying to think out of the box in measuring the human effects of climate change.

Solutions

- National level low carbon policies with targets are needed to help mitigate the effects of climate change.
- Mainstream climate change in all development initiatives and sectors.
- Capacity development at all levels in order to better understand climate change and how to respond to the problem.
- Use of mass media and civil society can help change public perceptions on climate change and increase individual action.
- International financial mechanisms for low carbon initiatives should continue to be explored.
- South-South cooperation is key as many countries have made progress in addressing climate change.
- Improve coordination and dialogue at political levels between concerned countries to address climate change and encourage regional actions, programmes and cooperative agreements.
- Involve identified vulnerable groups in the planning, decision-making and implementation processes to address human security issues resulting from climate stresses.
- More quantitative and qualitative analysis to put "human vulnerability" on the map for climate change.
- Raise awareness and understanding among communities affected by climate change and how they can respond for positive change.
- Establish links as to why the fate of the climate affected communities is relevant for the overall policies of the country and region. Highlight the urge to act by showing the relevance a change can bring.

- Equity within a society supports climate adaptation of vulnerable groups.
- Improve transboundary cooperation and dialogue, particularly in data sharing.
- Adaptative mechanisms: floating gardens, seed banking and changing cropping patterns are some existing success in adapting to climate change (e.g., *in Manipur, communities maintain asras, a paddy variety, which can sustain floods, as the water/flood level rises, the crop grows taller)*.
- Promote local champions to impart climate change awareness in local communities/region, e.g., youth groups, women groups, teachers of rural villages acting as agents of change to inform local communities and provide bottom up policy inputs from a local/holistic perspective.
- Cross-learning across different communities, countries and regions would be beneficial in bolstering South-South cooperation to address climate change.
- Collective benefit sharing under nature conservation (India-Bhutan CDM Project)
- Policy measures must be presented with different incentives for actors at various levels, such as government, international community, civil society, etc.

Messages

- Until and unless there is voice, there is no choice.
- Reductions and incentives should go hand-in-hand.
- Mitigation and adaptation go hand in hand.
- Walk the talk. So, less talk, less seminars, less travelling and more direct work on the ground.
- Hit the nail on the head. Major focus (inputs, resources, dialogue etc.) should be on the needy/vulnerable people.
- Place importance on evidence-based action.
- Put human development centre stage so that when addressing climate change, human issues would automatically be approached.

Other recommendations

- Regional vulnerability index cannot avoid gaps since official statistics tend to focus on national level, not community level.
- There is a need for additional indicators, e.g., health access as it is not universal; individuals and households/districts may be better representation of realities on the ground.

- Explore the carbon footprint concept.
- Establishment of regional banks for climate action but who will capitalize them?
- Adopt a future, vision-oriented approach. Is there a new economic paradigm?
- Consider a new technological direction (take examples from Thailand, Malaysia, China).
- In many countries, it not a norm as yet to include environment education into school syllabus. India is a good example of this.

COUNTRY EXPERIENCES (Afghanistan, Bangladesh, Bhutan, India, Iran, Maldives, Nepal, Pakistan, Sri Lanka)

Afghanistan

ISSUES	BARRIERS
▪ Intensifying and varying climate cycles, temperatures and precipitation ▪ Droughts and severe storms ▪ Adverse impact on agricultural productivity	▪ Lack of financial and technical resources ▪ Lack of institutional capacity

Bangladesh

ISSUES	BARRIERS
▪ Food insecurity is a key concern - 75% of population is susceptible to severe impact ▪ Cyclones, droughts and excessive rains hamper human development progress ▪ Increasing cases of malaria and dengue threaten people's health	▪ Existential problems associated with CC ▪ Lack of capacity of existing system/structure ▪ Lack of transparency in government ▪ CC is not integrated into national development plans

Bhutan

ISSUES	BARRIERS
▪ Tragedy of the commons (communities come to share a common pool of resources) is a reality ▪ Food and water insecurity	▪ Root causes are not well tackled in current policy efforts to address CC

India

ISSUES	BARRIERS
▪ Geographical vastness implies diversity of issues, namely, poverty and ecological	▪ Lack of information and finance for alternative technology ▪ Lack of institutional capacity ▪ Poor mangrove/wetland management, affecting coastal communities ▪ Attitudinal factors impede public action on CC

Iran

ISSUES	BARRIERS
▪ High population growth – youth oriented; threatens to increase the level	▪ Economic growth focused policies, thus the low priority for CC

of unsustainable energy use ▪ Rapid urbanization ▪ Non green energy intensive economy ▪ CC sensitive sector such as agriculture dominates share in GDP and employment ▪ Changes in rainfall and drought patterns ▪	▪ Mitigation and adaptation are not on policy agenda and national development plans. Hence, adaptation measures are not in place to compensate loss of income and welfare ▪ Pressure from rapid growth for energy demand forces the government to focus more on meeting energy needs of domestic market ▪ Lack of capability to drive a low carbon economy and to absorb and transfer efficient technology ▪ Uncertainty in climate prediction; mixed periodic climate variability and climate changes. Thus policymakers are not convinced of CC ▪ Lack of knowledge for climate modelling and prediction necessary for disaster management ▪ Inefficient implementation of technology transfer ▪ Lack of adaptation technology

Maldives

ISSUES	**BARRIERS**
▪ Whole country is vulnerable as >80% of land is one metre above sea level ▪ Extreme rainfall and storm surges	▪ Lack of financial resources and human capacity to address unfolding CC challenges

Nepal

ISSUES	**BARRIERS**
▪ 37% of population is indigenous whose lives are intertwined with biodiversity ▪ Food security is impacted due to dependency on land resources ▪ Health, livelihoods (agriculture/fisheries/livestock) are integrated with the climate	▪ Poor response by institutions due to limited capacity ▪ Science is seen as problematic when it does not indicate CC realities on the ground that people are faced with ▪ Poor policy-science interface due to inadequate scientific information that policymakers have.

Pakistan

ISSUES	BARRIERS
▪ Agricultural productivity will be seriously impacted when temperature increases and water availability for irrigation is decreased, thus leading to food insecurity ▪ Increased variability of monsoon ▪ Increased frequency and severity of extreme events such as floods and droughts	▪ Lack of financial and technical resources and expertise ▪ Lack of institutional capacity ▪ Lack of adequate, reliable data ▪ Socio-political constraints

Sri Lanka

ISSUES	BARRIERS
▪ Food insecurity with direct human development implications	▪ Unwillingness of stakeholders (government to farmers) to address mitigation ▪ National development does not address CC challenges ▪ Lack of resources especially for R&D for green growth

APPENDICES

Appendix 1: Individual Presentations

[All powerpoint presentation slides are available from: http://www.undprcc.lk/Our_Work/Human_Development.asp].

I. Asia-Pacific Human Development Report on Climate Change

(By Anuradha Rajivan, HDRU Regional Programme Coordinator, UNDP Asia-Pacific Regional Centre)

The presentation defined the Human Development Report (HDR) and highlighted the latter's emergence as the only UN report with backing from the UN General Assembly through a series of resolutions (latest 57/264 in 2003). The HDR's uniqueness was laid out in terms of its: credibility as a standalone publication for a wide external audience; potential for capacity-building and advocacy; and reliability as a tool to provide a forum for public policies and advocacy.

It was indicated that the HDRs are commissioned and facilitated by the UNDP inputs from leading scholars, development practitioners, advocates and members of the HDR teams within UNDP offices.

It was noted that the *East Asia Stakeholder Consultation* aimed to introduce the Asia-Pacific Human Development Report (APHDR) and to provide a platform for sharing experiences and brainstorming priority issues, barriers to change, solutions as well as better ways of measuring climate change effects on ordinary lives. The outcome is expected to enable the APHDR to identify and sharpen concerns in the subregion, paying particular attention to vulnerable groups and communities, thus, to enable the Report to reflect priorities and experiences for climate change and human development consistent with examining and measuring climate change from a human development angle. By building a critical mass of capacity and promoting buy-in, the Report, thus, will strengthen its policy advocacy potential. Good practices presented have the potential to serve as policy pointers.

The presentation included a technical section on the human development key dimensions (Sustainability, Equity, Empowerment, Efficiency, and Participation). It was also necessary to explain the 2-way relationship between human development and climate change and the birth process of climate change as a Regional HDR theme and that the Report will address climate change beyond geographical or environmental phenomenon.

Notwithstanding the need to balance political sensitivity and credibility, it was stressed that focusing the APHDR on climate change will require adopting a constructive and balanced approach throughout the process of selecting strategic areas that are transformative; presenting clear policy content; and contributing to something new/different. The presentation concluded by urging all to explore and contribute to what could be key messages that link up issues with human development, help issues to 'pop-out' and identify solutions to point the way forward.

II. Climate Change and Human Development: Some key issues for the Mongolia HDR 2010 (*By P.B. Anand, Principal International Consultant - NHDR, UNDP Mongolia)*

The National Human Development Report (NHDR) of Mongolia messages the complementary role of economic growth and environmental conservation in the human development equation. Hence, it is not a question of choosing one over the other as economic development, at the expense of the environment, stands to annul growth achievements in the long run. While in the short run, an increase in Gross Domestic Product (GDP) may boost Human Development Index (HDI), adverse effects of unchecked pollution may ultimately affect life expectancy.

Results of a survey of local governors demonstrated that more than 50% of the sample believed that environmental challenges and human development are highly relevant to *soum* and *aimag* (districts and territories, inhabited primarily by nomadic herders). Environmental challenges and human development nexus calls for the following: i) Putting people at the centre of discussions; ii) Using human development as an integrating framework; and iii) Deliberating processes to decide priorities and focus of the report.

Analyses of climate change models indicate prevailing trends of temperature variations, both winter and summer, and increased frequency of natural disasters. A rural-urban household survey

indicated that about 50% of rural and urban folks disagree that climate change is an issue about which only governments can do something.

The Mongolia HDR highlights these climate change policy challenges:

- Mitigation measures
  - Actions mainly needed by or affect urban households
- Adaptation measures
  - Actions mainly needed to protect vulnerability of rural households
- Cost of action
  - Who bear the costs?
  - What role for governments?

III. Climate change impacts and barriers to adaptation in Viet Nam *(By Koos Neefjes, Policy Adviser for Climate Change, UNDP Viet Nam)*

The Viet Nam's National Target Program on Responding to Climate Change (NTP-RCC) which encompasses all sectors puts forward plans and strategies, including: disaster risk management and preparation for Reducing Emissions from Deforestation and Forest Degradation (REDD); dyke building; relocation; and energy efficiency.

Viet Nam's development ambitions should remain high in the face of climate change vulnerability. Nevertheless, climate change negotiators are increasingly active in international climate change negotiations. The primary challenge is to strengthen the country's adaptive capacities of all sorts, which includes its research base and collaboration; and coordination with and between new institutions.

Fast rising energy demand and rapid urbanization along with rising climate change threats are some of the critical greenhouse gas mitigation challenges which Viet Nam is experiencing. While "efficiency" seems to be the "low-hanging fruit" for cutting GHG emissions, there is a need for international capital and technology transfer, and knowledge for emissions mitigation. With dedicated action, technology can give social benefits in a gender neutral way. Moreover, for Clean Development Mechanisms (CDMs) to be effective, supporting regulations must be in place. A good level of awareness is key.

It was highlighted that Viet Nam is '*particularly vulnerable to the adverse effects of climate change*', by UNFCCC definition. Sea level rise, enhanced saline water intrusion, drought, river floods, enhanced typhoons and storm surges, heavy rainfall and heat waves are examples of pressures that particularly affect the most vulnerable women, children and the elderly, ethnic minorities, migrants and poorer urban dwellers. Geographically, the deltas and coastal lowlands are affected, as well as the highlands, including both rural and urban areas. The sectors particularly sensitive are agriculture, transport, industry, education and health care are affected, and other sectors too.

