REGIONAL TRAINING ON CROSS-SECTORAL CLIMATE CHANGE ADAPTATION PLANNING

25 – 26 October 2011

Siam City Hotel, Bangkok, Thailand

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Background

There is now plenty of evidence that climate change is taking place. Climate change will affect everyone but developing countries will be hit hardest, soonest while they have the least capacity to respond. Asia is particularly vulnerable to the impacts of climate change with its heavy population, long coastlines, large agricultural sectors and big proportion of population living in poverty. There is an urgent need in the region therefore for capacity building of both national and local state and societal actors concerned with adaptation to address threats and pressures resulting from to climate change.

The Korea Adaptation Center for Climate Change (KACCC) was launched at Korea Environment Institute (KEI) in July 2009. The overall objective of the KACCC is to help build climate resilience of vulnerable societies, ecosystems, and economies through the mobilization of knowledge and technologies of adaptation policy-setting, planning, and practices specially for the Asia and Pacific Region. As a regional network under the Global Adaptation Network (GAN), the Asia Pacific Adaptation Network (APAN) was launched in 2009, facilitated by the United Nations Environment Programme (UNEP), the Institute for Global Environmental Strategies (IGES), and the Asian Institute of Technology/UNEP Regional Resource Centre for Asia and the Pacific (AIT/UNEP RRC.AP). The overall goal of the APAN is to help build climate resilience of vulnerable human systems, ecosystems and economies in Asia through the mobilization and sharing of knowledge and technologies to support climate change adaptation (CCA) in the region. The specific objectives of APAN include the following: i) to generate and share of knowledge and information on adaptation to enhance adaptation actions; ii) to facilitate application of appropriate knowledge to adaptation programs/ projects; iii) to facilitate access to adaptation finance mechanisms; and, iv) develop the capacity of national and local planners, communities, development partners and the private sector in adaptation.

Since both KACCC and APAN have the capacity building focus in their respective goals and objectives, a training program have been collaboratively designed, also in collaboration with UNEP - Regional Office for Asian and the Pacific (UNEP-ROAP), to improve adaptation capacity to climate change in the Asia and Pacific region. In 2010, the Regional Workshop to Raise Awareness and Enhance Action on Climate Change Adaptation and Mitigation at the Sub-national Level was co-organized by KEI/KACCC and UNEP-ROAP in Phuket, Thailand on 25-27 August under Territorial Approach to Climate Change Initiative. This year the Regional Training on Cross-Sectoral Climate Change Adaptation Planning was held to improve capacity of national and local authorities in their adaptation planning for climate change. This training provided a good opportunity for participants to learn frontline findings and innovations, opportunities and challenges in climate change adaptation.

Program Overview

Program Objectives

The training aims to improve the capacity of national and local authorities in their adaptation planning for climate change. The specific objectives set are the following:

- Provide general concepts on impacts of climate change, vulnerabilities and risk assessment, climate change adaptation and mitigation.
- Introduce different dimensions and approaches of climate change adaptation at regional and national levels.
- Provide examples on adaptation in vulnerable sectors and areas such as agriculture, water, coastal zone, etc.
- Provide guidance on mainstreaming and integrating adaptation into national planning processes for the different sectors
- Provide guidance on cross sectoral planning.

Learning Objectives

It is expected that by the end of the training, the participants would:

- Have deeper understanding regarding the general concepts on impacts of climate change, vulnerabilities and risk assessment, climate adaptation and mitigation
- Be familiar with different dimensions and approaches of climate change adaptation
- Through the examples to be presented, understand the practical adaptation in most vulnerable sectors and areas
- Be able to bring in or integrate adaptation approaches into their national planning processes for different sectors
- Have better understanding on incorporation of climate change in cross sectoral planning.

Partnerships for the Organization of the Training

The training was co-sponsored by the Korea Environment Institute (KEI) through the Korea Adaptation Center for Climate Change (KACCC) and the Institute for Global Environmental Strategies (IGES) through Asia Pacific Adaptation Network (APAN). KEI is Korea's foremost research institution, which has been actively involved in drawing up policies to resolve environmental problems and promote sustainable eco-friendly development. KACCC is a national agency which expedites effective strategies and improves the overall capacity of Korea, and coordinates international cooperation regarding climate change adaptation. KACCC was established by Ministry of Environment at the Korea Environment Institute on July, 2009. IGES, established under an initiative of the Japanese government in 1998, is an

international research institute conducting practical and innovative research for realising sustainable development in the Asia-Pacific region. APAN is the first network established under the Global Adaptation Network (GAN). It was launched in 2009, facilitated by the United Nations Environment Programme (UNEP), the Institute for Global Environmental Strategies (IGES), and the Asian Institute of Technology/UNEP Regional Resource Centre for Asia and the Pacific (AIT/UNEP RRC.AP). The workshop was also organized in coordination with the United Nations Environment Programme – Regional Office for Asian and the Pacific (UNEP-ROAP).

Participants and Resource Persons

The training brought together representatives from the national or sub-national government authorities with needs to enhance their respective capacities in climate change adaptation. About 50 participants attended the event, of which 27 were trainees and the rest were distinguished guests, resource persons, and organizers. The trainees came from 11 Asian countries, namely: Bangladesh, Bhutan, Nepal, and Sri Lanka in South Asia; Cambodia, Indonesia, Lao PDR, Philippines, Thailand, and Vietnam in Southeast Asia; and Mongolia in Northeast Asia. Male and female participants were almost equal, numbering 13 and 14 respectively.

The resource persons that delivered the training modules were from AIT, UNEP-ROAP, IGES Regional Center (Bangkok), ISET Nepal, KEI and SEA-START. (List of participants and resource persons is attached in Annex 1 of this report.)

Delivery of the Training

The training is comprised of four modules. Each module has two activities: lecture and group discussion. The first two modules were delivered during the first day of the training, and the latter two modules were given the second day.

Module 1: Vulnerability and Adaptation, and Typologies of Adaptation

Module 2: Introduction to Policy Integration and Cross-Sector Approach

Module 3: Pillars of Effective Cross-Sector Approach to Adaptation Strategy

Module 4: Group Exercise in SWOT Analysis of Country Adaptation Options and Identifying Priority Measures for Improving Policy Integration and Coherency in CC Adaptation Strategy

The detailed agenda of the training is attached in Annex 2.

Day 1: 25 October 2011

0830 - 0900	Registration
0900 - 0915	Welcome from UNEP [Dr. Young-woo Park]
0915 - 0930	Welcome from KEI [Dr. Byung-Wook Lee]
0930 - 0945	Introduction of Participants
0945 - 1000	Training Objectives, Agenda and Rule Setting *[Dr. Le Thi Thu Huong]*
Module 1 – Vulnerability and Adaptation, and Typologies of Adaptation	
1000 - 1100	Introduction to Concepts of Vulnerability and Adaptation, and Typologies of adaptation (Lecture) *[Ms. Raji Dhital]* Q & A
1100 - 1130	Group Photo and Tea Break
1130 - 1230	Group discussion of selected country NAPAS/National Communication [Inter-country grouping] *[Dr. Puja Sawhney]*
1230 - 1330	Lunch
1330 - 1430	Group Reporting
Module 2 – Introduction To Policy Integration and Cross-Sector Approach	
1430 - 1515	Policy Integration and Cross-Sector Approach to Adaptation (Lecture) [Dr. Edsel E. Sajor] Q & A
1515 - 1530	Tea Break
1530 - 1630	Group Exercise: Compatibility Matrix [Inter-country grouping]
1630 - 1700	Group Reporting
1830 onward	Reception Dinner at Siam City Hotel

The event began with the welcome remarks from Dr. Young Woo Park, Regional Director for UNEP Regional Office for Asia and the Pacific (UNEP-ROAP), and Dr. Byung-Kook Lee, Director of Korea Adaptation Centre for Climate Change (KACCC).

The first module consisted of a refresher lecture on the basic concepts on vulnerability and adaptation and the link between the two as well as the typologies of adaptation actions. It was presented Ms. Raji Dhital. A group exercise applying the concepts discussed in the lecture followed. The participants were grouped into four, and each group was assigned a specific National Adaptation Programme of Action or National Communication submitted to UNFCC by an Asian country to examine. The groups were then asked to identify the particular vulnerabilities highlighted in their assigned country NAPAs or NCs and the corresponding adaptation statement(s) used in the document to address the vulnerability

and the classification of the said main adaptation action(s). (The NAPA or NC document of Bangladesh, Bhutan, Philippines or Vietnam was each assigned to one of the four groups.)

While the exercise initially focused on two sectors (water and agriculture), the participants also identified forest, disaster and food security as the other vulnerable sectors in their respective NAPA or NC assignment. Intra-group examination of pertinent sections of assigned document familiarized its members on the particular vulnerabilities and adaptation measures stated in the country's adaptation paper, and to tacitly or explicitly compare certain contents of vulnerability and adaptation statements to their own home country's situation or priorities in adaptation. More importantly, each group's discussion focused on identifying and analyzing core features of most important vulnerabilities and corresponding adaptation statements in agriculture and water sectors, and the various types and range of measures to be employed. This exercise thus provided an immediate and concrete occasion for participants to reflect on and apply their understandings of most important concepts introduced or refreshed in the preceding first lecture. Further, group reporting of results of discussions in the plenary enriched the participants knowledge stock of forms of vulnerability and corresponding types and range of adaptation in two southeast and two south Asian countries in the region.

The group activity was followed by a lecture on policy integration and cross-sector approach to adaptation by Dr. Edsel E. Sajor and another group exercise. These two activities comprise Module 2 of the training. Dr. Sajor's lecture explained the characteristics and need and for a systemic approach by government to the agenda of vulnerability and adaptation, and highlighted how vulnerability and adaptation issues have to date been dominantly been approached from sector perspective in the documents of NAPAS and NCs. The lecture also

introduced and discussed the core meaning of policy integration and coherency, types of policy integration, and provided a checklist on improving integration and policy coherence for Climate Change adaptation.

With the same grouping from the first exercise and working on the same country adaptation document used in the first exercise, the participants assessed the compatibility of planned adaptation actions stated in the two sectors identified in the first group activity. The group then discussed likely scenarios and evaluated the corresponding nature of internal inter-relationship of aims, measures and outcomes between each of the two sectors. This group exercise sharpen the awareness of members to the fact that certain adaptation trajectories and results in agriculture collaterally affects another sector in a complementary or contradictory way/s. Through this exercise, group members were able to apply concepts given in Dr. Sajor's lecture in identifying win-win, win-loss, or loss-loss scenarios in the likely impacts of government planned adaptation actions between two sectors. Through the use of a compatibility matrix between agriculture and one or two other sectors' adaptation plan or policies, a systemic perspective and sensitivity to and need for integrative approach and coherency in cross-sector planning of government bodies were instilled among the participants.