Climate modelling data produce average changes over a range of scenarios, but they are not conclusive evidence enough to show that weather are become increasingly extreme. Weather extreme-related disasters are slow-onset that gradually accumulates stresses on lives and livelihoods. Thus, there is a need for information to show how much worse waves, floods, droughts, and storm surges can get, when will they occur and where? It was indicated that the overall objective of climate change adaptation should be to strengthen the resilience of people, regions and sectors, and enhance the ability of authorities and businesses to deliver services despite climate change stresses.

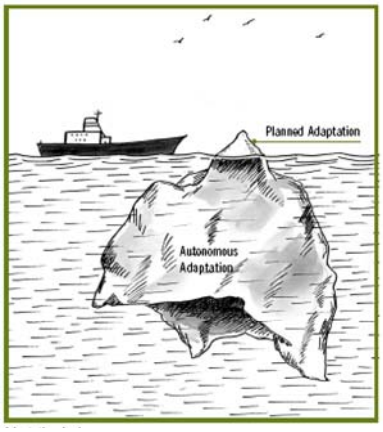
Some of the most pressing challenges, needs and barriers reveal the need for investment in R&D to support policymaking and adjustments including migration policies, and knowledge of migration advantages; training; infrastructure development including climate proofing; capacity-building and raising awareness.

IV. Exploring linkages: Climate change adaptation and human development *(By Ajaya Dixit, Expert, Institute for Social and Environmental Transition (INSET), Nepal)*

This presentation offered valuable insights into the science that forecasts the future climate variability of Nepal in terms of increase in temperature along with more erratic precipitation. It also warned that the latter scenarios must be interpreted and used cautiously due to complexities linked to highly varied topography over short distances. Moreover, there are weather station data limitations, namely, accessibility, station placement, lack of resources: finances and human, which would prevent understanding of precipitation distribution.

However, it was stressed that uncertainty does not imply absence of vulnerability and adaptation. The latter also means more than "coping". For example, in well adapted systems people, environment and other features "do well". The continued development and improvement in the quality of life should not lead to ill effects. Adaptation may be regarded as the ability to switch strategy. The presentation made a distinction between autonomous and planned adaption: see illustration below.

Adaptation iceberg



Source (NCVST, 2009)

Autonomous adaption:

Action that people/households/individuals take in response to stress including that due to climate change.

Planned adaptation:

a) Proactive identification of specific climate change impacts and taking carefully targeted actions (attribution).

b) Putting systemic mechanism in place to enable autonomous adaptation.

Some important elements which aid adaptation - Moench and Dixit (2004) - were indicated, such as (i)Access to and flow of information, goods, and services into and out of an area is a necessary condition to respond effectively to stresses; (ii)Social capital and the presence of multiple institutions providing support ; (iii) Diversification and access to alternative sources of livelihood help people respond to stress; (iv)Variety of income sources, not the level of income, seems to be an important condition; (v) Existing patterns of vulnerability (gender, income and social position); (vi) Degree to which roads, houses, and embankments are vulnerable to being disrupted by disaster; (vii) Extent to infrastructure maintain livelihoods by serving as a point of refuge, helping protect assets, and facilitating movement of goods, services and people; (viii)

Ability of households to obtain secure sources of water for domestic uses; and (ix) Degree to which ground and surface water systems are disrupted.

The presentation concluded by highlighting some critical elements of human development, that is, (i) climate science; (ii) shared knowledge and education; (iii) social and economic vulnerability; (iv) farming stress and food system; (v) alternative livelihoods; (vi) access and mobility; (vii) climate-resilient infrastructure; (viii) low negotiating capacity at global level; and (ix) adaptation fund.

V. Climate Change, Poverty, and Vulnerability in the Hindu Kush –Himalayan Region(*by Andreas Schild, Director General, and Brigitte Hoermann, Action Area Team Leader, International Centre for Integrated Mountain Development (ICIMOD))*

This presentation discussed three theses:

(i) Adaptation to climate change and vulnerability reduction in the mountains as closely linked to poverty reduction and MDGs;

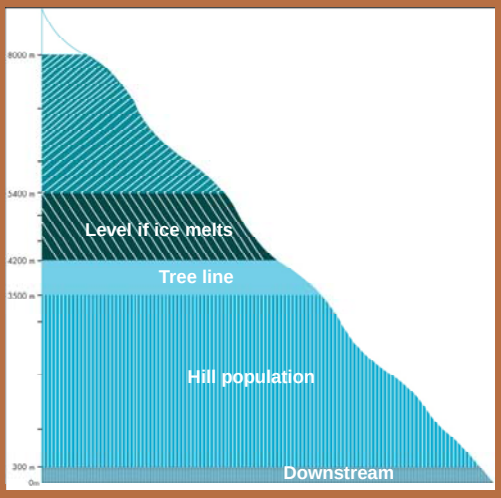
(ii) Reducing vulnerabilities in the mountains is part of a global strategy for sustainable development; and

(iii) Climate change creates not only increased vulnerabilities but also opportunities

For illustration and description of drivers of change and vulnerabilities using the position of the "tree line": see illustration below.

The Drivers of Change

ICIMOD
FOR MOUNTAINS AND PEOPLE



• *Above the tree line* climate change is a major driver
The affected**: Trans-himalayan traders, herders (Ethnic minorities).**

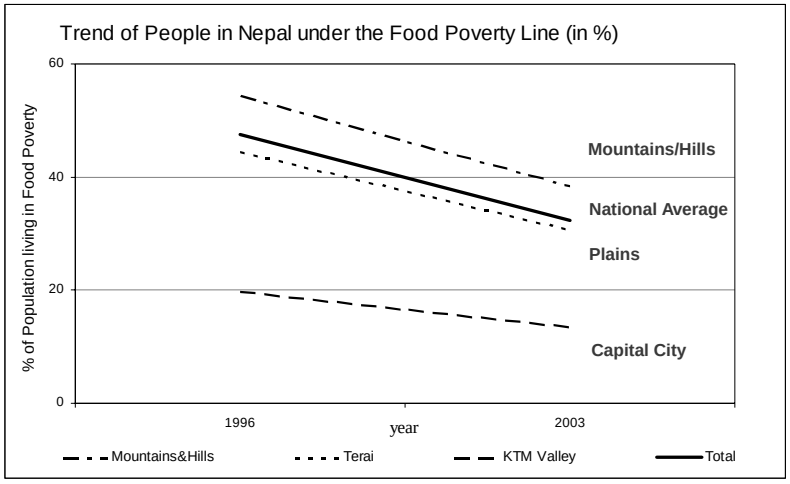
• *Below the tree line* the main drivers of change are Govern-ment interventions (infrastructure, •policies)
Globalization(Communication transport, urbanization, migration,
Climate change
Most Affected: minorities, women, poor people – basically the hill community

The Intergovernmental Panel on Climate Change (IPCC) and UN Framework Convention on Climate Change (UNFCCC) predict that the fragile mountain areas are particularly vulnerable to climate change effects. In South Asia, climate-related specificities of mountain vulnerabilities are linked to patterns change in temperature and precipitation; impact on snow and glaciers; and water availability from river systems. It was noted that climate stress induced by natural hazards aggravates poverty and inequality when it adversely impacts biodiversity, ecosystem services, agriculture, and food security, thereby, threatening traditional livelihoods.

The call for equity in the adaptation debate focused on higher poverty, lower reduction rate, pronounced climate change, constraint by mountain specificities, inequality and regional stability and security, and sustainable up- and downstream linkages. Below are some illustrations of food and non-food poverty trends in Nepal

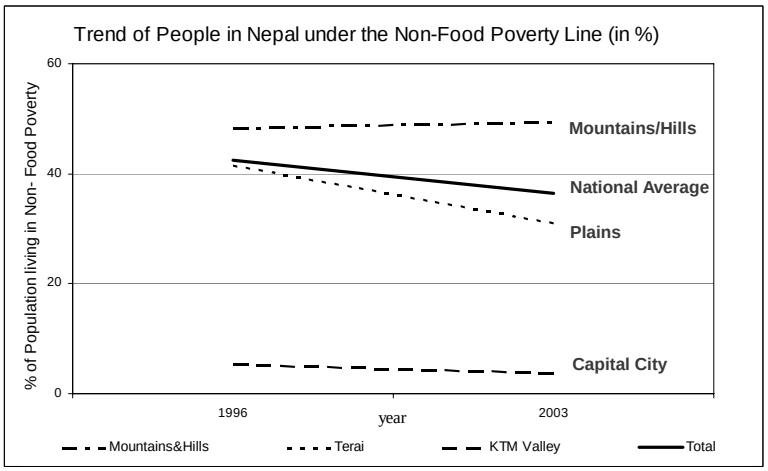
Food Poverty Trends according to Ecological Zones

ICIMOD
FOR MOUNTAINS AND PEOPLE



Non-Food Poverty Trends according to Ecological Zones

ICIMOD
FOR MOUNTAINS AND PEOPLE



The presentation concluded by emphasizing the need for action and that this requires understanding realities and intensifying poverty reduction and ensuring climate sensitivity for

sustainable upstream-downstream linkages. Climate change may create opportunities for mountain people at three levels: local, national, and global.

The way forward towards an equitable, secure and sustainable future for both up- and downstream people and transboundary linkages have shown that, among others, local knowledge and context play a key role in adaptation planning. Moreover, adaptation should be linked to poverty alleviation strategies while identifying common solutions and problems. Regional knowledge and debate forum serving regional policymakers and international development actors are good platforms for addressing specificity of mountain communities.

Appendix 2: Matrix to Apply the Human Development Lens to

Climate Change in Asia

CLIMATE CHANGE AND HUMAN DEVELOPMENT				
HD DIMENSION & ISSUE: SUSTAINABILITY - EQUITY – EMPOWERMENT-EFFICIENCY – PARTICIPATION (S-E-E-E-P)	CAUSES	CONSEQUENCES (THREATS)	INDICATORS / EVIDENCE	POLICIES/LAWS/ PROGRAMS/ (OPPORTUNITIES)
SUSTAINABILITY Survival: coastals; arid; mountains; Food security: agriculture and fisheries; biodiversity Fresh water: critical for life Sanitation: health risk Land: ownership differ; traditional rights Climate: variability; natural disasters	Rich population lifestyles; Persistent carbon-intensive technology use; sea level rise; sea water incursion into potable water; climate variability and climate change; population relocation is an issue when land is owned by people	Threatened coastals; land degradation; melting himalayas Loss of biodiversity Forced migration; fresh water; Impact on fisheries, food crops Health; where women and girls depend highly on natural resources for water and cooking, where they collect water– prolonged droughts affect them disproportionately; conflicts (in use of resources, & in resettlement) Increase in incidence and	Track relevant data (e.g., species decline); trends in natural resources availability and use; food and non-food poverty Document case studies; identify positive examples of success	Mitigation by developed countries Planned and autonomous adaptation Traditional knowledge and practices; consult widely among diverse groups on relocation issues to identify viable options; Identify data needs

		impact of natural disasters; Spread of water-borne and vector-borne diseases		
EQUITY Geography: urban- rural; transboundary Gender: differential impacts on males and females; differential access/control over land and other natural resources; differential access to political power, voice and decision-making Development level: differential coping capacities among the better and worse off	The poor and marginalized groups with smaller carbon footprint may be bearing the brunt of climate impacts Land ownership, traditional land rights threatened	Conflicts (in use of resources, & in resettlement); Declining safety nets Urban crowding, congestion, traffic, waste and pollution	Track relevant data; document case studies; identify positive examples of success	Financial compensation; technology transfer; boost voice of the disadvantaged; Use skills and knowledge of women as managers and users of natural resources; Bottom up approach Identify data needs
EMPOWERMENT Right to life and settlement: live in safety in place of choice; Right to safe mobility: free back and forth movement of people Right to culture: protection and practice Voice: in decisions that impact people's lives Traditions: value local traditions of adaptation	Powerlessness to negotiate with larger and developed nations; displacement; no control over influencing mitigation by developed countries; low capacities to adapt	Complete undermining of usual life; Restricted choices of livelihood; involuntary undermining of cultures; restrictions on cross-border mobility; undermined social fabric and culture	Track relevant data; document case studies; identify positive examples of success	Regulation (domestic and international) Resettlement – facilitate discussions to address complexities Document, encourage, support and disseminate traditions of adaptation Identify data needs
EFFICIENCY Labour: mobility Energy: security	Growth policies which are not linked to GHG emissions	Denial of job opportunities; compromised livelihoods Shortened life	Track relevant data Track trends in health and	Upgrade skills Policies for sustainable renewable energy;