Day 2: 26 October 2011

0830 - 0910	Group Reports on Previous Day's Exercise
Module 3- Pillars of Effective Cross-Sector Approach To Adaptation Strategy	
0910 - 0940	Knowledge and science-policy nexus in stimulating public action in cross-sector adaptation (Lecture) *[Dr. Ajaya Dixit]*
0940 - 0955	Q & A
0955 - 1015	Multi-stakeholder engagement in policy integration *[Dr. Daisuke Sano]*
1015 - 1030	Q & A
1030 - 1045	Tea Break
	Administrative and capacity building issues in policy integration and cross-sector approach (Panel)
1045 - 1115	Introductory remarks on integrative administration and capacity for cross-sector adaptation *[Mr. Mozaharul Alam]*
1115 - 1145	Case Presentation: Local Adaptation Planning Procedure and Consulting Program in Korea *[Dr. Jiyoung Shin]*
1145 - 1215	Holistic approach and capacity for mainstreaming climate change adaptation in policy planning - A perspective from Thailand *[Dr. Suppakorn Chinvanno]*
1215 - 1230	Q & A
1230 - 1330	Lunch Break
Module 4: Group Exercise in SWOT Analysis of Country Adaptation Options and Identifying Priority Measures For Improving Policy Integration and Coherency in CC Adaptation Strategy [Led by Dr. Edsel E. Sajor and 4 rotating facilitators]	
1330 – 1400	How to Prioritize Adaptation Measures *[Dr. Yeora Chae]*
1400 - 1530	Country Group Discussion
1530 - 1600	Tea Break
1600 – 1730	Group Reporting
1730 - 1745	Closing Remarks

The third module consisted of several lectures and a case presentation. Dr. Ajaya Dixit. Presented a lecture on knowledge and science-policy nexus for cross-sector adaptation and Dr. Daisuke Sano discussed the multi-stakeholder engagement involved policy integration. A talk on integrative administration and capacity for cross-sector adaptation was given by Dr. Mozaharul Alam. The case presentation on integrative administration of National Adaptation Planning and implementation in Thailand was delivered by Mr. Suppakorn Chinvanno to give the participant a concrete example on how administrative and cross-sectoral integration was applied on a national policy development and meso-level implementation in Thailand. In

these three presentations, participants became more cognizant of the several important requirements for progress to be achieved in integrative and cross-sector adaptation planning, namely, in the field of knowledge and science-policy research, in the field of multi-stakeholder engagement, and in the field of administrative reforms and building capacity in government. The last presentation of this module in particular, a case study in Thailand, illustrated to the participants how integration and cross-sectoral approach in adaptation planning is operationalized and the changes and specific challenges that this entails in certain routine and conventional way of looking at the problem and solution, which are dominant in certain relevant government agencies in Thailand.

Fourth module began with lecture on how to prioritize adaptation measures from Dr. Yeora Chae. It then moved to the country group discussion of their NAPAs or NCs. The participants were grouped according to country affiliation and were asked to assess the strengths, weaknesses, opportunities and threats to integrative and cross-sector approach to adaptation policy making and planning as expressed in their country's NAPA or NC. SWOT analysis covered the most important statements pertaining to inter-sectoral compatibility or inter-relationship, and to knowledge base and research support for policy, multi-stakeholder engagement and procedures involved in preparing the documents. Analysis also scoped the document's reference to administrative and capacity building issues associated with the task of integration. Each country group came up with their own SWOT assessment on various subject areas in the document. Because of the members' familiarity with their own country's particular situation, SWOT assessment by almost country group went beyond simple document content analysis, but made reference to their own knowledge of existing conditions of government and relevant societal groups, which are key players in formulating and implementing adaptation goals and strategies. Though only a limited time was allotted,

on the whole this SWOT exercise was successful in imparting to the participants the analytical perspective that should underpin the identification and examination of problems, constraints, opportunities and strengths in moving forward integrative and cross-sector planning in their respective countries. This understanding is evident in their analysis of the current situation and the list of priority recommendations made for overcoming hurdles and challenges to integrative approach and cross-sector planning in Climate Change adaptation.

Towards the end, participants provided their feedback and evaluation the training by filling the event feedback forms as well as self-assessment forms. The forms are attached in Annex 4.

To conclude the training, Dr. Mozaharul Alam concluded the training event with a closing remark. He also led the distribution of certificate of participation to each trainee participant.

Feedback and Lessons Learnt

Event Feedback

The participants were asked to evaluate the following:

1. Pre-event information

According to the exit survey, 90.91% of the participants agreed that the information circulated prior to the workshop was fully or mostly useful. Further, 95% of the participants also opined that the information disseminated were accurate (see Figure 1 below).

Upon arrival and registration, all participants were provided with the training kit consisting of a canvass handbag that contains the filing folder holding the printouts of the lecture presentations, exercise sheets and brochures of APAN, IGES and KEI.

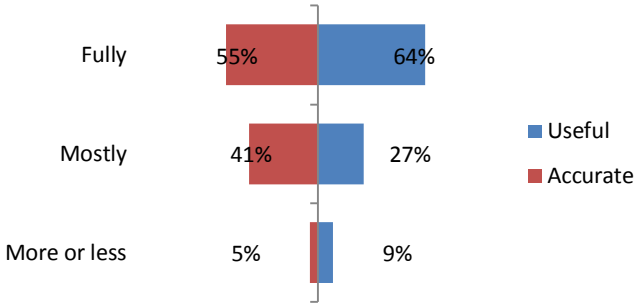


Figure 1. Degree to which information circulated prior to the workshop

2. Objectives of the Workshop

The participants were asked to evaluate each module based on the clarity of the objective, relevance of the objective to their needs, and degree of success to which they thought the session was useful in meeting the objective.

Majority of the participants' gave a positive (i.e., "mostly" or "fully") on their evaluation of how the objective was explained, how it was relevant to the training and their practice, and how effective each module was utilized to meet the training objectives. While none of the participants rated the modules negatively, a significant percentage of around 9% to 14% of the participants feel that the objectives for each module was only more or less met with clarity, relevance and success. (See Figure 2 next page.)

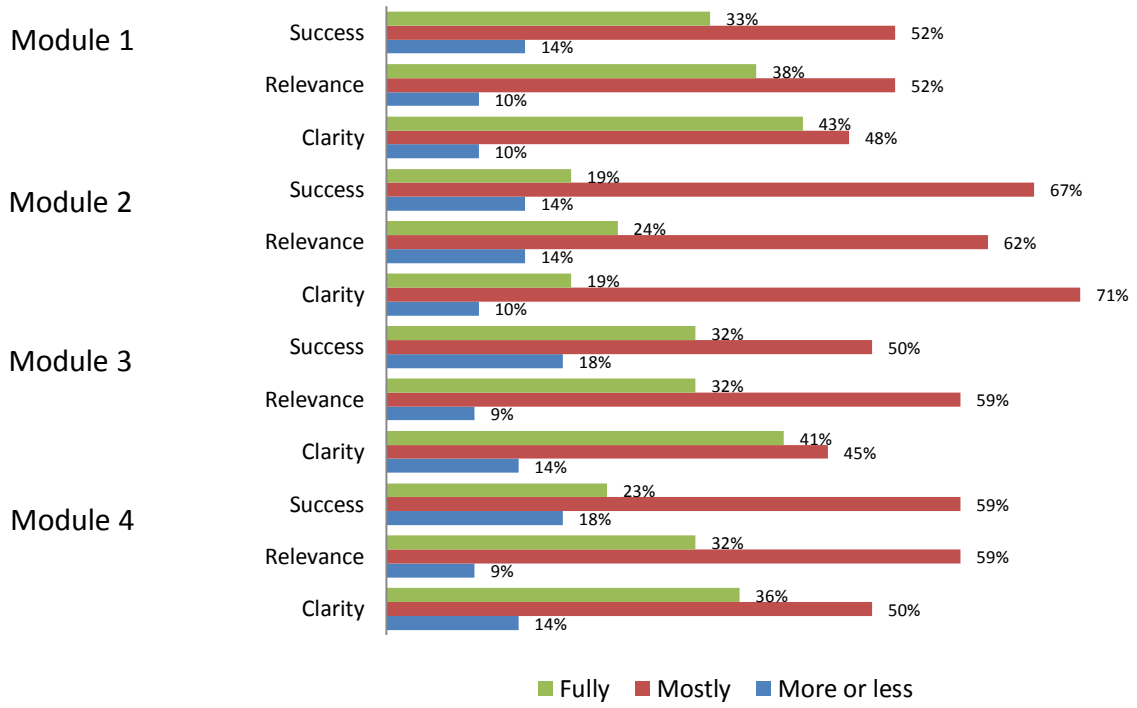


Figure 2. Rating of learning objectives according to "clarity", "relevance to your needs" and "degree of success"

Some participants opined that Module 1 was more academic and needs to provide more information. A participant noted that application of concepts discussed in Module 2 can be challenging when practiced in reality. A participant also suggested that the lecture should provide an introduction that would clarify the interrelations between sectors further. For Module 3, some participants noted the need to present more successful cases of effective cross-sectoral integration. One participant suggested that Module 4 should include a field trip or site visit.

3. Value of the content of the event

Ninety-one percent (91%) of the participants felt that information provided by training was totally and mostly new. With regards to the relevance of the workshop, 95% of the participants claimed that the content was fully and mostly relevant to their jobs. All the participants answered that they would fully and mostly likely use the information they acquired from the training.

Table 1. Most liked or interesting presentations

Presentation	Number of participant votes
Module 3: Holistic approach and capacity for mainstreaming CCA in policy planning	7
Module 2 Lecture	4
Module 4 Lecture	3
Module 1 Lecture	3
Module 3: Multi-stakeholder engagement in policy integration	2
All	1
Module 3: Knowledge and science-policy nexus	1
Module 3 Lectures (unspecified)	1

The lecture for Module 3 on the case study from Thailand entitled "Holistic approach and capacity for mainstreaming climate change in policy planning" was regarded by the participants as the most interesting and useful (see

Table 1 above) . A participant opined that the lecture was highly relevant and that the presenter was highly knowledgeable of his material.

The lecture for Module 2 regarding "Policy Integration and Cross-Sector Approach to Adaptation" was the second most liked lecture in terms of relevance and usefulness.

Only Module 1 lecture presentation was regarded as not useful for the training due to lack of in-depth explanation regarding the materials. The ability of the lecturer to present was poor as the lecturer was only reading from the slides.

4. Methodology, delivery and intent to use

According to the majority of the trainees, the methodologies used in the training were "mostly" and "extremely" appropriate and effective for both the introductory presentations and Q&A discussions (see Figure 3).

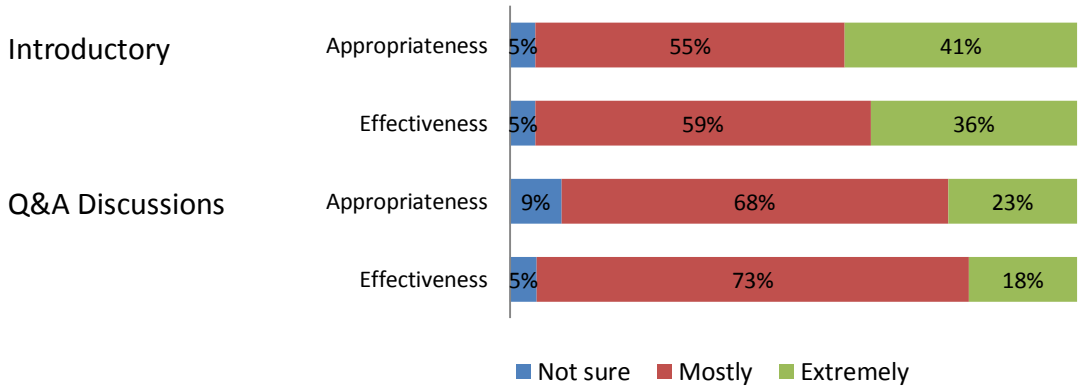


Figure 3. Effectiveness and Appropriateness of Methodology Used

5. Delivery

A significant majority of the participants have found the facilitators and presenters as "mostly" effective in their respective tasks in assisting the training participants and presenting the information in the lecture, respectively (see Figure 4 below).

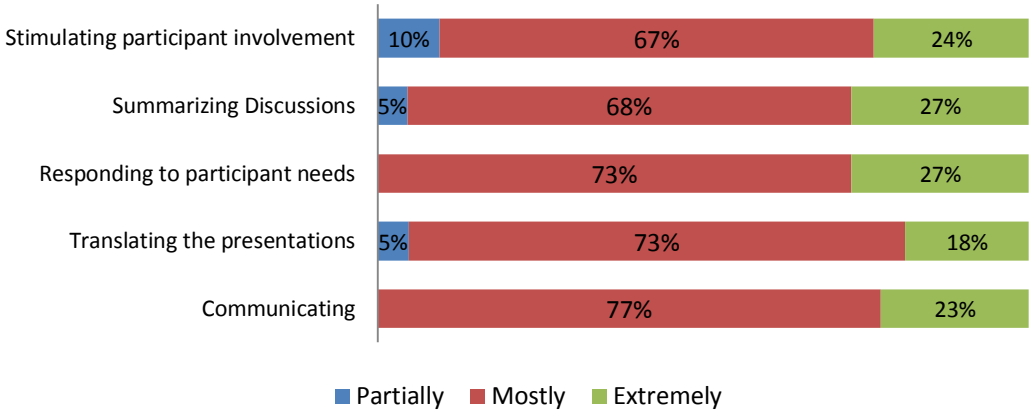


Figure 4. Effectiveness of facilitator(s) in terms of presenting information and in terms of responding to participants

With regards to the performance of the support staff, 95.5% of the respondents found they are "mostly" and "extremely" effective both in terms of coordinating and communicating with the participants and responding to their needs. Several participants found the materials to be good, comprehensive, useful and relevant.

6. Intent to use

Majority of the respondents answered that they are "very likely" (64%) and extremely likely (36%) to use the information acquired from the event in their organizations. Fifty percent of the participants opined that they would likely encounter challenges or obstacles if they apply the information and skills they acquire from the training.

The participants opined that the concepts of cross-sector integration may not be easy to put into practice. Each government agency would sometimes have their internal rules and regulations. Thus, it would require unique arrangements among and between national and sub-national organizations if they are to integrate policy planning and implementation. A paradigm change on how governmental organizations think and work is needed and would greatly affect how they currently deal with their human resources, financial resources, organizational structure and internal and inter-agency policy arrangements. The participants also raised the lack of awareness among policy makers with regards to effective cross-sector integration, especially among local level government organizations. A participant from Vietnam shared that for the past 30 years that she has been conducting trainings in communities around Vietnam, obstacles in cooperation between and among sectors are prevalent.

The participants suggested several ways in which UNEP and its partners could be of assistance in addressing such challenges:

- Capacity building or training for field practitioners and stakeholders at the subnational level
- Support for developing a comprehensive concept paper to address climate change
- Funding support for sub-national organization in project implementation

7. Event Structure and Logistics

Most of the participants consider that the time allocated for the discussion and Q&A and sharing and networking sessions were "mostly sufficient" or "extremely sufficient" (see Figure 5 below). However, a considerable percentage of the participants were also "not sure" or considered the time allocated for each session "not sufficient". Eighty six percent (86%) of the participants think that the overall length of the event was adequate. However, 14% found the training too short.

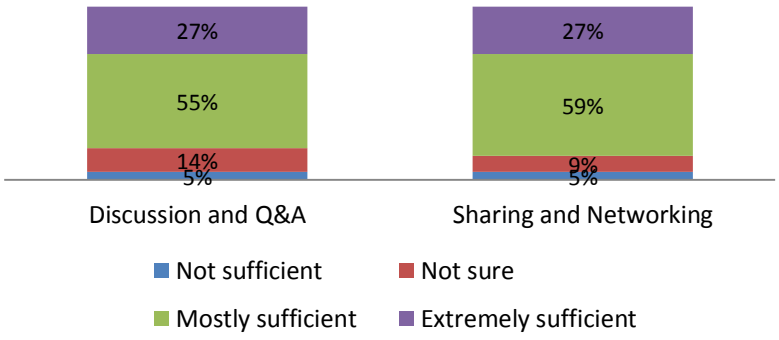


Figure 5. Time Allocation for Sessions

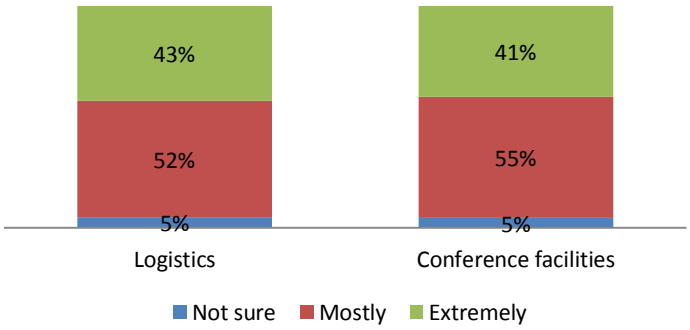


Figure 6. Participants' Satisfaction for Event and Logistics

In terms of the participants' satisfaction with logistics and the event's conference facilities, the majority were "mostly" and "extremely" satisfied (see Figure 6).

8. Overall Satisfaction Rating

Overall, majority of the participants (55%) were "mostly" satisfied with the training. A significant portion of the participants (36%) were "extremely" satisfied (see Figure 7). Only 9% was not sure if the training experience was satisfying or not.

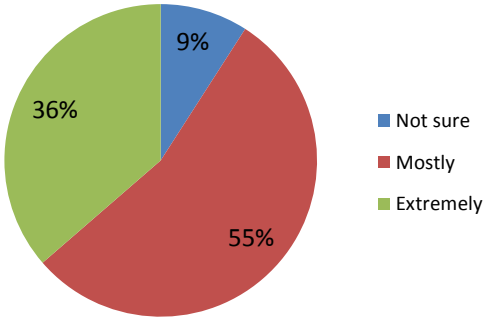


Figure 7. Overall Satisfaction Rating

All of the participants would recommend the training to their colleague. The participants found the training useful, enriching and informative, and helpful in improving their knowledge on climate change adaptation and capacity on cross-sector integration. It provided an opportunity for them to gain new knowledge and develop skill regarding climate change adaptation and also to network with other climate change practitioners in the region.

The participants also suggested other event topics that they think would be useful to further develop their knowledge, skills and competencies:

- Linking solid waste management to climate change adaptation
- Developing a local climate change action plan
- Improving public awareness on reduction of climate change impact
- Institutional strengthening and capacity building
- Linking adaptation plan between local community and national-internal level

Several recommendations were also raised by the participants on ways that the training can be improved further:

- Field trips and site visits should also accompany the lectures
- Support more participants, especially from developing countries
- Improve the quality and readability of the handouts (maximum of 2 slides per sheet)
- Showcase IEC materials regarding the impacts of climate change
- Set more time for group discussions for each topic

9. Self-Assessment

After the training, majority of the participants considered that they improved their understanding regarding the issues of integrative and cross-sector approach in climate change adaptation planning as well as the means on how to put the theories discussed in the lectures into practice (see Figure 8).

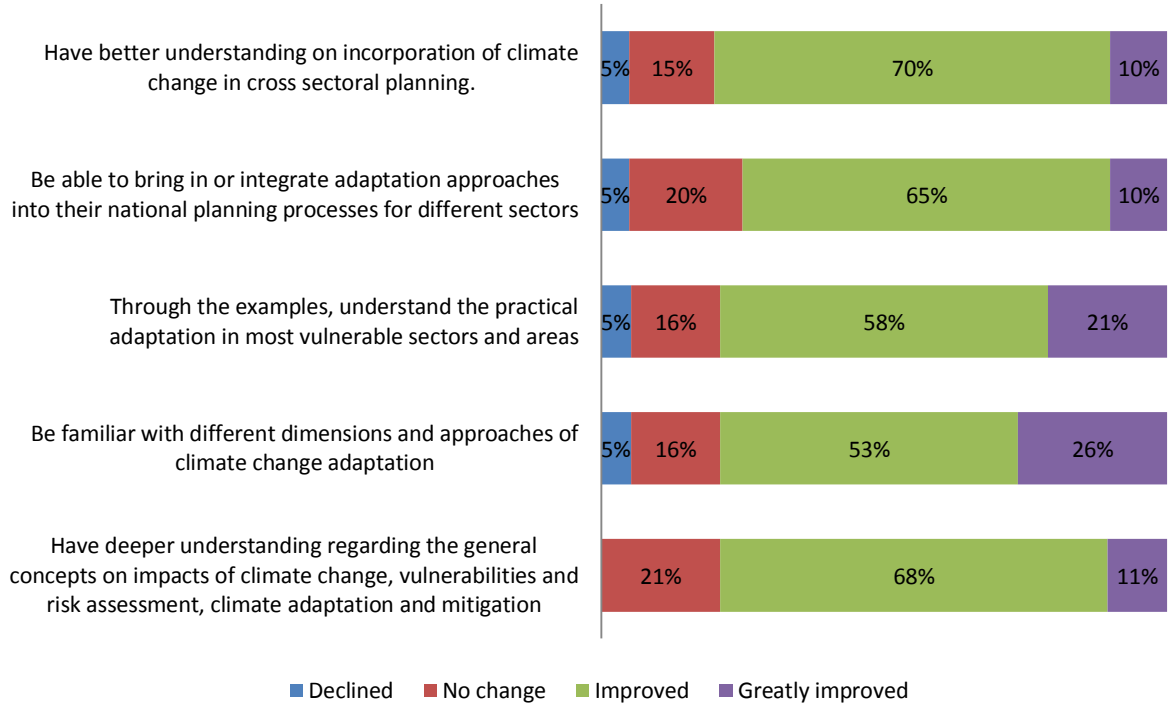


Figure 8. Competency Level Improvement After the Training

Lessons Learnt

In the two-day training, participants were introduced to the basic concepts of vulnerability and adaptation and types of adaptation, to essential concepts and principles of policy integration and cross-sector approach to adaptation planning, and to important pillars of integrated and cross-sector approach to adaptation strategy, namely, knowledge platform, multi-stakeholder participation and important administrative and capacity issues. The main tools used for training were lectures, document content analysis exercise, and case study presentations. As their synthesizing exercise, the participants were further instructed to examine closely their own country's adaptation document, and identify the strength, weakness, opportunities and threats (SWOT analysis) to integrative approach and cross-sector planning to adaptation. In this final exercise, new perspective and understandings acquired by the participants in the previous sessions were applied to identify critical areas needing intervention and changes as well as recommendations for problem solving or improvements. It should be noted that the fact that during the SWOT exercise most country groups presented situations and recommendations that went beyond what have been explicitly stated in their own NAPA or NC documents, but rather based on their own

knowledge of certain characteristics or country-specific circumstances directly bearing on the task to promote and operationalize cross-sector planning, reveals their much sharpened and clearer understanding of the principles and concepts introduced. Collated results from relevant feedback surveys among the participants also confirm this new appreciation of cross-sector planning and improved understanding of relevant concepts, principles, and application.