Transport: mobility Tourism: revenues Traditions:efficient adaptation Urbanization: access to amenities/services; employment opportunities Global economy: countering downturn can compromise real action on mitigation and compensation by energy-intensive economies (developed countries)	Rural-urban migration	expectancy Conflicts (in use of resources, & in resettlement); urban congestion, traffic, waste and pollution; poor health	nutrition status; document case studies; identify positive examples of success	mobility, communications and transport Labour regulation (domestic &international); technology transfer; more focus on vulnerability Credible financing mechanisms; strengthen south-south cooperation
PARTICIPATION Governance: wider leadership Migrants/indigenous: excluded or under-represented Women and girls: marginalized International fora: aid or compensation; effectiveness, coordination and management	Political will Corruption through collusion between business and local elite for private gain Inadequate political voice for poor and marginalized	Marginalization of the disadvantaged Growing disaffection and potential for conflict (in use of resources, and in resettlement)	Document case studies	Review local laws; review strategies for governance and management of common property resources; build on cumulative experience; develop financing mechanisms and ways to enforce them Address regional cooperation Strengthen South-South cooperation

Appendix 3: Stakeholder Sharing Experience

One-Pagers

Climate Change: The Case of Cambodia

By Vathana Sann, Deputy Secretary-General, Council for Agriculture and Rural Development

The dialogue on climate change has not just emerged; it is one that has been around and would continue to be shaped by the current multiple crises that face society, especially the poor. Even though categorized as the less-exposed country to climate change, the main issue for Cambodia remains its vulnerability to natural disaster, given the unique hydrological regime and limited coverage of water control infrastructure. These phenomena are more pronounced in prolonged and frequent droughts and floods. Most rural households reply heavily on subsistence agriculture for their livelihood, with an estimate of 72%. The widespread to properties, livelihood, and public infrastructure will have a long-term impact on community livelihood.

The second issue is that climate change causes a seasonal and prolonged food insecurity resulting in the change of farming system and seasonal unemployment and underemployment, affecting human well-being.

The third issue is the more pronounced effects of climate change on the vulnerable groups, especially the chronic poor, resulting in negative coping strategy to shocks and crises. While affected by the burden of economic crises and idiosyncratic shocks, the vulnerability of the poor is aggravated by the adverse effects of climate change, thus building up and bringing about deeper impoverishment. The household property, agricultural inputs, and finally land, were mobilized as negative coping strategy.

Finally, the dilemma linked to barriers to change is not whether policies demonstrate willingness but that of adaptive capacity as actions:

1. The way that climate change is addressed around “Business as usual” at the policy level has yet to be well integrated and systematic in the context of current poverty profile.
2. As mentioned early, because everybody is at risk of climate Change but more pronounced for the poor and vulnerable, addressing to the issues must take an integrated approach. Using social protection strategy to address climate change through public work programme(s) and community awareness development is yet an issue to be taken into consideration. In fact, it is a crucial issue since adaptive capacity of Cambodia to climate change is relatively low.
3. The coordination among stakeholders towards a harmonized action (Act Now, Act Together, Act Different as stated in World Development Report) is met with willingness in Cambodia but it has to progress beyond the current situation. This can be achieved when climate change is no longer seen as a standalone field but a cross-cutting and cross-sector issue by stakeholders.
4. The coordination of dialogue and implementation of climate change adaptation intervention programme(s) (as an integral part to an overall social protection programme) is not only to

ensure policy cohesion among policymakers at national level but also to ensure the active participation from grass root levels to private sectors. Yet, the issue remains questionable. The scheme of new approaches such as REDD, CDM, or Payment for Ecosystem Service (PES) will encourage the participation of the two main latter stakeholders.

5. Financial resource, while expected to increase under adaptive intervention to climate change, will hit a dilemma when competing with poverty reduction objectives. In the context of social protection, pro-poor climate change expenditure has to be seen as an investment rather a burden.
6. Last but not least, information and knowledge exist at different levels and there is a need to collect and collate them. Cost-effective technological innovation along with demands from community need to be promoted.

Education for bringing about attitudinal change towards environmental concerns

By Dr. Jaishree Sharma, Professor of Chemistry, DESM, NCERT, India

In India, as early as 1937, serious attempts have been made to connect the school education with local environment. The roots of the present status of environment education can be traced back to the Indian Education Policy document of 1964. The National system of education is based on curriculum framework that is evolved depending on the needs and aspirations of the nation. In general, it consists a common core which includes values like protection of environment, egalitarism, removal of social barriers, development of scientific temper etc. The common core is deliberated by cutting across different subject areas.

Environment education is therefore a compulsory part of school syllabus throughout the country. The children therefore are well aware of their responsibilities and rights.

Studies show that what needs is to make all children take judicious steps in favour of environment. Though the present curriculum framework, attempts are being made to expose children to the real life natural and social situation where they are encouraged to critically evaluate, analyze and draw inferences about various environmental problems and issues, prior to taking any action. The environmental concerns are woven through the texts of difference subjects at appropriates places with ample opportunities of doing activities and projects.

The project books on Environment Education (EE) brought out by the National Council of Education Research and Training (NCERT) aims at bringing out the desired attitudinal changes among the children so that when they enter the world of work they think critically towards environmental issues and act accordingly. Children are encouraged to observe the various R's- Reduce, Reuse, Refuse, Recycle, Rethink etc so that they work for conservation of energy and material.

The Supreme Court of India has also intervened by directing to make EE compulsory for all stages of education, including Higher Education.

The NCERT through an annual event Jawaharlal Nehru Science Exhibition (JNNSEC), where at least one of the five sub-themes is on the environment, also provides a platform to children in the age group 13 to 17 where they exhibit various innovative methods and techniques.

Though many concerted efforts are being made to bring about the desired attitudinal changes among the children and there are many success stories also like, saying no to crackers, switching off the energy devices when not required; saying no to any wastages of material like food, paper, cloths; keeping the surrounding clean etc but still a lot has to be done before the environmental concerns become a way of lifestyle.

Mongolia National Human Development Report (NHDR) 2010

By P.B. Anand, Reader, Department of Development and Economic Studies, University of Bradford, UK;
Shoko Noda, Deputy Resident Representative, UNDP Mongolia;
Tsetsgee Puntsag, PREF II Project, UNDP Mongolia

For Mongolia, climate change is not an issue of concern about things in distant future but something that is already impacting livelihoods today.

Examples of issues:
1. Agriculture is the second biggest contributor to GDP. Within that, pastoralist livestock keeping is the key livelihood for more than a third of all households in Mongolia. Climate variability has increased vulnerability of herder households in the various ecological regions within Mongolia differently. For those in the southern region (around the Gobi), increasing summer temperatures are an issue while for those in the northern and central regions, increasing frequency of 'dzuds'or harsh winters are a major challenge. Introduction of private property rights and enormous increase in herd size by some of the large herders have weakened traditional pastoral land allocation mechanisms and in some aimags [districts], increasing pressure on land is contributing to degrading of pastures and forests.

2. More than one half of nation's population now lives in urban areas. Domestic heating, transport, industry and energy production activities are the principal users of energy and thus principal contributors of consequent greenhouse gas emissions. Some studies and popular perceptions point a finger of blame at the so called 'ger' districts in cities such as Ulanbaatar where more than 55 per cent of all households live. However, part of the problem lies in the fact that heating distribution systems from combined heating and power plants do not supply to residents in gerdistricts. As a result, such households end up using coal, firewood and even wastes collected from streets (plastics, tyres). A related issue is that of localized air pollution especially in winters and its potential impact on morbidity and mortality especially among the poorer households. Mitigation measures of climate change would require a serious evaluation of energy use patterns. Though technology can play a role in improving energy efficiency, there is a need for a host of other interventions also including creating appropriate

policies, developing appropriate incentive mechanisms, consumer education, creating a role for market or quasi-market mechanisms where this is appropriate, improving regulatory capacity of the state and connecting energy issues with climate change mitigation strategies.

Examples of barriers:
1. In Mongolia, scientific evidence is very clear. However, it can also lead to a certain sense of helplessness as climate change is seen to be something beyond control. There is a need to highlight the need for actions now and how these can still prevent or minimize lasting negative changes.

2. There is a tendency to consider climate change to be mainly affecting rural economy. There is a need to highlight the connection between climate change and all sections of society i.e. increasing food prices, increasing rural to urban migration and climate refugees, impoverishment of those who remain in countryside].

Climate Change: The Case of Myanmar

By Htun Paw Oo, Forestry and Environment Specialist, Post Nargis Recovery Programme,
UNDP Myanmar

Myanmar is endowed with one of the largest forest covers in the Asia and the Pacific region. The country's population was estimated to be about 57 million in 2009. About 75% of the country's total populations are rural and dependent greatly on goods and services from the forests to meet their basic requirements including food, fuel, fodder and timber.

To achieve sustainable forest management the Government of Myanmar formulated and adopted the Myanmar Forest Policy in 1995. The old Forest Act of 1902 was replaced by the new Forest Law in 1902, and enacted Protection of Wildlife and Wild Plant and Conservation of Natural Areas Law and related rules . The environmental policy was formulated in 1994 and followed by the formulation of "Myanmar Agenda 21" which underscores the strategic course guiding to promote and sustain the overall development in the country.

Considering the aforementioned national policies and legislations on forestry and environment as well as broad consultation with relevant stakeholders, seven environmental concerns were prioritized to evaluate the effectiveness of environmental management policies and protection measures within the last one and half decade. Priority of environmental concerns for the present Environment Performance Assessment (EPA) Report 2009 highlighted climate change among other priority concerrn areas such as (1) forest resource diminishing, (2) land degradation, (3) water resource and quality declining, (4) threat to biodiversity, (5) inadequate solid waste management, (6) climate change, and (7) impacts of mining industry on environment.

The Department of Meteorology and Hydrology (DMH) in only national meteorological agency which predicts that for general inferences climate change is taking place in Myanmar. Temperatures are warmer, southwest monsoon is advancing later and later and also withdrawal is becoming earlier and earlier, so duration of monsoon is shorter and shorter. However cyclone duration season becomes longer, frequencies are increasing and cyclones are becoming stronger and stronger also takes more abnormal tracks. Rainfall pattern also changes and there are heavier rain spells causing more risk of landslides and floods.

Myanmar's average temperature has increased at a rate of 0.1–0.3°C per decade and sea level rise has also noticed especially in Ayeyarwady Delta. The increasing frequency and intensity of extreme weather events such as heat waves, droughts, floods, and tropical cyclones in recent decades are also evidence that climate change is already affecting the country. Climate change is worsening water shortages; constraining agricultural production and threatening food security; and causing forest fires, coastal degradation, and greater health risks.