It is also noteworthy that this training has been a sort of knowledge initiation for the majority of participants on the particular subject topic of integrative and cross-sector approach to adaptation. This is certainly an important breakthrough in competency building in adaptation planning among relevant government officials and personnel in Asian countries participating.

While the substantive contents of discussions in group exercise sessions that examined various countries' NAPAS or NCs have been about country-specific situations, problems and challenges to cross-sector planning, it is also clear that many countries' government face similar problems and situations especially in the domains of government and societal forces' activation and mobilization to advance such an endeavor. There are also common institutional constraints commonly facing every country group. Thus, there is indeed a strong justification for region-wide inter-country workshop training on cross-sector adaptation such as this one. Commonly shared problems and experiences vis-à-vis cross-sector adaptation planning situations have made discussions and learning more robustly grounded yet adequately abstracted to pass the standard of a more or less universal applicability for developing countries in the region.

Based on some of the feedbacks from participants themselves, and by the very novel nature of the focal subject theme of this particular training workshop (i.e. integrative and cross-sector planning approach to climate change adaptation), being able to strike a good balance between introducing and clarifying relevant concepts and principles, on the one hand, and presenting concrete illustrative cases of operationalizing these on the ground, on the other hand, remains a daunting challenge. There are important reasons for this difficulty. For one, to date there are not many cases known in the region that can serve as 'good practice' models in integrative and cross-sector planning on Climate Change adaptation, which can be used for training material, whether these be at the macro-national or local level,. For another, participants often have to still be introduced to key principles and concepts on a new subject theme, since they have not commonly encountered them before. What the organizers can do in this regard is to start a case study bank and also to draw up good list of resource speakers who are intimately familiar with these pioneer good-practice cases. Simultaneously, they should also be good in making sure that lecture speakers really focus and limit themselves only to discussing and explaining key concepts and principles directly relevant to the theme or sub-theme of cross-sector adaptation. In this way, discussion and explanation of basic theory and principle are given ample time and central focus when kept

to the essential minimum, while the elaboration and substantiation of their applications in the real world of adaptation planning are principally transmitted through concrete study cases and exercises given to the participants.

That said, it is strongly recommended here that a second and third edition of this 'experimental' training on the same subject theme be conducted. This will not only increase the number of trainee-participants from each country. More importantly, this can result to a much improved training workshop and conduct on this particular theme, whose third edition form can be replicated widely and regularized as an essential training on climate change adaptation, to be given subsequently in a cascading manner to government and non-government organizations in each developing country in Asia.

Annexes

Annex 1. List of Participants

Annex 2. Agenda of the Workshop

Annex 3. Exercise sheet for group exercise on Adaptation

Annex 4. Forms for Event Feedback and Self-Assessment

(For more information on the workshop, please contact le@iges.or.jp)

Annex 1: Participant List

	Name	Organization	Designation	Country
Trainees from South Asia Countries				
1	Ms. Shakila Yasmin	Climate Change Unit Ministry of Environment & Forests	Assistant Director for Adaptation	Bangladesh
2	Mr. Phurba Lhendup	Freshwater & Climate Change Programme WWF-Bhutan Program Office	Program Officer	Bhutan
3	Ms. Ganjuur Sarantuya	Institute of Meteorology and Hydrology Ministry of Nature, Environment and Tourism	Director	Mongolia
4	Mr. Shyam Prasad Paudyal	Livestock Services Training and Extension Department of Livestock Services	Program Director	Nepal
5	Mr. Shankar Raj Kandel	Kathmandu Metropolitan City Office	Chief City Planning Commission Secretariat	Nepal
6	Ms. Kasturiarachchillage Kema Kasturiarachchi	Climate Change Secretariat Ministry of Environment	Environment Management Officer	Sri Lanka
Trainees from Southeast Asia Countries				
7	Mr. Hok Kimthourn	Project Support Unit Ministry of Agriculture Forestry and Fisheries	National Project Manager	Cambodia
8	Mr. Chea Chan Thou	Climate Change Department Ministry of Environment	Deputy Director	Cambodia
9	Mr. Hem Saroeun	Environmental Department	Director	Cambodia
10	Mr. Thay Chantha	Environmental Department	Director	Cambodia
11	Mr. Koko Wijanarko	Sub Division for Identification and Analysis Vulnerability of Climate Change	Head	Indonesia
12	Mrs. Yuli Budiasih	West Java EPA	Officer	Indonesia
13	Mr. Armi Susandi	Working Group on Adaptation National Council on Climate Change	Vice Chair	Indonesia
14	Ms. Erni Pelita Fitratunnisa	Sub Division on Mitigation and Adaptation of Climate Change	Head	Indonesia
15	Ms. Ayu Sukenjah	Environmental Protection Agency	Section Head	Indonesia
16	Mrs. Dewi Nurhayat	West Java EPA	Officer	Indonesia
17	Ms. Chanthamany Siliya	Second National Communication Project Climate Change Office	Assistant Project Manager	Lao PDR
18	Ms. Xaysomphone	Ministry of Environment and	Technical Officer	Lao PDR

	Suvannavong	Forests		
19	Dr. Honorato G.Palis	Ecosystems Research and Development Bureau	Division Chief of the Coastal Zone and Freshwater Research Division	Philippines
20	Dr. Charlie Fedencio O. Balanon	Environment & Natural Resources Division Office of the Provincial Agriculturist	Pollution Control Officer/Environmental Management Coordinator	Philippines
21	Mr. Nestor V. Patnugot	Environmental Management Bureau Region 9	OIC, Chief Legal & EED	Philippines
22	Dr. Alicia Ilaga	Climate Change Division - Department of Agriculture	Project Overseer	Philippines
23	Ms. Uma Wirutskulshai	Industrial Energy Efficiency Project, UNIDO	National Project Coordinator	Thailand
24	Ms. Nguyen Thanh Thao	Department of Water Resources Management - Ministry of Natural Resources and Environment	Senior Officer	Vietnam
25	Dr. Truong Duc Tri	Department of Meteorology, Hydrology and Climate Change	Deputy Director General	Vietnam
26	Ms. Trinh Thi Long	Southern Institute of Water Resources Research 28 Ham Tu, Ward 1, District 5	Director of the Center for Environment Science Technology and Ecology	Vietnam
27	Ms. Pham Nguyen Bao Hanh	Southern Institute for Urban and Rural Planning	Urban Planner	Vietnam
Distinguished Participants				
28	Dr. Young Woo Park	UNEP Regional Office for Asia and the Pacific	Director	Republic of Korea
29	Dr. ByungKook Lee	Korea Adaptation Centre for Climate Change	Director	Republic of Korea
30	Dr. Daisuke Sano	IGES Regional Centre	Director	Japan
KEI Delegates				
31	Dr. Yeora Chae	Korea Environment Institute	Senior Research Fellow	Republic of Korea
32	Dr. Changsub Shim	Korea Environment Institute	Research Fellow	Republic of Korea
33	Dr. Haejin Han	Korea Environment Institute	Research Fellow	Republic of Korea
34	Dr. Jiyoung Shin	Korea Environment Institute	Senior Researcher	Republic of Korea
35	Ms. Ju Youn Kang	Korea Environment Institute	Researcher	Republic of Korea
Resource Persons				
36	Mr. Ajaya Dixit	Institute for Social and Environmental Transition - Nepal	Executive Director	Nepal

37	Dr. Edsel Sajor	Asian Institute of Technology	Associate Professor	Philippines
38	Mr. Mozaharul Alam	United Nations Environment Programme - Regional Office for Asia and the Pacific	Regional Climate Change Coordinator	Bangladesh
39	Dr. Puja Sawhney	Asia Pacific Adaptation Network	Senior Climate Change Specialist	India
40	Ms. Raji Dhital	United Nations Environment Programme - Regional Office for Asia and the Pacific	Program Officer	Nepal
41	Mr. Suppakorn Chinvanno	Southeast Asia START Regional Center	Senior Researcher	Thailand
Organizers				
42	Dr. Le Thi Thu Huong	Asia Pacific Adaptation Network	Climate Change Specialist	Vietnam
43	Mr. Claudius Gabinete	Asia Pacific Adaptation Network	Research Associate	Philippines
44	Ms. Supaporn Phusatorn	Asia Pacific Adaptation Network	Administrative Associate	Thailand
45	Mr. Jacopo Milano	Asia Pacific Adaptation Network	Intern	Italy
46	Ms. Narudee Lerdphornsuttirat	IGES Regional Centre	Research/Administrative Associate	Thailand
Observers				
47	Mr Terapol Ketphan	Thai Carbon Fund, Carbon Finance Office	Managing Director	Thailand
48	Mr Ramesh Soysa	GMSARN Office, SERD, AIT	Senior Program Officer	Thailand
49	Dr. Luong Quang Huy	Department of Meteorology, Hydrology and Climate Change	Deputy Director General	Vietnam

Annex 2: Agenda

DAY 1	
0830 - 0900	Registration
0900 - 0915	Welcome from UNEP [Dr. Young-woo Park]
0915 - 0930	Welcome from KEI [Dr. Byung-Wook Lee]
0930 - 0945	Introduction of Participants
0945 - 1000	Training Objectives, Agenda and Rule Setting *[Dr. Le Thi Thu Huong]*
Module 1 – Vulnerability and Adaptation, and Typologies of Adaptation	
1000 - 1100	Introduction to Concepts of Vulnerability and Adaptation, and Typologies of adaptation (Lecture) *[Ms. Raji Dhital]* Q & A
1100 - 1130	Group Photo and Tea Break
1130 - 1230	Group discussion of selected country NAPAS/National Communication [Inter-country grouping] *[Dr. Puja Sawhney]*
1230 - 1330	Lunch
1330 - 1430	Group Reporting
Module 2 – Introduction To Policy Integration and Cross-Sector Approach	
1430 - 1515	Policy Integration and Cross-Sector Approach to Adaptation (Lecture) [Dr. Edsel E. Sajor] Q & A
1515 - 1530	Tea Break
1530 - 1630	Group Exercise: Compatibility Matrix [Inter-country grouping]
1630 - 1700	Group Reporting
1830 onward	Reception Dinner at Siam City Hotel