The government of Myanmar signed the United Nations Framework Convention on Climate Change (UNFCCC) on 11 June 1992 and ratified the convention on 25 November 1994. Myanmar is also a party to several international and regional conventions and agreements relating to the climate change and greenhouse gas (GHG) emission reduction. Myanmar is preparing its National Adaptation Plan of Action (NAPA) and the Second National Communication under the UNFCCC.

Myanmar ratified the Kyoto Protocol in 2003 as a non-Annex I party. Myanmar implemented a GHG emission inventory project, titled "Asia Least-cost Greenhouse Gas Abatement Strategy" during 1995 and 2007. The project assessed the GHG emissions in energy, forestry and land-use change, and agriculture sectors setting 1990 as a base year. Based on the data collected during the project, the projection of GHG emissions to 2020 was estimated. Moreover, formulation of a national least-cost GHG abatement strategy, a portfolio of least-cost GHG abatement projects, a national GHG action plan and recommendations and future actions on GHG emissions in Myanmar were also done during the project.
Myanmar has initiated to develop CDM since 2005 through awareness workshops and meetings. Designated National Authority (DNA) was established in 2006 in order to approve the proposed CDM projects at national level, to coordinate and facilitate implementing CDM projects in various sectors of Myanmar, to connect with international organizations for CDM project activities, and to provide information on CDM projects to related ministries, organizations and private sectors. DNA of Myanmar is led by Minister of Ministry of Forestry, the secretariat and joint secretariat, who are senior officials from the Forest Department, and is formed by 22 members representing 15 ministries. DNA is now preparing the procedures and to form the technical teams which are necessary to approve a proposed CDM project in Myanmar.

Recently, a National Workshop on Reduction from Deforestation and Forest Degradation (REDD) has been held on 7 April 2010 jointly organized with the Ministry of Forestry and UNDP Myanmar. Climate

change contributions of Myanmar would be encouraged and improved, and there are examples of issues and barriers related to climate change as follows:

Issues	Barriers
Climate change is only related to relevant agencies	Inadequate understanding and awareness on CC
Climate variability affects agriculture and rural livelihoods	Underestimating the consequences of CC
Lack of technologies such as climate science, vulnerability assessments, adaptation practices, mitigation technology, etc.	Policy focus on economic growth and short term benefit among policymakers

Past and Expected Future Climatic Changes over Pakistan

By Abdul Qadir Rafiq, Programme Specialist, Environment and Energy Unit, UNDP Pakistan

During the last century, average annual temperature over Pakistan increased by 0.6 °C, in agreement with the global trend, with the temperature increase over northern Pakistan being higher than over southern Pakistan (0.8 °C versus 0.5 °C). Precipitation over Pakistan also increased on the average by about 25 %.

Studies based on the ensemble outputs of several Global Circulation Models (GCMs) project that the average temperature over Pakistan will increase in the range 1.3-1.5 °C by2020s, 2.5-2.8 °C by 2050s, and 3.9-4.4 °C by 2080s, corresponding to an increase in average global surface temperature by 2.8-3.4 °C by the turn of the 21st century. Precipitation is projected to increase slightly in summer and decrease in winter with no significant change in annual precipitation. Furthermore, it is projected that climate change will increase the variability of monsoon rains and enhance the frequency and severity of extreme events such as floods and droughts.

Major Climate Change Related Concerns

The most important climate change potential threats to Pakistan are identified as:

- Increased variability of monsoon;
- Rapid recession of Hindu Kush-Karakoram-Himalayan (HKH) glaciers, threatening water inflows into the Indus River System (IRS); reduction in capacity of natural reservoirs due to glacier melt and rise in snow line;
- Increased risks of floods and droughts;
- Increased siltation of major dams resulting in greater loss of reservoir capacity;

- Severe water-stressed and heat-stressed conditions in arid and semi-arid regions, leading to reduced agriculture productivity and power generation;
- Increased upstream intrusion of saline water in the Indus delta, adversely affecting coastal agriculture, mangroves and breeding grounds of fish; and
- Threat to coastal areas including the city of Karachi due to sea level rise and increased cyclonic activity due to higher sea surface temperatures

The above threats lead to major concerns for Pakistan in terms of its Water Security, Food Security and Energy Security. Some other climate change-related concerns of Pakistan are identified as: Increase in deforestation; loss of biodiversity; increased health risks (heat strokes, pneumonia, malaria and other vector-borne diseases) and risks to other vulnerable ecosystems (e.g. rangelands, degraded lands, mountainous areas etc.).

Mitigation

Pakistan is a small GHG emitter and, like other developing countries, its emissions are bound to increase considerably as the country climbs over the development ladder and strives to provide adequate amount of energy to support its growing socio-economic developmental needs. Still, as a responsible member of the international community, Pakistan would like to contribute to the global GHG mitigation efforts without compromising on its basic minimum energy and food needs consistent with its socio-economic developmental requirements, energy security considerations, and financial and technological constraints.

Energy

Energy efficiency improvement at all levels in the energy system chain; energy conservation measures and use of energy-efficient devices; rapid development of hydropower resources; large scale use of various renewable energy technologies; expansion of nuclear power programme; acquisition and adoption of clean coal technologies such as Coal Bed Methane Capture (CBMC), Integrated coal Gasification Combined Cycle power generation (IGCC), and CO2 Capture and Storage (CCS); development of mass transit systems in large cities; and greater use of CNG as fuel for urban transportation.

Agriculture and Livestock

Development and adoption of (i) new methods of rice cultivation that have lower methane emissions, (ii) new methods for reducing nitrous oxide releases from agricultural soils, (iii) new breeds of cattle which are more productive in terms of milk and meat but have lower methane production from enteric fermentation, and (iv) new economical feeds that reduce methane production activity of cattle besides providing them with better nutrition.

Forestry

Promotion of afforestation and reforestation activities to the maximum possible extent.

Adaptation

Water Resources

Addition of sufficient reservoir capacity on IRS rivers so that even during high flood years no water flows down Kotri in excess of what is necessary for environmental reasons; local rain harvesting and building of surface and sub-surface storages for agriculture and other local needs; adoption of stringent demand management and efficiency improvement measures in all water-use sectors, particularly in the supply, distribution and use of irrigation water; reuse of marginal quality irrigation effluent.

Agriculture and Livestock

Development of new breeds of crops of high yield, high resistance to heat stress, drought tolerant, less vulnerable to heavy spells of rain, and less prone to insects and pests; improvement of crop productivity per unit of land and per unit of water by increasing the efficiency of various agricultural inputs, in particular the input of irrigation water; improvement of farm practices by adopting modern techniques such as laser land leveling, crop diversification, proper cropping patterns, optimized planting dates etc; development and introduction of better varieties of livestock which would have higher productivity of milk and are less prone to heat stress and more drought tolerant.

Coastal Areas and Indus Deltaic Region

Provision of regulated flows down Kotri to conform to minimum necessary environmental flows; restoration and protection of mangroves; construction of proper engineering structures (like dikes and seawalls) to protect beaches and other facilities along the coast; development of capacity to deal with natural disasters such as cyclones, floods, etc.

Forests and Other Vulnerable Ecosystems

Aggressive afforestation and reforestation programmes with plantation suited to the looming climate change; biological control of forest pests by maintaining viable populations of predatory birds and insects through restricted use of chemical insecticide; preservation of rangelands through proper rangeland management; increase of grasslands using appropriate varieties of grass in saline and waterlogged zones to prevent their degradation; assisting genetically impoverished species or those that have important ecosystem functions by providing natural migration corridors as well as assisted migration; use of gene banks, seed banks, zoos and botanical gardens for preserving genetic diversity and conserving species out of their natural environment.

Source: Final Report from the Task Force on Climate Change, Planning Commission, Government of Pakistan, February 2010.

Climate Change: A Major Cause of Concern for Pakistan

By Arshad M. Khan, Global Change Impact Studies Centre, Islamabad, Pakistan

Pakistan is extremely vulnerable to the adverse impacts of climate change because of its location in a highly climate-sensitive world region. Its economy being primarily agrarian is prone to vagaries of weather and changing climate. Of the many climate change-related concerns that Pakistan faces today, the two most serious concerns are the threats to its Water Security and Food Security.

Water Security: Pakistan is a water-stressed country heading, under population pressure, to become a water-scarce country (with per capita availability less than 1000 m^3/y) by 2035. The country's primary sources of water are rainfall brought down by monsoon and westerly winds (averaging about 60 billion m^3/y), and river inflows in the Indus River System (IRS) (averaging about 175 billion m^3/y) fed largely by glacier and snow melt from the Hindukush-Karakoram-Himalayas (HKH) mountain ranges. The climate change is threatening the water security of Pakistan through impacts such as (i) rapid melting of the HKH glaciers, resulting in the loss of Natural Reservoirs (ii) increased variability of river flows due to increase in the variability of monsoon and winter rains, coupled with the loss of natural reservoirs in the form of glaciers, (iii) increased frequency and severity of extreme events such as floods, droughts, cyclones etc., (iv) increase in sediment flow due to increased incidences of high intensity rains resulting in more rapid loss of reservoir capacity, etc., which hardly corresponds to about 30 days of average river flows, and (v) increased demand of irrigation water due to higher evaporation rates and of environmental flows in the deltaic region to prevent excessive intrusion of saline water due to sea level rise. The main barriers to the Adaptation effort to counter these challenges are: (a) non-availability of adequate, reliable data (b) lack of technical expertise to monitor glacial changes and project future patterns of monsoon and climatic changes in the KHK region and their impacts, (c) lack of financial resources, coupled with socio-political constraints preventing rapid development of additional reservoir capacity, and (d) lack of technical know-how and financial resources to improve the efficiency of water supply, distribution and use in various sectors, particularly agriculture.

Food Security: Agriculture and Livestock subsectors together contribute about 22% to the national GDP (about 11% by each). The agriculture system in Pakistan is mainly irrigated- to the extent of 88% of the cultivated area Climate change is likely to result in reduced crop productivity due to heat stress, as the temperatures in most regions are already above optimum, as well as due to water stress, since higher evapotranspiration at elevated temperature would require more irrigation water, which will be difficult to supply. Coupled with this will be the higher production losses due to more frequent and intense floods and droughts and more incidences of pests and insects. The Climate change will also affect the productivity of livestock due to heat stress and degradation of rangelands. At present the major constraints to avoiding these adverse impacts are inability to increase the supply of irrigation water (as discussed above) and absence of regulations to preserve rangelands.

Mainstreaming Climate Change Mitigation and Adaptation in the Development Agenda: Key Policy Issues in the Philippine Context

By Arsenio M. Balisacan, Professor of Economics, School of Economics, University of Philippines

For the Philippines (as well as most other developing countries), responding to the challenge of climate change is complicated by the fact that the country is faced with serious pre-existing development problems, particularly persistently high poverty and a widely degraded natural and man-made resource base. Viewed from the development experiences of the country's neighbours, these problems have their roots in policy and governance failures to create productive employment opportunities and sustained income growth for the rapidly burgeoning population. Fiscal resources to fix these problems are extremely limited, even assuming that the country can raise its low tax effort to the norms of its neighbours. And so are the resources needed to address the challenges of climate change. Hence, the potential for "crowding out" is real; i.e., climate change mitigation and adaptation efforts would compete for resources that otherwise would be used to directly address the problems of widespread poverty (e.g., health, education, and infrastructure) and anemic economic growth.

One way of reducing this risk is perhaps to (initially) focus the country's climate change response to adaptation measures, particularly to vulnerable groups in society, rather than mitigation measures. This implies that the country's response to climate change has to be anchored on the societal goals of winning the war on poverty and achieving sustained economic growth and development. Operationally, this will involve bringing in climate change adaptation strategies within the development agenda for poverty reduction and sustained economic growth. Adaptation measures will then be seen in terms of their efficiency (cost-effectiveness) in contributing to these goals.