DAY 2	
0800 - 0830	Registration
Module 3 – Pillars of Effective Cross-Sector Approach To Adaptation Strategy	
0830 - 0900	Knowledge and science-policy nexus in stimulating public action in cross-sector adaptation (Lecture) *[Dr. Ajaya Dixit]* Q & A
0900 - 0930	Multi-stakeholder engagement in policy integration *[Dr. Daisuke Sano]* Q & A
0930 - 1000	Administrative and capacity building issues in policy integration and cross-sector approach (Panel) Introductory remarks on integrative administration and capacity for cross-sector adaptation *[Mr. Mozaharul Alam]*
1000 - 1015	Tea Break
1015 - 1045	Holistic approach and capacity for mainstreaming climate change adaptation in policy planning - A perspective from Thailand *[Dr. Suppakorn Chinvanno]* Q & A
Module 4 – Group Exercise in SWOT Analysis of Country Adaptation Options and Identifying Priority Measures For Improving Policy Integration and Coherency in CC Adaptation Strategy [Led by Dr. Edsel E. Sajor and 4 rotating facilitators]	
1045 - 1115	How to Prioritize Adaptation Measures *[Dr. Yeora Chae]*
1115 - 1145	Country Group Discussion
1145 - 1215	Group Reporting
1215 - 1230	Closing Remarks
1230 - 1300	Delivery of Training Certificates
1300 - 1400	Lunch

Annex 3: Exercise Sheets

Module 1: Exercise Sheet

Group Exercise Steps:

1) Familiarize yourselves quickly with the Executive Summary of the selected country NAPA/National Communication document and documents selected sections.

2) Discuss and fill in the corresponding cells in the table below:

   a) In various parts of the document, identify the particular vulnerabilities highlighted in agriculture, water, and another focal area. Write down a core statement for each, based on the document, on the rows of the first column in the table below.

   b) Identify and examine the corresponding adaptation defined in the document for the particular vulnerability related to agriculture, water and another focal area. Discuss the particular action planned and classify this according to the classification of adaptation action discussed in the lecture. Fill in the cells of the last two columns of the table below:

Particular Vulnerability Highlighted	Corresponding Adaptation Statement	Classification of Main Adaptation Action

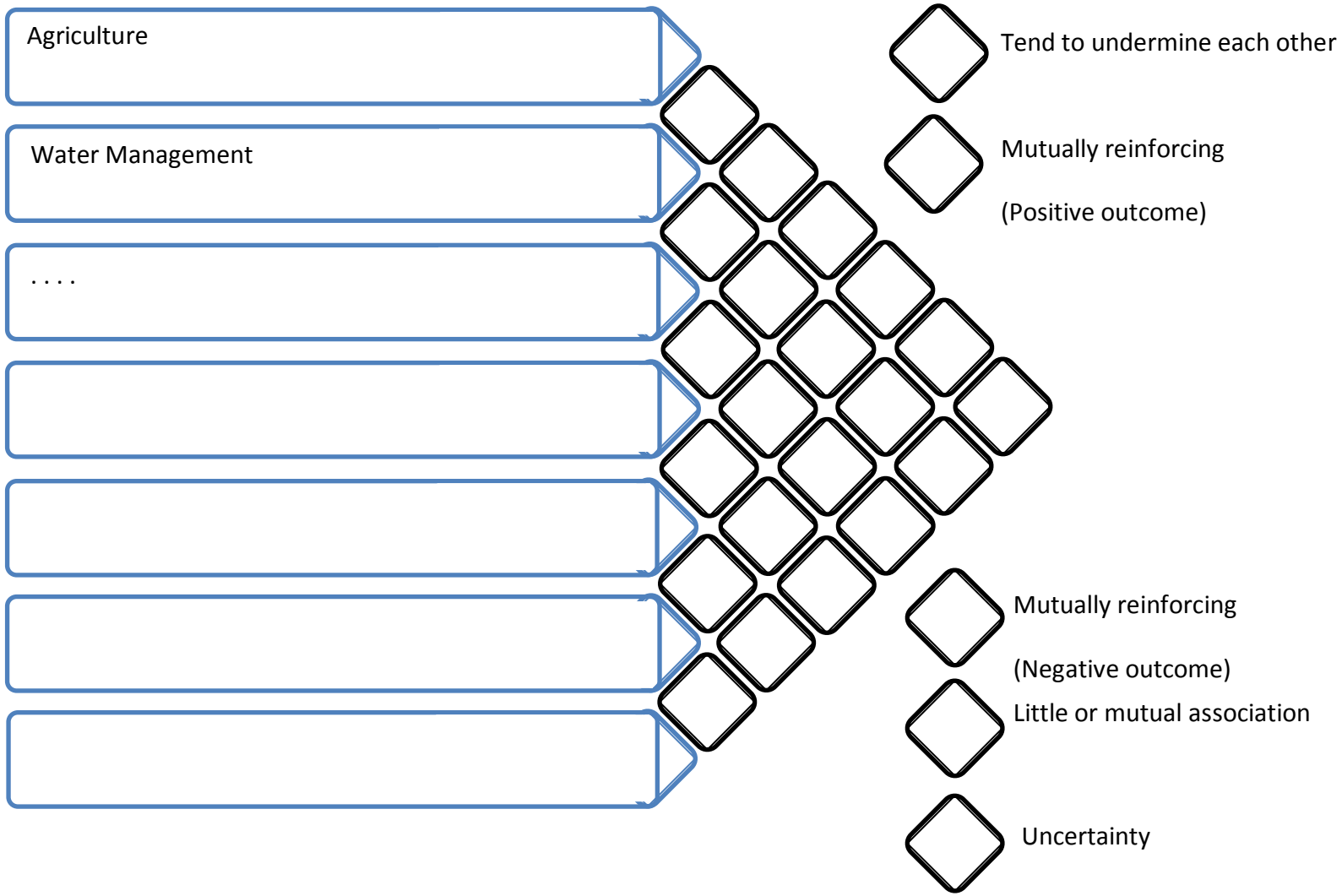
Module 2: Exercise Sheet

Group Exercise Steps:

1) Closely examine the major sectors in the selected NAPA/National Communication document.
2) Select and write down one or two other sectors of adaptation identified in the document in the rows of Adaptation Sector's Compatibility Matrix, in addition to agriculture and water sectors.
3) Discuss the likely scenarios and corresponding nature of internal inter-relationship of aims, measures and outcomes between each two sectors.
4) Make an evaluative judgment on the likely or actual nature of the inter-relation in the interface cell of two sectors, and use the suggested color code to express this.
5) Briefly state your group's reasons underpinning your evaluation color code for each two sectors' compatibility.

   (Attached is the Policy Sectors' Compatibility Matrix)

Policy Sectors' Compatibility Matrix



Module 4: Exercise Sheet

Country Group Exercise Steps:

- Step One: Examine the subjects and scope of sectoral and cross-sector concerns of your country's NAPA or National Communication document through a quick reading of the Executive Summary and priority areas defined in vulnerability and adaptation sections.
- Step Two: Evaluate the internal interrelationship of each sector and identify the complementation and disharmonies between agriculture and water sector, and with another sector discussed in the document.
- Step Three: Identify and evaluate the research activities, mechanisms, and outputs that served as the knowledge base for developing this document, especially on the discussions pertaining to agriculture, water and another sector, and draw two or three priority recommendations for this.
- Step Four: Examine and evaluate the multi-stakeholder engagement and procedures involved – or absent -- in the making of the document; draw two or three priority recommendations related to this.
- Step Five: Examine the extent to which the administrative issues of integration and cross-sector approach have been addressed in the document; draw two or three priority recommendations related to this.
- Step Six: Draw up a *SWOT* Quadrant that summarizes the group's most important evaluation points in Steps 2, 3, 4, and 5; make a corresponding recommendation measure for each.
- Step Seven: Presentation of the *SWOT* Quadrant and list of recommendations.

(For the discussion and evaluation, follow the questions in the SWOT chart below.)

Strength	Weakness
■ How are agriculture, water and another sector strongly and explicitly integrated and cohered in the document? ■ What is a good mechanism of integration in these areas in your country CC document related to knowledge for policy, multi-stakeholder engagement, integrative administration or capacity building plan? ■ What corresponding measure may be important to enhance further this strength related integration and cross-sector planning of vulnerability and adaptation.	■ How are agriculture, water and another sector poorly integrated or lacking in coherence in your country's CC document? ■ What is the most important element or dimension lacking or weak in integration and cross-sector approach in your country's CC document, in the areas knowledge, multi-stakeholder, administrative or capacity issues? ■ What is the corresponding measure necessary to address these weaknesses?
Opportunities ■ What may be the policy environment, extreme events, public sentiments, external donor initiatives or other drivers that can provide opportunities for pushing integration and cross-sector policy approach and planning between agriculture and water sectors? ■ What is your main recommendation to seize this opportunity?	Threats ■ Identify a current threat to achieving progress in integrated and cross-sector approach to national government adaptation planning and implementation Name one important institutional, resource, technology, or economic and political threat to integration and policy coherency in CC adaptation. ■ What is your recommended measure to address these threats in the short and long-term?

Strength:	
Weakness:	
Opportunity:	
Threat:	

Annex 4: Event Feedback and Self-Assessment Forms

Workshop information

Pre-event information	**Criteria**	**Rating**				
Degree to which information circulated prior to the workshop was…	Useful	Fully ◯	Mostly ◯	More or less ◯	Partially ◯	Not useful ◯
	Accurate	Fully ◯	Mostly ◯	More or less ◯	Partially ◯	Not useful ◯
	Comments					

Objectives

Please rate the learning objectives according to "clarity", "relevance to your needs" and "degree of success to which objective was met in the event".