There is a need to answer questions like, how is climate change exacerbating the poverty situation in the Philippines due to previous policy failures to address poverty and food insecurity? Given the fiscal bind, what policy interventions can be put in place to make the country more agile in confronting the challenges of climate change, while ensuring that such interventions do not crowd out resources intended for meeting poverty reduction and food security goals? Such information is needed to assess the potentials for coping with more drastic climate change and the prudent investments necessary to make the adaptation strategies a success.

Recognizing that there is no one-size-fits-all solution, it is imperative that the development stakeholders – the government, the private sector, and the science community – need to work together to: (i) identify, develop, and support appropriate, location-specific adaptation practices and technologies, including those currently used by farmers, fisher folk, and other stakeholders, and focus efforts and resources on refining such practices for more scaled up applications; (ii) formulate policies and instruments that would enable a more effective public-private sector partnership in managing risks resulting from climate variability; (iii) owing to the archipelagic nature of the Philippines, give commensurate attention to climate change adaptation measures relating to the marine environment

and resources; (iv) expand and deepen public awareness of factual climate change issues and solutions; and (v) develop decision tools and simulation models that would provide quantitative assessments of the effects, consequences, and sustainability of policy and investment options on climate change adaptation.

Effects on climate change and its variability on agricultural productivity and rural livelihoods of Sri Lanka: Issues and barriers

By B.V.R. Punyawardena, Research Officer (Climatology), Natural Resource Management Center,
Department of Agriculture, Sri Lanka;
A.Mallawatantri, Assistant Resident Representative, UNDP Sri Lanka

In spite of the recent technological advances on plant breeding, irrigation, plant protection and fertilization, climate and its variability is a critical factor in the agricultural productivity of the Island Nation of Sri Lanka in South Asia. Historically the farming systems and agronomic practices in different agro-ecological regions of the country have evolved in harmony with the climatic regime of respective regions. However, it has been evident in recent years that the heritage of farming experiences and accumulated weather lore of centuries are no longer the main driver in the process of agricultural planning, primarily due to climate change. Climate regime of the island has changed to an extent that no longer the correct amount of rainfall nor the times of rain help conditions for an optimal growing season, as in the past. Meanwhile the ambient temperature also shows a rising trend with a web of negative impacts and new challenges on the agricultural sector.

Sri Lankan economy and quality of life of rural poor is highly dependent on quality and quantity of agricultural outputs. Furthermore the Country is susceptible to droughts, floods, landslides and cyclones with poor as the most affected. Hence, unless addressed in a holistic manner the change and variability of climate has a great potential to inflict a severe strain on rural livelihoods primarily due to reduction of quality and quantity of crop yields and reduced quality of life due to increased natural disasters.

Major issues of change and variability in climate with respect to agriculture & livelihood in Sri Lanka can be summarized as: **Reduction of crops yield due to increased variability of rainfall resulting** a) Soil moisture stress on rain fed upland crops; b) Inadequate irrigation water at crucial times; c) Flood damages to crops grown in flood plains; d) Excess soil moisture for upland crops at certain times; d) Increased post-harvest losses due to abnormal rains; e) Increased soil erosion and sedimentation of downstream reservoirs; and f) Increased pest and disease infestations. **Reduction of crop yields due to increasing ambient temperature resulting** a) Reduced food reserves in crops due to reduced photosynthesis and increased respiration rates; b) Desiccation of pollens; c) Spikelet sterility in grain crops, especially in rice; d) Reduced bulking of tuber crops especially in potatoes; e) Increased soil moisture stress due to high evapotranspiration; f) Reduced availability of irrigation water due to rapid drying up of irrigation tanks; and g) Increased pest damages. S**oil fertility reduction as a result of** a) Land

degradation due to salinization; b) Rapid decomposition of organic matter; and c) Less microbial activity. **Possible impacts due to sea level rise causing** a) Contamination of both surface and ground sources by brackish water; b) Salinity and Sodicity in coastal agricultural lands; and c) Alternative uses of agricultural lands.

Barriers for addressing the vulnerability due to change and variability of climate includes a) Inadequate targeted awareness at different levels including policymakers, planners, farmers and extension officers; b) Unwillingness or slow response of farmers for unseen circumstances; c) Lack of readiness of policy makers and planners to adapt climate change concern into key development sectors; d) Inadequate trained human resources on the subject in all areas including science, economics, sociology, engineering etc; e) Lack of developed financial mechanisms and resources for research, insurance systems and investment on adaptation; f) Poor prediction capabilities related to climate change and g) Weak coordination mechanisms to promote data sharing and research on adaptation.

Climate change impacts and barriers to adaptation in Viet Nam

By Koos Neefjes, Policy Advisor Climate Change, UNDP Viet Nam

Viet Nam is '*particularly vulnerable to the adverse effects of climate change*', as per the UNFCCC. Sea level rise, enhanced saline water intrusion, drought, river floods, enhanced typhoons and storm surges, heavy rainfall and heat waves are pressures that particularly affect the most vulnerable women, children and the elderly, ethnic minorities, migrants and poorer urban dwellers. The deltas and coastal lowlands are affected, as well as the highlands, including both rural and urban areas; agriculture, transport, industry, education and health care are affected, and other sectors too. But Viet Nam is not as vulnerable as other countries, because it has adaptive capacities of all sorts. The primary challenge for the country is to improve those further, which will require domestic efforts and international capital, knowledge and technology transfers, so that climate change adaptation actions can in fact become development opportunities.

Climate modelling data produce average changes over a range of scenarios, but are not conclusive on how weather *extremes* are becoming more extreme. Weather extremes are causing disasters and also slow-onset or gradually accumulating stresses on lives and livelihoods. There will be more heat waves, floods, droughts, and storm surges; but how much worse, when and where? The overall objective of climate change adaptation should be to strengthen the resilience of men, women, children, communities, regions and sectors, and enhance the ability of authorities and businesses to deliver services in the face of climate change stresses.

Some of the most pressing challenges, needs and barriers include the following:

1. Financial needs are enormous, including domestic and international finance, public and private, e.g., infrastructure, capacity-building, research and awareness raising.

2. Financing mechanisms to receive international finance, generate domestic investment capital, and channel it to sectors and localities, researchers and businesses, etc., must be developed, which requires major capacity-building efforts.
3. Capacities for climate proofed spatial planning (across existing administrative boundaries) should increase drastically, of e.g. river basins, coastal areas, and urban corridors, to ensure that climate change adaptation is considered thoroughly, especially to avoid future costs.
4. Adaptation infrastructure investments must be made, especially 'no-regret' investments that are beneficial independent of the seriousness of climate change, in climate proofing of existing and new infrastructure and special structures are also needed.
5. Major investment in agriculture R&D, extension, and infrastructure are needed to protect livelihoods, increase productivity, and maintain national food security and export earnings.
6. Forest conservation and expansion are becoming possible with the promises of additional finance from REDD and thus the potential to increase the resilience of livelihoods and protection of communities (upland forests and plantations, coastal mangrove belts).
7. Migration and resettlement in support of livelihood resilience must be enabled to maintain and improve resilience of people and services in both sending and receiving communities. This requires study of migration advantages, policy adjustments and investments.
8. Awareness and behaviour change are needed in terms of plans and actions to minimize risks now and in the longer term future and ensure public support for drastic actions.
9. Strengthened community-based disaster risk reduction systems and behaviours scaled up across the country require major financial, logistical and managerial efforts.
10. Climate change mainstreaming in social services, for example to ensure continuity of health care provision and education during disasters will require major investment, training, etc.
11. Research and knowledge generation is critical for support policymaking, awareness raising, climate change prediction, and e.g. the design of infrastructure investments.

ANNEXES

Annex A

CONCEPT NOTE

ASIA-PACIFIC HUMAN DEVELOPMENT REPORT ON CLIMATE CHANGE
EAST ASIA STAKEHOLDER CONSULTATION

Bangkok, Thailand, 26th- 27th April, 2010

1. THE ASIA-PACIFIC HUMAN DEVELOPMENT REPORTS

The Asia-Pacific Regional Human Development Report (RHDR) on **Climate Change** will be the fourth in a regular series, led by the Human Development Report Unit, housed at the UNDP Regional Centre in Colombo.[2] The first RHDR in this series was the 2006 Report titled *Trade on Human Terms: Transforming Trade for Human Development in Asia and the Pacific* which was followed by the one on corruption, *Tackling Corruption, Transforming Lives: Accelerating Human Development for Asia and the Pacific* and the newly launched *Power, Voice and Rights: A Turning Point for Gender Equality in Asia and the Pacific*.

HDRs are policy-advocacy tools to explore critical development issues from a human development perspective. There is a fundamental difference between a technical analysis of an issue versus an exploration from a human development lens, which is an important element of the value added of

[2] For greater details on the process of the Asia Pacific Human Development Report series, please see the attached HDRU note on the subject

an HDR.[3] HDRs aim to provide policy options by bringing *people to the centre of development concerns* for poverty reduction, countering inequalities, promoting internationally accepted development goals and, ultimately, promoting human development.

2. CLIMATE CHANGE: BEYOND LIVING DANGEROUSLY

The Asia-Pacific region has changed immeasurably in the space of a generation. During the mid to late 1970s average per capita incomes were low, literacy rates were low, and average life expectancy was little over 50 years. Over the past quarter of a century consistent high growth rates have helped to roll back poverty in many countries, significantly expand the middle class, improve social mobility, and cultivate the aspirations of hundreds of millions for a better life. This 'better life' for most means greater opportunities for education of their children, but equally for greater access to the spoils of the global economy. In short, the expanding Asia-Pacific middle class aspires to consume more, and their leaders would like them to do just that.

With failing export markets today, Asian economies are taking steps to encourage greater domestic consumption. For example, in China, rural residents are being provided with incentives to spend more, such as subsidies for buying cars, computers, mobile phones and kitchen appliances. The main driver of this initiative may be the financial crisis itself – the need to shift the balance of growth from exports to domestic spending. But the underlying premise is that sustained and increasing consumption is the only way to maintain the viability of the current social contract, based on a promise of future prosperity.

Yet there is increasing realization among leaders across Asia and the Pacific that the very substantial welfare gains that have been made possible thus far are based on a growth model that is fundamentally unsustainable. This realization is nothing new. The environmental movement has its roots in the energy crisis of the late 1970s and the subsequent limits to growth debate, culminating in the Brundtland Commission report – Our Common Future (1987). More than a decade ago, UNDP coined the term 'sustainable human development' and began to re-orient its programmes accordingly - with the strong support of its Executive Board.

[3] For details, see APRI 2005. "*From Development to Human Development: Tool for Examining Themes from a Human Development Perspective*."

However it was not until the 2005 Stern Review on the Economics of Climate Change that the issue of global climate change has truly graduated into the mainstream. With this review came the realization that a new development paradigm must now be forged – on the basis of human ingenuity, new sources of financing and investment, as well as unprecedented levels of international cooperation. But despite all the evidence of global climate change and the call for a de-coupling of growth from environmental degradation, there is still very little clarity or agreement on how this new paradigm should be constructed – in simple terms 'what is the alternative?'

East Asia will face the brunt of climate change impacts. All too frequent occurrence of cyclones and hurricanes have claimed thousands of lives especially in cities where people are concentrated. An example is the 2008 Myanmar cyclone that left 80,000 dead and many missing, millions homeless and food production severely affected. East Asia also faces complex air environment interlinkages of pollution, smog, and haze. The most visible impact is the Asian Brown Cloud which causes major impact on health and induces chronic weather conditions, such as the China northern drought and southern flooding. East Asian nations are increasingly focusing on multilateral finance for technology transfer and development as a cornerstone to any agreement. In a region that has significant opportunities in space and resources, how do governments develop a modern vision that encompasses sustainable mobility and deep change in consumption patterns and lifestyles of (aspiring) middle class society?

The 2010 APHDR on Climate Change seeks to bring a unique perspective to this debate by providing new and innovative Asia-Pacific thinking on some of the key ingredients of what a more sustainable pathway might be.

By looking at a number of distinct groups of people across the region already being affected by climate change, but who also have high aspirations and are 'on the move' socio-economically, the APHDR will seek to identify policy levers that can be used to begin to encourage a broad scale shift in mindset – towards a new development paradigm for Asia-Pacific.

3. OBJECTIVES OF THE CONSULTATIONS

The East Asia consultation will take place in Bangkok, Thailand on April 26th-27th and will primarily focus on a cross section of governments and intergovernmental organizations, civil society, academia and think tanks, and media institutions based in the respective sub-region. Given the resource and time constraints involved in physical consultations, current and additional stakeholders are encouraged to continue to provide inputs through the Asia-Pacific Human Development Network (AP-HD net :http://www2.undprcc.lk/ext/HDRU/index.php). The AP-HD net will be hosting an extensive online discussion on the sub-themes and issues which the Report will speak to, as the research develops. The East Asia stakeholder consultations aim to:

- Introduce East Asian stakeholders to the Asia-Pacific HDR history, concept, process and the proposed approach for the theme of 'climate change' for this Report, namely the identification and focus on vulnerable groups and communities.
- Discuss an 'East Asian perspective' for understanding climate change, its myths and realities, causes and consequences, and opportunities.
- Take stock of stakeholder perceptions and priorities in identifying and sharpening sub- themes that are cognizant of the concerns in East Asia.
- Discuss ways in which climate change is presently being examined and measured and consider alternative indicators as proxy measures that focus more sharply on human development.
- Extrapolate national and regional policy implications from vulnerability analysis, paying attention to climate change mitigation and adaptation linkages.
- Share an overall view of climate change state of play, key issues and evolving debates and challenges in East Asia, taking into account post Copenhagen outcome and implications.
- Provide a platform for stakeholders to share experiences and good practices, highlight priorities and solutions that affect people's lives.
- Support capacity development by working with stakeholders to apply the human development lens to climate change issues and solutions.
- Tap into East Asian thinking in addressing possible politically controversial aspects of the work.
- Promote buy-in for the APHDR and thus strengthen its policy advocacy potential.

4. EXPECTED OUTCOMES OF THE CONSULTATION

- Identify East Asian perspectives and priorities on climate change and human development and how the East Asian experience can be best reflected in the Report

- Advance the ongoing discussions for the Report taking into account the following suggested outline which has been developed following recent brainstorming sessions:

1. **A vision of human development through a low carbon climate-resilient (LCCR) society**
2. **Mapping and measuring human development from a climate change perspective in East Asia**
3. **People at the centre: vulnerabilities and opportunities in East Asia**
4. **Making the LCCR society a reality: going beyond the adaptation-mitigation dichotomy**

- Sharpen the indicative directions for the APHDR on Climate Change.

Annex B

CONCEPT NOTE

ASIA-PACIFIC HUMAN DEVELOPMENT REPORT ON CLIMATE CHANGE SOUTH ASIA STAKEHOLDER CONSULTATIONS

Kathmandu, Nepal, 29th-30th April, 2010

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With failing export markets today, Asian economies are taking steps to encourage greater domestic consumption. For example, in China, rural residents are being provided with incentives to spend more, such as subsidies for buying cars, computers, mobile phones and kitchen appliances. The main driver of this initiative may be the financial crisis itself – the need to shift the balance of growth from exports to domestic spending. But the underlying premise is that sustained and increasing consumption is the only way to maintain the viability of the current social contract, based on a promise of future prosperity.

Yet there is increasing realization among leaders across Asia and the Pacific that the very substantial welfare gains that have been made possible thus far are based on a growth model that is fundamentally unsustainable. This realization is nothing new. The environmental movement has its roots in the energy crisis of the late 1970s and the subsequent limits to growth debate, culminating in the Brundtland Commission report – Our Common Future (1987). More than a decade ago, UNDP coined the term 'sustainable human development' and began to re-orient its programmes accordingly - with the strong support of its Executive Board.

However it was not until the 2005 Stern Review on the Economics of Climate Change that the issue of global climate change has truly graduated into the mainstream. With this review came the

realization that a new development paradigm must now be forged – on the basis of human ingenuity, new sources of financing and investment, as well as unprecedented levels of international cooperation. But despite all the evidence of global climate change and the call for a de-coupling of growth from environmental degradation, there is still very little clarity or agreement on how this new paradigm should be constructed – in simple terms 'what is the alternative?'

South Asian countries, particularly the poorest people, are most at risk of Climate Change. The impacts of higher temperatures, more variable precipitation, more extreme weather events, and sea level rise are felt In South Asia and will continue to intensify. These changes are already having major impacts on the economic performance of South Asian countries – agriculture and fisheries, in particular - and on the lives and livelihoods of millions of poor people. Climate change will compound the pressures on natural resources and the environment due to rapid urbanization, industrialization, and economic development. Crop yields could decrease up to 30 per cent in South Asia by the mid-21st century. Some of the future impacts include, Himalayas glacier melting which increases flooding and affects water resources, rise in mortality due to diarrhea primarily associated with floods and droughts and sea level rise which will exacerbate inundation, storm surge, erosion and other coastal hazards.

The 2010 APHDR on Climate Change seeks to bring a unique perspective to this debate by providing new and innovative Asia-Pacific thinking on some of the key ingredients of what a more sustainable pathway might be.

By looking at a number of distinct groups of people across the region already being affected by climate change, but who also have high aspirations and are 'on the move' socio-economically, the APHDR will seek to identify policy levers that can be used to begin to encourage a broad scale shift in mindset – towards a new development paradigm for Asia-Pacific.

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- Introduce South Asian stakeholders to the Asia-Pacific HDR history, concept, process and the proposed approach for the theme of 'climate change' for this Report, namely the identification and focus on vulnerable groups and communities.
- Debrief on 'East Asian' Consultation.
- Discuss a 'South Asian perspective' for understanding climate change, its myths and realities, causes and consequences, and opportunities.
- Take stock of stakeholder perceptions and priorities in identifying and sharpening sub-themes that are cognizant of the concerns in South Asia.
- Discuss ways in which climate change is presently being examined and measured and consider alternative indicators as proxy measures that focus more sharply on human development.
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- Sharpen the indicative directions for the APHDR on Climate Change.

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Resources and Suggested Readings

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- The Bali Action Plan *[http://unfccc.int/resource/docs/2007/cop13/eng/06a01.pdf]*
- The Convention on Biological Diversity *[http://www.cbd.int/doc/legal/cbd-un-en.pdf]*
- Madrid Conference Statement and Action Plan [http://www.wmo.int/pages/themes/weather/documents/Madrid_Statement_ActionPlan.doc]
- Ministerial declaration of the 2007 high-level segment of ECOSOC *(2007)* [http://www.un.org/ecosoc/docs/pdfs/Revised_Ministerial_declaration.pdf]
- Multilateral Environment Agreements [http://www.unep.org/science/secretariat/index.asp]
- United Nations Convention to Combat Desertification
- The Anchorage Declaration http://www.indigenoussummit.com/servlet/content/declaration.html
- Manado Ocean Declaration http://www.gc.noaa.gov/documents/051409-manado_ocean_declaration.pdf
- Port of Spain CC Consensus: The Commonwealth Climate Change Declaration http://www.chogm2009.org/home/node/210

Annex B

East Asia Stakeholder Consultation for the AP HDR on Climate Change 26-27 April, 2010, Bangkok, Thailand						
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Annex C

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Annex E

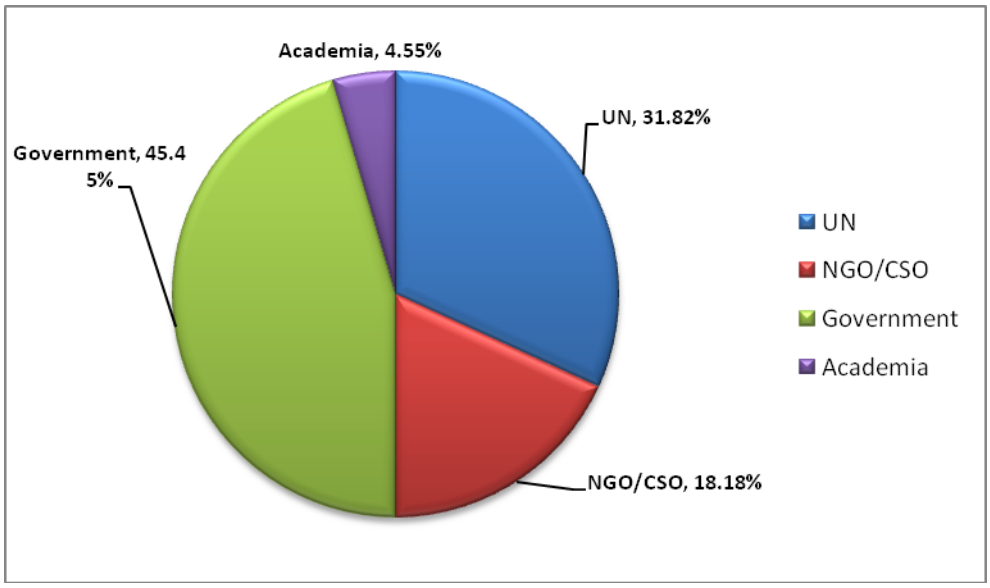
Analysis of Participant Evaluation

East Asia stakeholder consultation

The Human Development Report Unit (HDRU), UNDP Asia-Pacific Regional Centre, Colombo office, conducted the East Asia stakeholder consultation during April 2010 as part of its ongoing work on APHDR on Climate Change. The objectives of the stakeholder consultations were two-fold: to be informed by views, experiences and priorities of countries in the region, while strengthening cross-country networks, and to obtain buy-in for the RHDR from stakeholders.

22 participants from different type of organizations participated in the consultation. Figure 1 shows the participation of different organization in the consultation.

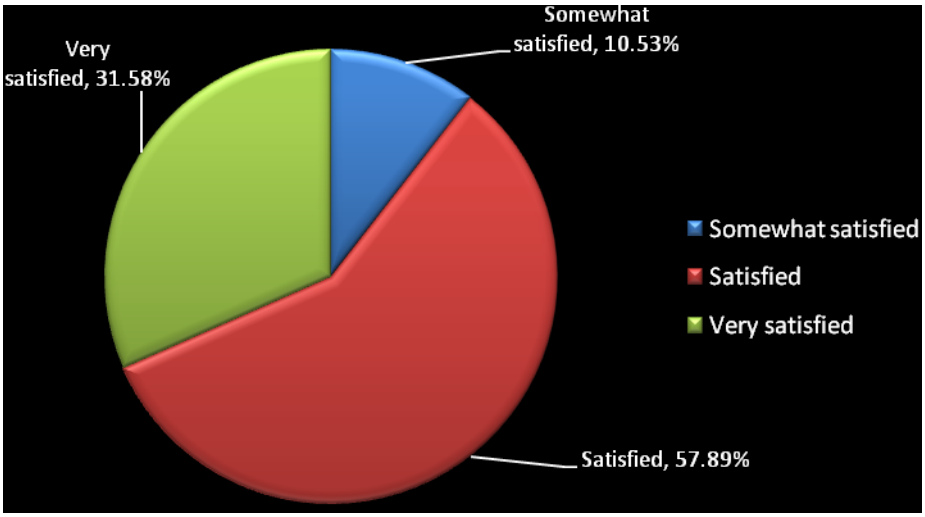
Figure 1: Type of organization (%)



In order to assess whether the participants were satisfied in the consultation and to get their suggestions aimed at improving future consultations, the HDRU circulated a simple questionnaire to all the in-session participants. Feedbacks obtained from these participants are summarized below.