Event objective	**Criteria**	**Rating**				
MODULE 1 To further expand the basic understanding of the participants on the concepts of climate change vulnerability, adaptation and link between the two, the classification of climate change adaptation actions	Clarity of objectives (i.e. Were the objective clear to you?)	Fully ◯	Mostly ◯	More or less ◯	Partially ◯	Not useful ◯
	Relevance of objective to your needs	Fully ◯	Mostly ◯	More or less ◯	Partially ◯	Not useful ◯
	Degree of success to which objective was met in event	Fully ◯	Mostly ◯	More or less ◯	Partially ◯	Not useful ◯
	Comments					
MODULE 2 To introduce to the participants the basic concept of integration and coherency of government climate change	Clarity of objective (i.e. Was objective clear to you?)	Fully ◯	Mostly ◯	More or less ◯	Partially ◯	Not useful ◯
	Relevance of objective to your needs	Fully ◯	Mostly ◯	More or less ◯	Partially ◯	Not useful ◯

adaptation policy and clarify to participants dimensions internal interrelations between sectors of, and to clarify key points for improving integration and policy coherence for Climate Change adaptation	Degree of success to which objective was met in event	Fully ○	Mostly ○	More or less ○	Partially ○	Not useful ○
	Comments					

Event objective	**Criteria**	**Rating**				
MODULE 3 To clarify to the participants the importance and role of knowledge and science-policy nexus and multi-stakeholder participation, integration and coordination between and among policy sectors in developing national adaptation strategy	Clarity of objective (i.e. Was objective clear to you?)	Fully ○	Mostly ○	More or less ○	Partially ○	Not useful ○
	Relevance of objective to your needs	Fully ○	Mostly ○	More or less ○	Partially ○	Not useful ○
	Degree of success to which objective was met in event	Fully ○	Mostly ○	More or less ○	Partially ○	Not useful ○
	Comments					
MODULE 4 To be able to apply the participants' learning on identifying priority areas needing improvement and corresponding critical remedial measures necessary to further push effectiveness in integration and	Clarity of objective (i.e. Was objective clear to you?)	Fully ○	Mostly ○	More or less ○	Partially ○	Not useful ○
	Relevance of objective to your needs	Fully ○	Mostly ○	More or less ○	Partially ○	Not useful ○
	Degree of success to which objective was met in event	Fully ○	Mostly ○	More or less ○	Partially ○	Not useful ○

cross-sector planning and implementation in one's own national adaptation strategy .	**Comments**	

Value/benefits of the content of the event

Information presented in this workshop was new to me.	Strongly Agree ○	Mostly ○	Neutral ○	Disagree ○	Strongly Disagree ○
The content of the workshop is relevant to my job	Strongly Agree ○	Mostly ○	Neutral ○	Disagree ○	Strongly Disagree ○
It is likely that I will use the information acquired in this workshop?	Strongly Agree ○	Mostly ○	Neutral ○	Disagree ○	Strongly Disagree ○
Which presentation(s) / sessions) were most interesting and useful for you in this event and why?	1. _____ 2. _____ 3. _____ 4. _____				
Which presentation(s) / session(s) were not useful in this event and why?	1. _____ 2. _____ 3. _____ 4. _____				
Comments					

Methodology

The methodology used in this workshop was the following: Introductory presentations followed by questions, answers and discussions

Methodology	**Criteria**	**Rating**				
Please rate the effectiveness and appropriateness of the methodology used						
Introductory Presentation	Effectiveness of methodology	Extremely ○	Mostly ○	Not sure ○	Partially ○	Not ○
	Appropriateness of methodology	Extremely ○	Mostly ○	Not sure ○	Partially ○	Not ○
Q&A Discussions	Effectiveness of methodology	Extremely ○	Mostly ○	Not sure ○	Partially ○	Not ○
	Appropriateness of methodology	Extremely ○	Mostly ○	Not sure ○	Partially ○	Not ○
Comments						

Delivery (trainers/interpreters)

How effective was (were) the facilitator(s) in terms of presenting information and in terms of responding to participants?

Delivery of training/interpreters	**Rating**				
Did the Training staff and Interpreters meet your expectations in:					
Effectively communicating and presenting Information	Extremely ○	Mostly ○	Not sure ○	Partially ○	Not ○
Effectively translating the presentations in the native language	Extremely ○	Mostly ○	Not sure ○	Partially ○	Not ○
Effectively responding to participant questions and learning needs	Extremely ○	Mostly ○	Not sure ○	Partially ○	Not ○
Summarizing discussions / presentations	Extremely ○	Mostly ○	Not sure ○	Partially ○	Not ○
Promoting participation of all learners and stimulating their involvement	Extremely ○	Mostly ○	Not sure ○	Partially ○	Not ○
Comments					

Support in Training	Rating				
Did support staff at the event meet your needs and expectations in:					
Coordinating and communicating information	Entirely ☐	Mostly ☐	Not sure ☐	Hardly ☐	Not ☐
Responding to participants questions and needs	Entirely ☐	Mostly ☐	Not sure ☐	Hardly ☐	Not ☐
Describe Training material(s) provided					
Comments					

6. Intent to use

Please indicate the likelihood that you will to use the information acquired from the event.

Likelihood that you will use information acquired from the event (for your sub-national authority or organization)	Extremely ☐	Very likely ☐	Not sure ☐	Hardly likely ☐	Not ☐
Do you foresee any challenges or obstacles in applying information/knowledge/skills acquired in this workshop into practice?					
If so, please describe the challenges.					
If so, in what ways could UNEP (and its partners) be of assistance in addressing such challenges?					

7. Event Structure and Logistics

Do you think the time allocated for discussion and Q&A sessions were sufficient?	Extremely ☐	Mostly ☐	Not sure ☐	Hardly ☐	Not ☐
Comments or Suggestions					
Do you think the time allocated for sharing and networking sessions was appropriate?	Extremely ☐	Mostly ☐	Not sure ☐	Hardly ☐	Not ☐
Comments					

Do you think the overall length of the event was appropriate?	Too long ☐	Adequate ☐	Too short ☐
Comments or Suggestions			

How satisfied were you with the event's logistics?	Extremely ☐	Mostly ☐	More or less ☐	Hardly ☐	Not ☐
How satisfied were you with the event's conference facilities?	Extremely ☐	Mostly ☐	More or less ☐	Hardly ☐	Not ☐
Comments or Suggestions					

8. Overall satisfaction rating of the event

Overall, how satisfied were you with the event?	Entirely ☐	Mostly ☐	More or less ☐	Hardly ☐	Not satisfied ☐
Would you recommend the event to a colleague?	Yes ☐	Maybe ☐	No ☐		
Why?					
What other event topics would be useful to further develop your knowledge, skills, and competencies?					
In your opinion, what can we improve concerning the workshop?					
Additional comments					

Self-Assessment Form:

INFORMATION & INSTRUCTIONS: This self-assessment is designed to provide an informal measurement on how the "Regional Training on Cross-sectoral Climate Change Adaptation Planning" contributed to increasing your knowledge, skills and/or competencies. Based on your understanding at the end of this workshop, rate your level of knowledge, skill, competencies based on each learning objective before and after the training.

Learning Objectives **As a result of taking the Training, I am able to…**	**Before** **Rate your level of knowledge, skill, competency before event**					**After** **Rate your level of knowledge, skill, competency after event**				
	Very Low	**Low**	**Average**	**High**	**Very High**	**Very Low**	**Low**	**Average**	**High**	**Very High**
Have deeper understanding regarding the general concepts on impacts of climate change, vulnerabilities and risk assessment, climate adaptation and mitigation	○	○	○	○	○	○	○	○	○	○
Comments										
Be familiar with different dimensions and approaches of climate change adaptation	○	○	○	○	○	○	○	○	○	○
Comments										
Through the examples, understand the practical adaptation in most vulnerable sectors and areas	○	○	○	○	○	○	○	○	○	○
Comments										

	Very Low	Low	Average	High	Very High	Very Low	Low	Average	High	Very High
Be able to bring in or integrate adaptation approaches into their national planning processes for different sectors	○	○	○	○	○	○	○	○	○	○
Comments										
Have better understanding on incorporation of climate change in cross sectoral planning.	○	○	○	○	○	○	○	○	○	○
Comments										

Thank you

Annex 5: Lecture Presentations

List of Presentations

1. Concepts of Vulnerability and Adaptation, and Types of Adaptation Actions [Ms. Raji Dhital]
2. Policy Integration and Cross-Sector Approach to CC Adaptation Strategy [Dr. Edsel Sajor]
3. Knowledge and science-policy nexus for cross-sector adaptation [Mr. Ajaya Dixit]
4. Multi-stakeholder engagement in policy integration [Dr. Daisuke Sano]
5. Integrative Administration and Capacity Building Issues [Mr. Mozaharul Alam]
6. Local Adaptation Planning Procedure and Consulting Programs [Dr. Jiyoung Shin]
7. Holistic approach in mainstreaming climate change adaptation into policy planning - A perspective from Thailand [Mr. Suppakorn Chinvanno]
8. How to prioritize climate change adaptation measures? [Dr. Yeora Chae]

Concepts of Vulnerability and Adaptation, and Types of Adaptation Actions [Ms. Raji Dhital]

Objectives

To further expand the basic understanding of the participants on the concepts of climate change vulnerability and adaptation, and link between the two.

To introduce to the participants classification of climate change adaptation actions

Overview

Section 1: Meaning of vulnerability

Section 2: Meaning of adaptation and link to vulnerability

Section 3: Common classification of adaptation actions and mainstreaming adaptation

Refreshing basic concepts: definitions

- **Climate Variability** : Refers to the naturally occurring changing patterns of the climate from year to year.
- **Climate Change**: Refers to changes in climate characteristics, including temperature, humidity, rainfall, wind, and severe weather events over long term periods
- **Adaptation**: Adaptation to climate change refers to adjustment in natural or human systems in response to expected Climate Change
  - Moderate harm and exploit opportunities- ultimately for people
- **Hazards**: Physical manifestation of Climatic variability or change such as droughts, floods, storms etc.
- **Risks**: Probability of occurrence of a hazard (climatic event) or non climatic event that creates undesirable outcomes

Refreshing basic concepts: definitions (contd.)

- **Impacts**: The effect of Climate Change on natural and human systems
- **Vulnerability**: the degree to which a system is susceptible to, and unable to cope with, adverse effects of climate change
  - Depends on risk, exposure, sensitivity and capacity
- **Resilience**: Amount of change a system can undergo without changing state.
- **Adaptive Capacity**: The ability of a system to adjust to Climate Change to moderate potential damages and take advantages of opportunities

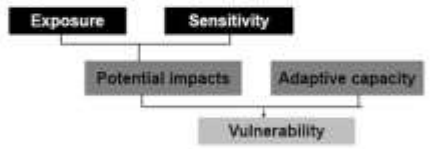
Understanding and defining Vulnerability

- IPCC definition: Vulnerability is the degree to which a system (includes human system) is susceptible to, and unable to cope with, adverse effects of climate change, including climate variability and extremes.
- In the context of climate change, vulnerability is a function of **character** (what impacts?), **magnitude** (how much?), **rate** (how quick?) of climate change to which a system is **exposed**, it's **sensitivity** and **adaptive capacity.**
  - **Exposure**: The nature and degree to which a system is exposed to significant Climatic variation.
  - **Sensitivity** is a degree to which a system is affected, either adversely or beneficially, by climatic event

Refreshing basic concepts: linkages

Climate Change Adaptation: Planned measures to decrease Vulnerability

Example of vulnerability of agriculture systems



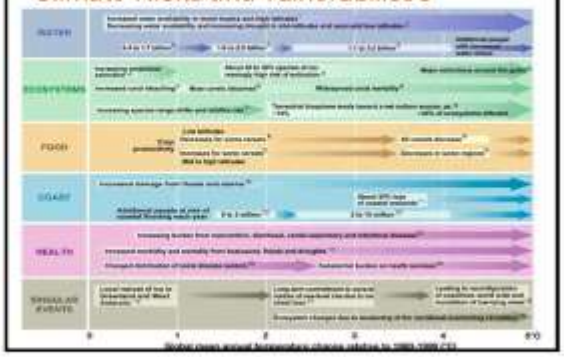
Agricultural vulnerability to climate change is described in terms of not only exposure to elevated temperatures, but also crop yield sensitivity to the elevated temperatures, impacts on crop, and the adaptive capacity of farmers to adapt to the effects of that sensitivity, e.g., by planting more heat-resistant cultivars or by ceasing to plant their current crop altogether.