- 19 participants submitted the feedback forms. Among them 08 representatives were from UN agencies, 02 from NGO/CSO, 08 government representatives and 01 from academia (Table 1).
- Among the participants, 57.89 per cent were satisfied about the consultation, 31.58 per cent were very satisfied and 10.53 per cent (2 participants) were somewhat satisfied. (Table 2, Figure 2). One participant in the 'somewhat satisfied' group suggested future participation from key countries/sub regional bodies and the other participant in the same group indicated that the discussions held were still at preliminary stage. No respondent has ticked 'not at all satisfied' category.

Figure 2: Level of satisfaction (%)



- All the respondents stated that discussions and presentations were informative or very informative. Over 89 per cent of the respondents stated that the discussions and presentations were participatory or very participatory while the rest (10.53 per cent) reported that they were somewhat participatory (Table 3a and table 3b).

- Above 94 per cent of the respondents were able or very able to get their views across in the group while 5.26 per cent of respondents were somewhat able.

- *People at the centre: Vulnerabilities and opportunities in the East Asia* came out as the most important issue related to climate change. 37.50 per cent responses endorsed this issue. The second highest responses were for *a vision of Human Development through a low carbon society* and 28.13 per cent responses towards that point. Some respondents also voted for *Making the low carbon society a reality: going beyond the adaptation-mitigation dichotomy* (21.88 per cent of responses) and for *mapping and measuring human development from a climate change perspective in the East Asia (9.38 per cent of responses)* (Table 5).

- 29.73 per cent responses favoured participating in network discussions for the RHDR. 27.03 per cent of responses favoured providing case studies, 13.51 per cent would prefer to share their experience, another 13.51 per cent responses have preference for research contribution and an additional 13.51 per cent responses were in favour of contributing to advocacy (Table 6).

Suggestions for improvement:

- Even though the 19.05 per cent of responses indicated that they do not find a need to improve the consultation, all the others have suggested some improvement to some parts of the consultation. 23.81 per cent of responses said that communication should be the component that has to be improved.

Another 23.81 per cent of responses indicated that participation has to be improved, likewise an equivalent share of responses signified that the material and presentation could be improved. 9.52 per cent of responses also have suggested allocating proper time for the consultation (Table 8).

Table 1: Number of participants from different agencies

Agencies	No of participants	Percent
UN	8	42.11%
NGO/CSO	1	5.26%
Government	8	42.11%
Academia	1	5.26%
Development Partner	1	5.26%
Total	19	100.00%

Table 2: Level of satisfaction in the consultation

Level of satisfaction	*No of participants*	*Percent*
Not at all satisfied	0	0.00%
Somewhat satisfied	2	10.53%
Satisfied	11	57.89%
Very satisfied	6	31.58%
Total	19	100.00%

Table 3a: Opinion on quality of presentations and discussions: Whether they are informative

Discussions and presentations	*Number of participants*	*Percent*
Very informative	*8*	42.11%
Informative	*11*	57.89%
Somewhat informative	*0*	*0.00%*
Not at all informative	*0*	*0.00%*
No opinion	*0*	*0.00%*
Total	*19*	*100.00%*

Table 3b: Opinion on quality of presentations and discussions: Participatory

Discussions and presentations	*Number of participants*	*Percent*
Very participatory	*5*	*26.32%*
Participatory	*12*	*63.16%*
Somewhat participatory	*2*	*10.53%*
Not at all participatory	*0*	*0.00%*
No opinion	*0*	*0.00%*
Total	*19*	*101%*

Table 4: Did you get your views across in the group discussion?

Response	*No of Participants*	*percentage*
Very able	*8*	*42.11%*
Able	*10*	*52.63%*
Somewhat able	*1*	*5.26%*
Not at all able	*0*	*0.00%*
No opinion	*0*	*0.00%*
Not answered	*0*	*0.00%*
Total	*19*	*100.00%*

Table 5: Important issues relating to Climate Change

Important issues	*No of responses*	*Percent*
A vision of Human Development through a low carbon society	*9*	*28.13%*
Mapping and measuring human development from a climate change perspective in the East Asia	*3*	*9.38%*
People at the centre: Vulnerabilities and opportunities in the East Asia	*12*	*37.50%*
Making the low carbon society a reality: going beyond the adaptation-mitigation dichotomy	*7*	*21.88%*
No opinion	*1*	*3.13%*
Total	*32*	*100.00%*

Note: Some respondents have ticked more than one choice. So number of responses are 32.

Table 6: Interest in contributing to the HDR

Contribution	*No of responses*	*Percent*
Research	*5*	*13.51%*
Case studies	*10*	*27.03%*
Sharing your experience	*5*	*13.51%*
Participating in network discussion	*11*	*29.73%*
Advocacy	*5*	*13.51%*
No opinion	*1*	*2.70%*
Total	*37*	*100.00%*

Note: Some respondents have ticked more than one choice. So number of responses are 37.

Table 7: Time allocation to participants in the round table

Time allocation	*No of participants*	*Percent*
Very well allocated	*4*	*21.05%*
Sufficiently allocated	*15*	*78.95%*
Not sufficiently allocated	*0*	*0.00%*
No opinion	*0*	*0.00%*
Total	*19*	*100.00%*

Table 8: Suggestion - What part of consultation can be improved?

Part of consultation can be improved	*No of participants*	Percent
Communication	*5*	*23.81%*
Participation	*5*	*23.81%*
Material and Presentation	*5*	*23.81%*
Time	*2*	*9.52%*
No change-Fully satisfied	*4*	*19.05%*
Total	*21*	*100.00%*

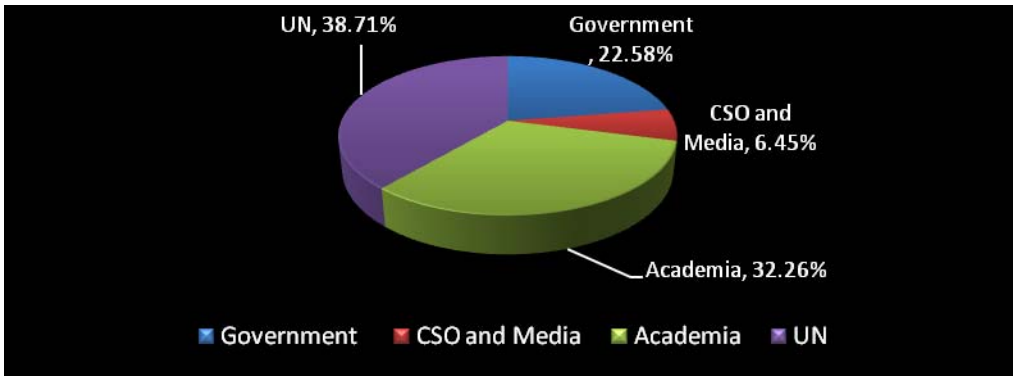
Note: Some participants have ticked more than one choice. So number of responses are 21.

South Asia stakeholder consultation

The Human Development Report Unit (HDRU), UNDP Asia-Pacific Regional Centre, Colombo Office, conducted the South Asia stakeholder consultation during April 2010 as part of its ongoing work on APHDR on Climate Change. The objectives of the stakeholder consultations were two-fold: to be informed by views, experiences and priorities of countries in the region, while strengthening cross-country networks, and to obtain buy-in for the RHDR from stakeholders.

31 participants from different type of organizations participated in the consultation. Figure 1 shows the participation of different organization in the consultation.

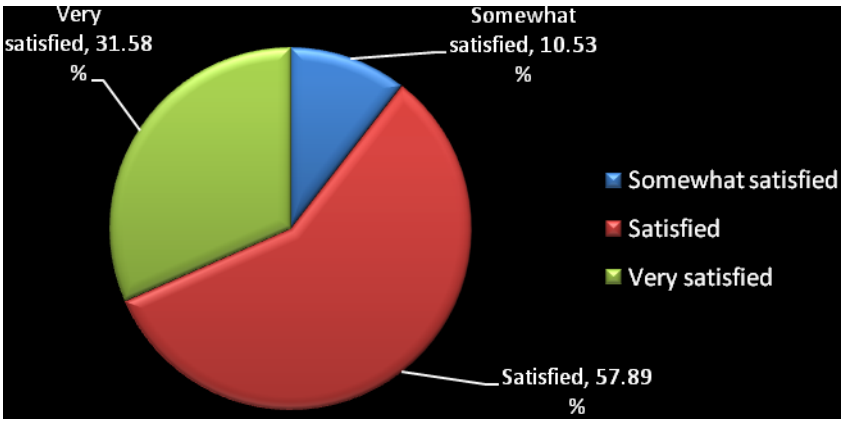
Figure 1: Type of organization (%)



In order to assess whether the participants were satisfied with the consultation and to get their suggestions for improving future consultations, the HDRU circulated a simple questionnaire to all the participants in the consultation. The feedback obtained from these participants is summarized below.

- 19 participants submitted the feedback forms. Among them 07 representatives were from UN agencies, 02 from CSO and media, 07 government representatives and 03 from academia (Table 1).
- Among the participants, 78.95 per cent were satisfied about the consultation, 15.79 per cent were very satisfied and 5.26 per cent (1 participant) were somewhat satisfied. (Table 2, Figure 2). One participant in the 'somewhat satisfied' group suggested getting the participation of wider range of stakeholders to enrich discussions. No respondent has ticked 'not at all satisfied' category.

Figure 2: Level of satisfaction (%)



- Over 94 per cent of the respondents stated that discussions and presentations were informative or very informative. 5 per cent of the respondents have not mentioned their answers. All the respondents stated that the discussions and presentations were participatory or very participatory (Table 3a and table 3b).

- Above 84 per cent of the respondents were able or very able to get their views across in the group while 10.53 per cent of respondents were somewhat able. 5.26 per cent have not mentioned their answer.

- *People at the centre: Vulnerabilities and opportunities in the East Asia* came out as the most important issue related to CC. 37.14 per cent responses endorsed this issue. The second highest responses were for *a vision of Human Development through a low carbon society* and 31.43 per cent responses towards that point. Some respondents also voted for *Making the low carbon society a reality: going beyond the adaptation-mitigation dichotomy* (17.14 per cent of responses) and for *mapping and measuring human development from a climate change perspective in the East Asia (14.29 per cent of responses)* (Table 5).

- 30.77 per cent responses showed that they prefer to contribute to CC APHDR by sharing their experience. 25.64 per cent responses favoured in participating in network discussions for the RHDR. 20.51 per cent of responses were in favour of providing case studies. Another 12.82 per cent responses preferred research contribution and an additional 10.26 per cent responses favoured contributing to advocacy (Table 6).

Suggestions for improvement:

- Only eight per cent of responses indicated that the consultation does not need any improvement, all the others have mentioned that some parts of the consultation have to be improved. 40 per cent of responses suggested improving both material and presentation. 20 per cent of responses showed that the participation is the component that has to be improved. Another 20 per cent of responses found a need to improve on the time allocation. 12 per cent of responses reflected that communication was in need of improvement (Table 8).