Allen consulting and Schnitzer et al., 2005

Different dimensions of vulnerability

- When a "system" is considered as a vulnerable system, its different dimensions should be considered.
- Biophysical dimension : Ultimate impact of a Climate risk viewed as damage experienced by physical systems (eg: hydrology, coastal processes, snow, ice and frozen ground) and biological systems (eg: terrestrial, marine, freshwater)
- Social: Socially inherent in human system arising from internal characteristics, depending on economy, politics, institutions, power distributions etc.)
- Individual: Vulnerability of life and livelihood of an individual, depends on geographic location, and various socioeconomic factors.
- These dimensions are not isolated from each other.

Climate Risks and vulnerabilities



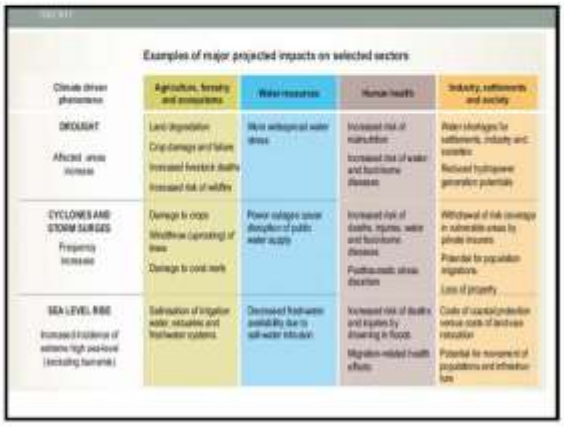
Projected impacts of CC in Asia

Social implications

- **Equity:** Climate change will affect the poorest the most, causing greater inequality both between and within countries.
- **Migration:** Some estimates suggest that nearly 200 million people will be displaced from their homes due to climate change by 2050
- **Conflict:** Increasing level of conflict is expected due to scarcity of resources and migration

Examples of major projected impacts on selected sectors

Climate driver phenomena	Agriculture, forestry and ecosystems	Water resources	Human health	Industry, settlements and society
TEMPERATURE CHANGE Over most land areas, warmer and fewer cold days and nights, warmer and more frequent hot days and nights	Increased yields in cooler environments Decreased yields in warmer environments Increased insect outbreaks	Effects on water resources relying on snow melt Effects on some water supply	Reduced human mortality from decreased cold exposure	Reduced energy demand for heating and increased demand for cooling Declining air quality in cities Reduced disruption to transport due to snow, ice Effects on winter tourism
HEAT WAVES/ WARM SPELLS Frequency increases over most land areas	Reduced yields in warmer regions due to heat stress Wildfire danger increases	Increased water demand Water quality problems, e.g. algal blooms	Increased risk of heat-related mortality, especially for the elderly, chronically sick, very young and socially isolated	Reduction in quality of life for people in warm areas without appropriate housing Impacts on elderly, very young and poor
HEAVY PRECIPITATION EVENTS Frequency increases over most land areas	Damage to crops Soil erosion Inability to cultivate land due to waterlogging of soils	Adverse effects on quality of surface and groundwater Contamination of water supply Water stress may be relieved	Increased risk of deaths, injuries, infectious, respiratory and skin diseases	Disruption of settlements, commerce, transport and societies due to flooding Pressures on urban and rural infrastructures Loss of property



Defining and Understanding Adaptation

- IPCC definition: Adjustment in natural or *human systems* in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities.
- Given the constant level of climatic hazards over time (despite mitigation efforts) Adaptation will reduce the vulnerability thus reducing the risks associated with Climate hazards.
- Adaptation requires a significant investment in increasing adaptive capacity of human systems (knowledge, skills, resources).
- For biophysical systems, adaptive capacity implies a "potential" ability to adapt and indicates reaction to future risks- hence it is reactive

Adaptation- reduces vulnerability, risks and increases capacity

Adaptation –current and future risks

Types of Adaptation :

- Anticipatory Adaptation: Adaptation that takes place before the impacts of Climate Change are observed. Proactive adaptation as opposed to reactive.
- Autonomous Adaptation: Adaptation that does not constitute a conscious and a planned response to climatic stimuli but is triggered by ecological changes in natural systems and by market or *welfare* changes in *human systems*. Spontaneous adaptation.
- Planned Adaptation: Adaptation that results from a deliberate policy decision based on an awareness that conditions have changed or are about to change and that action is required for a desired state.

Types of Adaptation and examples

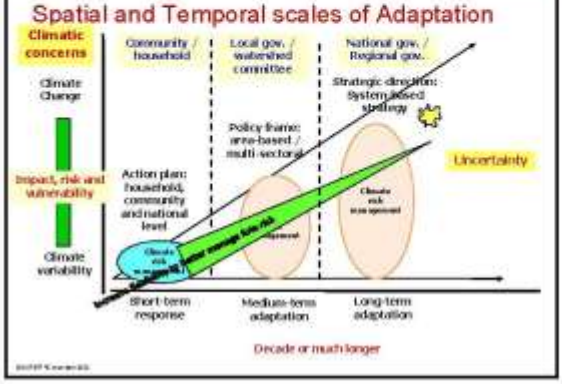
Type	Example	Involvement
Anticipatory	Diversifying rainfall removal by promoting rainwater storing, permeable surfaces and drainage pipelines	Community and personal
Reactive	Expanding drainage infrastructure to accommodate heavy precipitation events	Community
Top-down	Changing national standards, such as building codes, to address changes in climate	National
Bottom-up	Developing community regulation for building construction - increased habitable spaces, increased permeable surfaces to minimize pressure on sewage system and flooding	Community and productions systems
Autonomous	Farmers' decisions to change timing and planted species based on weather changes	Individual and community
Planned	Changes in water resources allocation to ensure biodiversity protection, agriculture and drinking waters supply	Community, production systems and individual

Different dimensions of Adaptation

- By spatial scale (local, regional, national)
- By temporal scale (short vs long term)
- By actor- communities, policymakers, practitioners
- By climatic zone-coastal area, upland agriculture
- By baseline income/development level of the systems- poor, rich, urban vs rural, developed vs developing
- By sector- water, agriculture, health, energy

- Determine type of action -technical such as crop diversification, infrastructure, ecosystem based

Spatial and Temporal scales of Adaptation



Common classifications of Adaptation actions:

- Physical measures (e.g. building dykes and embankments)
- New technologies for weather and climate predictions
- Biological modifications (e.g. drought resistant crop varieties)
- Ecosystem management (e.g. integrated river basin management)
- Livelihood enhancements and diversifications (eg:In situ farming and non-farming)
- Social infrastructure and community and capacity development

Developing adaptation options

We must aim for actions that will get us onto resilient, low emission development pathway, which operates at two levels:

1)The large collective decisions about structural issues which will determine the framework within which we adapt .

2) The cultural, social and psychological dimensions of values, lifestyle and consumption behaviour

Robinson et al 2009

Identifying "low hanging fruits"

- Many adaptation options are linked to sustainable development practices already known, e.g.:
- Maintaining ecosystems
- Integrated water resource management
- Disaster prevention

Prioritizing adaptation options

- There are a number of options available for adapting to expected climate impacts. Depending on, for example, available capacities, cultural, social and economic preferences, and urgency for actions adaptation options need to be evaluated and prioritized.
- Prioritizing between adaptation options based on criteria that recognize the importance of sustainable development also helps to realize synergies and create long-term adaptation options.

Prioritizing adaptation options

Category	Criteria
Sustainability	Mitigation co-benefits
	Environmental impacts
	Equity
	Implementation Cost p
	Operating and Maintenance Cost
Effectiveness	Robustness
	Reliability
Risk and Uncertainty	Urgency
	Degree of risk or impact
	Precautionary
Opportunity	Ancillary benefits
	No regret option
	Window of Opportunity
Implementation	Public acceptability
	Funding sources
	Capacity (information, technical, staff, resources)

Costs of adaptation options

There are two main categories of costs:

1) The cost & benefit of :
   a. the adaptation option
   b. non- action or delayed action
   c. Maladaptation
   d. Mitigation benefits

2) The cost & benefit that the ecosystem services provide.

Responding to policy needs:

Economic valuation of adaptation and ecosystem services is often greatly needed by decision makers.

Caution: Avoid Mal adaptation options

Mal adaptation is

Any changes in natural or *human systems* that inadvertently increase *vulnerability* to climatic *stimuli*;

An adaptation that does not succeed in reducing vulnerability but increases it

Both aspects of mal-adaptation may have significant costs.

Mainstreaming adaptation

- Climate change is not just an environmental issue – it is a development issue.
- Mainstreaming includes compromises and tradeoffs among competing local, national and/or regional interests and priorities.
- Finally, climate change adaptation mainstreaming processes should account for sustainable development goals of the country at hand as well as all elements, including local/indigenous coping strategies.

Importance of Multi-Level Adaptation Planning (Vertical Integration)

- Involvement of multiple levels of governance in development planning requires co-ordination
- Division of competence between national and sub-national level varies among countries
- National, sub-national and local adaptation action needs to be mutually supportive
- Actions should be taken at the most appropriate level after thorough analysis
- Subsidiary principle
  - encourages action at the lowest level of governance whenever possible
  - recognizes the importance for some action at higher level

Importance of horizontal integration

- Involvement of different sectoral governments is a key as effects of Climate Change can not be isolated in one sector, for example higher precipitation affects water resources, agriculture, forestry etc
- Need for coordinated and planned actions designed for specific risk or hazard
- Need to integrate crosscutting issues also such as gender, poverty etc.

Common Barriers

- **Denial/Disbelief.** Climate change is not occurring.
- **The "so what?" problem of scale.** Mis-interpretation of the magnitude of the change (it's only a couple of degrees…)
- **The "perfect information" problem.** There is too much uncertainty to take action; I'll wait for better information.
- **Issue fatigue.** I have to deal with X,Y, and Z *yesterday*, and you want me to do this too?
- **The "after I've retired" problem.** The long-term nature of the problem is beyond the time horizon for many decision makers.

How Do We Get Past These Barriers?

- **Invest in outreach, education, and training**
  - ► For internal and external audiences
- **Build internal capacity for accessing or producing climate change information at a variety of levels**
  - ► Improved connections to research communities
  - ► Improved access to climate information (data, publications, external technical expertise)
  - ► Modeling capabilities that integrate climate change
  - ► Data collection related to climate concerns

How do we get past, cont'd

- Reframe the issue
  - ► Climate change will exacerbate many existing high-priority management concerns, thereby warranting consideration.
  - ► Uncertainty is an inherent part of decision making; climate change uncertainty fundamentally no different than other uncertainties
  - ► Planning for climate change is necessary for meeting the community's responsibilities at all levels
- Build partnerships and leverage others' experiences
  - ► Develop partnerships with neighboring communities, other stakeholders, etc. for the purpose of cost-sharing
  - ► Look for examples of where other communities are integrating climate information into planning as a means for demonstrating "doability" of the task

Some key elements for designing adaptation plans

- Assessment of climate change risk and opportunities in the context of development;
- Identify adaptation options to address climate risks including cost-benefit;
- Identify possible entry points for considerations of climate change adaptation;
  - Sustainable Development Strategy and Plan
  - Regular Development (National, sub-national and local level) – livelihood improvement
  - Sectoral Development Plan (infrastructure, natural resource management etc.)