Table 1: Number of participants from different agencies

Agencies	*No of participants*	*Percent*
UN	*7*	*36.84%*
CSO/Media	*2*	*10.53%*
Government	*7*	*36.84%*
Academia	*3*	*15.79%*
Total	*19*	*100.00%*

Table 2: Level of satisfaction in the consultation

Level of satisfaction	*No of participants*	*Percent*
Not at all satisfied	0	0.00%
Somewhat satisfied	1	5.26%
Satisfied	15	78.95%
Very satisfied	3	15.79%
Total	19	100.00%

Table 3a: Opinion on quality of presentations and discussions: Whether they are informative

Discussions and presentations	*Number of participants*	*Percent*
Very informative	*3*	*15.79%*
Informative	*15*	*78.95%*
Somewhat informative	*0*	*0.00%*
Not at all informative	*0*	*0.00%*
Not mention	*1*	*5.26%*
Total	*19*	*100.00%*

Table 3b: Opinion on quality of presentations and discussions: Participatory

Discussions and presentations	*Number of participants*	*Percent*
Very participatory	*8*	*42.11%*
Participatory	*11*	*57.89%*
Somewhat participatory	*0*	*0.00%*
Not at all participatory	*0*	*0.00%*
No opinion	*0*	*0.00%*
Total	*19*	*100.00%*

Table 4: Did you get your views across in the group discussion?

Response	*No of Participants*	*percentage*
Very able	*7*	*36.84%*
Able	*9*	*47.37%*
Somewhat able	*2*	*10.53%*
Not at all able	*0*	*0.00%*
No opinion	*0*	*0.00%*
Not answered	*1*	*5.26%*
Total	*19*	*100.00%*

Table 5: Important issues relating to Climate Change

Important issues	*No of responses*	*Percent*
A vision of Human Development through a low carbon society	*11*	*31.43%*
Mapping and measuring human development from a climate change perspective in the pacific	*5*	*14.29%*
People at the centre: Vulnerabilities and opportunities in the Pacific	*13*	*37.14%*
Making the low carbon society a reality: going beyond the adaptation-mitigation dichotomy	*6*	*17.14%*
Total	*35*	*100.00%*

Note: Participants have ticked more than one choice. So number of responses are 35.

Table 6: Interest in contributing to the HDR

Contribution	*No of responses*	*Percent*
Research	*5*	*12.82%*
Case studies	*8*	*20.51%*
Sharing your experience	*12*	*30.77%*
Participating in network discussion	*10*	*25.64%*
Advocacy	*4*	*10.26%*
Total	*39*	*100.00%*

Note: Some participants have ticked more than one choice. So number of responses are 39.

Table 7: Time allocation to participants in the round table

Time allocation	*No of participants*	*Percent*
Very well allocated	*8*	*42.11%*
Sufficiently allocated	*9*	*47.37%*
Not sufficiently allocated	*1*	*5.26%*
No opinion	*1*	*5.26%*
Total	*19*	*100.00%*

Table 8: Suggestion - What part of consultation can be improved?

Part of consultation can be improved	*No of participants*	*Percent*
Communication	*3*	*12.00%*
Participation	*5*	*20.00%*
Material and Presentation	*10*	*40.00%*
Time	*5*	*20.00%*
No change-Fully satisfied	*2*	*8.00%*
Total	*25*	*100.00%*

Note: Some participants have ticked more than one choice. So number of responses are 25

Annex F

Glossary of Technical Terms (from IPCC and UNFCCC official sources)

- **Adaptation:** Initiatives and measures to reduce the vulnerability of natural and human systems against actual or expected climate change effects. Various types of adaptation exist, e.g. anticipatory and reactive, private and public, and autonomous and planned. Examples are raising river or coastal dikes, the substitution of more temperature-shock resistant plants for sensitive ones, etc.
- **Adaptive capacity**: The whole of capabilities, resources and institutions of a country or region to implement effective adaptation measures
- **Adaptation fund:** Finances adaption projects and programmes in developing countries that are Parties to the Kyoto Protocol. The Fund is financed with a 2% share of credits (CERs) from Clean Development Mechanism (CDM) project activities and can receive funds from other sources
- **Adverse effects/impacts:** Adverse effects or impacts, refers to the potential negative effects of human-induced climate change as well as the impacts resulting from implementation of response measures. Such effects or impacts include, e.g. sea level rise, changes in precipitation, storms or other weather patterns, and reduced demand for fossil fuels or other energy intensive products. Impacts of climate change can be positive as well as negative
- **Anthropogenic emissions:** Emissions of greenhouse gases, greenhouse gas precursors, and aerosols associated with human activities, including the burning of fossil fuels, deforestation, land-use changes, livestock, fertilization etc.
- **Bali Action Plan:** A plan drawn up at the UN Climate Change Conference in Bali, in December 2007, forming part of the Bali roadmap. The action plan established a working group to define a long-term global goal for reduction of greenhouse gas emissions, and a "shared vision for long-term co-operative action" in the areas of mitigation, adaptation, finance and technology
- **Carbon footprint:** The amount of carbon emitted by an individual or organization in a given period of time, or the amount of carbon emitted during the manufacture of a product
- **Carbon sequestration:** The storage of carbon or carbon dioxide in the forests, soils, ocean, or underground in depleted oil and gas reservoirs, coal seams and saline aquifers. Examples

include: the separation and storage of CO2 from flue gases or the processing of fossil fuels to produce H2; and the direct removal of CO2 from the atmosphere through land-use change, afforestation, reforestation, ocean fertilization, and agricultural practices to enhance soil carbon

- **CDM (Clean Development Mechanism):** Defined in Article 12 of the Kyoto Protocol, CDM projects undertaken in developing countries are intended to meet two objectives: (1) to address the sustainable development needs of the host country; and (2) to generate emissions credits that can be used to satisfy commitments of Annex 1 Parties and thus increase flexibility in where government Parties meet their reduction commitments. Projects that limit or reduce greenhouse gas emissions can earn the investor (governmentor industry) credits if approved by the CDM Executive Board. A share of the proceeds from the project activities (US $0.10 per CER for first 15,000 tonnes CO2eq; US$0.20 per CER there after) is used to cover administration costs, and 2 percent of the credits are assessed to create an adaptation fund to assist developing countries that are particularly vulnerable to the adverse effects from climate change to take action to adapt
- **Climate change**: Climate change refers to a change in the state of the climate that can be identified (e.g., by using statistical tests) by changes in the mean and/or the variability of its properties, and that persists for an extended period, typically decades or longer. Climate change may be due to natural internal processes or external forcings, or to persistent anthropogenic changes in the composition of the atmosphere or in land use. Note that the United Nations Framework Convention on Climate Change (UNFCCC), in its Article 1, defines climate change as: 'a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods'. The UNFCCC thus makes a distinction between climate change attributable to human activities altering the atmospheric composition, and climate variability attributable to natural causes. See also Climate variability; Detection and Attribution
- **Climate-resilient society:** A society that is "able to withstand or recover quickly from difficult conditions" caused by the adverse effects of climate change, including climate-related hazards and disasters (based on the definition of "resilient" in the English Oxford Dictionary)
- **Climate variability:** Variations in the mean state and other statistics (such as standard deviations, the occurrence of extremes, etc.) of the climate on all spatial and temporal scales

beyond that of individual weather events. Variability may be due to natural internal processes within the climate system (internal variability), or to variations in natural or anthropogenic external forcing (external variability)

- **Evapotranspiration:** The combined process of water evaporation from the Earth's surface and transpiration from vegetation
- **Global warming:** The increase in the Earth's temperature, in part due to emissions of greenhouse gases associated with human activities such as burning fossil fuels, biomass burning,cement manufacture, cow and sheep rearing, deforestation and other land-use changes. Suggested alternate definition: The observed increase in global average surface temperature, whether attributable to natural or human-induced causes
- **GHG (Greenhouse gases):** Greenhouse gases are those gaseous constituents of the atmosphere, both natural and anthropogenic, that absorb and emit radiation at specific wavelengths within the spectrum of thermal infrared radiation emitted by the Earth's surface, the atmosphere itself, and by clouds. This property causes the greenhouse effect. Water vapour (H2O), carbon dioxide (CO2), nitrous oxide (N2O), methane (CH4) and ozone (O3) are the primary greenhouse gases in the Earth's atmosphere. Moreover, there are a number of entirely human-made greenhouse gases in the atmosphere, such as the halocarbons and other chlorine and bromine containing substances, dealt with under the Montreal Protocol. Beside CO2, N2O and CH4, the Kyoto Protocol deals with the greenhouse gases sulphur hexafluoride (SF6), hydrofluorocarbons (HFCs) and perfluorocarbons (PFCs)
- **IPCC (Intergovernmental Panel on Climate Change):** Panel established in 1988 by governments under the auspices of the World Meteorological Organization and the UN Environment Programme. It prepares assessments,reports and guidelines on: the science of climate change and its potential environmental, economic and social impacts; technological developments; possible national and international responses to climate change; and cross-cutting issues. It is currently organized into 3 Working Groups which address: I) Science; II) Impacts, Adaptation and Vulnerability; and III) Mitigation. There is also a Task Force to develop methodologies for GHG inventories
- **Kyoto Protocol**: The Protocol, drafted during the Berlin Mandate process, that requires countries listed in its Annex B (developed nations) to meet differentiated reduction targets for their emissions of a 'basket' of greenhouse gases (see 'Kyoto Basket' (*)) relative to 1990 levels by 2008–12. It was adopted by all Parties to the UNFCCC in Kyoto, Japan, in December 1997 and entered into force on 16 February 2005. *Under the Kyoto Protocol, Parties have

committed to control emissions of a 'basket' of six GHGs. This 'basket' includes carbon dioxide, methane, nitrous oxide, HFCs, PFCs and SF6. The arrangement is meant to give the flexibility which would enable a Party to increase emissions of any gas in the 'basket' provided commensurate reductions were made in another gas in the 'basket'

- **Mitigation:** Technological change and substitution that reduce resource inputs and emissions per unit of output. Although several social, economic and technological policies would produce an emission reduction, with respect to *Climate Change*, mitigation means implementing policies to reduce *greenhouse gas* emissions and enhance *sinks*
- **NAPA (National Adaptation Plan of Action):** In 2001, COP-7 established the NAPAs programme to provide a process for Least Developed Countries (LDCs) to identify and prioritize their adaptation needs
- **Per capita emissions:** The total amount of greenhouse gas emitted by a country per unit of population
- **Pre-industrial levels of carbon dioxide** The levels of carbon dioxide in the atmosphere prior to the start of the Industrial Revolution. These levels are estimated to be about 280 parts per million by volume (ppmv). The current level is around 380 ppmv
- **Protocol:** An international agreement linked to an existing convention, but as a separate and additional agreement which must be signed and ratified by the Parties to the convention concerned. Protocols typically strengthen a convention by adding new, more detailed commitments
- **REDD (Reducing Emissions from Deforestation and Forest Degradation):** An effort to create a financial value for the carbon stored in forests, offering incentives for developing countries to reduce emissions from forested lands and invest in low-carbon paths to sustainable development
- **Stern review:** Study commissioned by the UK Chancellor of the Exchequer in which Sir Nicholas Stern examined the economics of climate change. Nicholas Stern presented his findings at the second Dialogue workshop
- **Two degree target:** Limiting global average temperature increase to not more that 2 degrees Celsius above pre-industrial level. This has been globally agreed to increase changes of avoiding dangerous climate change. The IPCC has concluded that ambitious GHG emission reduction targets of industrialized countries by 2050 are necessary to reach this target

- **UNFCCC (The United Nations Framework Convention on Climate Change):** One of a series of international agreements on global environmental issues adopted at the 1992 Earth Summit in Rio de Janeiro. The UNFCCC aims to prevent "dangerous" human interference with the climate system. It entered into force on 21 March 1994 and has been ratified by 192 countries
- **Vulnerability:** The degree to which a system is susceptible to, or unable to cope with, adverse effects of climate change, including climate variability and extremes. Vulnerability is a function of the character, magnitude, and rate of climate change and variation to which a system is exposed, its sensitivity, and its adaptive capacity