Key steps

- Awareness raising among policy-makers and planners
  - This need to science based and development oriented
- Institutional Capacity Building (tools, methodology, and trained human resources)
  - Planners, programme and project developers at different levels – National, Sub-national, local and community level and for different sectors
- Formulation and Implementation
  - Begin with small scale demonstration and learning by doing to modify measures
- Monitoring and improvement

Closing the cycle – some considerations

- The importance of developing adaptation options that can be translated into a concrete management plan and preferably costed
- The importance of aligning the adaptation plan to the National Communications, National Adaptation Plans of Action, and the municipal development strategies
- The importance of taking into account local knowledge and existing coping startegies

Examples of Adaptation

- Bangladesh
- Community-based practices to survive in changing ecosystem condition – floating gardens in seasonal wetlands
- Adaptation at individual household and community level

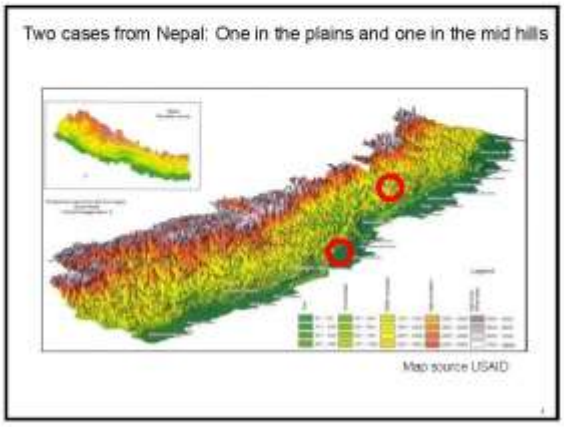
Examples of Adaptation

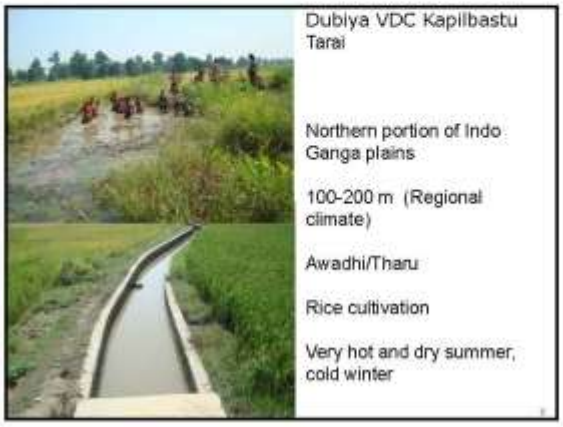
- Nepal
- Introduction of Climate Change issues in minimum performance criteria for local governments to be eligible for performance based public funding
- Planned adaptation at local and national level

Examples of Adaptation

- Regional -Mangroves for
- the Future Program
- Restoration of Mangroves
  - ecosystem as green infrastructures

Knowledge and science-policy nexus for cross-sector adaptation [Mr. Ajaya Dixit]





Responses:

Digging river bed and pumping
At household level: RWH
At community level pond
Selling buffaloes
Move to Kathmandu/urban areas seeking jobs

Not planned by the central government

- Largely local initiative create systems for responding to stresses.
- Local governments provide support
- Resources came from other sources
- Locals contribute labor
- Intermediaries help

- Community based natural resources management approaches are also going on in forest, drinking water, irrigation, trail bridges, community electricity distribution, and micro hydro development etc as basis of collective actions.

Response of state

- Provides overall framework
  - Sectoral policies
  - Invested in building systems
  - Decentralisation
  - Financial resources transfer to local government.
  - Funds to parliamentarians

  Community can organise into groups

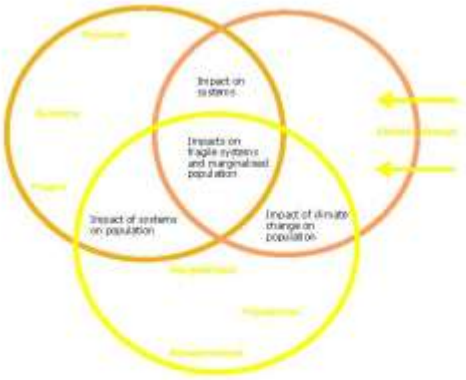
  Community based initiatives on forestry, drinking water, electricity distribution

- Intermediaries operate

Context		Domain	
Current	Scenario	Science	Policy/ies
Temperature Rainfall Evaporation Flow Sediment flow Crop type Etc	How will each is likely to alter in 2030, 2060, 2090	How many stations, regularly collecting facts, analysis, forecasting,	Dissemination plan End users Households and community response Decision making

Who are involved in the process of knowledge generation, sharing, formulating and implementing policies

•	National government	(framework, monitoring and evaluation, level playing field)
•	Sectoral departments	(resources, skills sets)
•	Local government units	(some local governance)
•	CBOs	(as intermediaries)
•	Local community organisations)	(local knowledge and
•	Researchers (Donors)	((CCS, downscaling, methods, new insights, gaps, translation engaging, (funding))
•	Private sector	(local entrepreneurship, incubation, expansion of local market new employment, higher wage)
•	Media: print, TV, radio	(communicating research to public)



In all of above we have not touched upon the dominant discourse in climate change one main drivers of adaptation processes.

Mitigation, adaptation, development and emerging global systems imply growing complexity and wickedness.

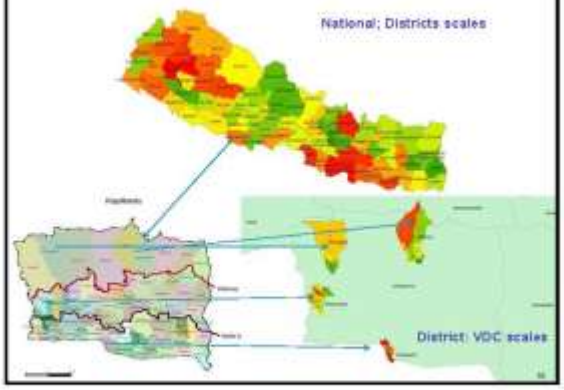
Climate change is a wicket problem requiring uncomfortable knowledge and plural solutions.

Knowledge in plural

Five issues emerge

- How will the localised character of an area change due to global climate change (Temperature rise, erratic rainfall, flood, droughts, snow melt, GLOF, sea level rise etc) .
- Which specific area is likely to be affected more by a the new hazard than the other
- What are resources, systems within that area that will be affected by the hazards [exposure]
- Who is likely to be more vulnerable to hazard impacts?
- What is to done to reduce vulnerability and by whom?

Vulnerability at different scales



Understanding of knowledge and science-policy nexus is necessary to bring together perspectives from multiple disciplines and stakeholders to:

- **Take effective action**: Make available what is known, including what works and does not work.
- **Avoid mal-adaptation**: Help practitioners of policies be better prepared for unintended consequences of their actions.
- **Harmonise:** Explore limitations and gaps in current policies and practices with the objectives of harmonisation.
- **Synthesise knowledge**: Create space for iterative and shared dialogue methods to identify point of entry for changes in policies and practices.

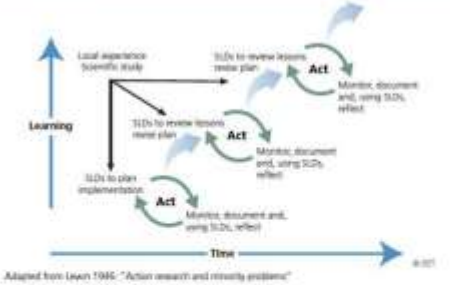
Small, iterative focus group discussions to:

Engage vulnerable groups & assess their capacities.

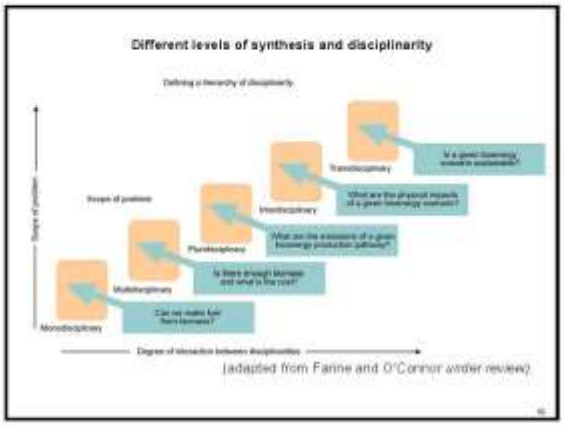
Cross disciplinary and orgranisational boundaries & scales of governance.

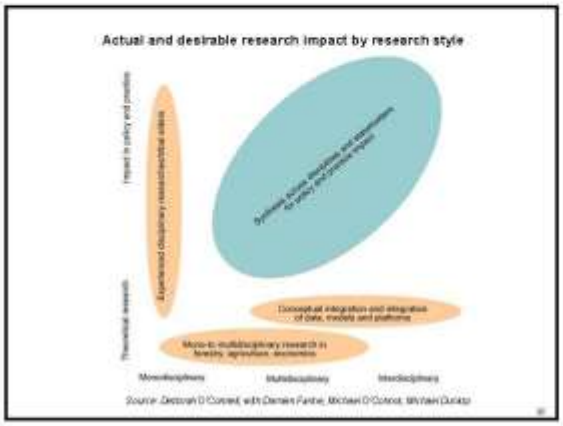
Generate new information & use existing information in new ways.

The Shared Learning Dialogue Process



Adapted from Lewin 1946: "Action research and minority problems"

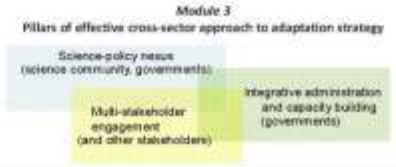

Different levels of synthesis and disciplinarity
Defining a hierarchy of disciplinarity
Scope of problem
Monodisciplinary
Multidisciplinary
Pluridisciplinary
Interdisciplinary
Transdisciplinary
Can we make fuel from biomass?
Is there enough biomass and what is the cost?
What are the economic of a given bioenergy production pathway?
What are the physical impacts of a given bioenergy scenario?
Is a given bioenergy scenario sustainable?
Degree of interaction between disciplinarities
(adapted from Fanne and O'Connor under review)


Actual and desirable research impact by research style
Impact in policy and practice
Theoretical research
Experienced disciplinary researcher/practitioner elders
Systematic fusion disciplinary and approaches for policy and practice impact
Conceptual integration and integration of data, models and platforms
Mono-to-multidisciplinary research in forestry, agriculture, economics
Monodisciplinary
Multidisciplinary
Interdisciplinary
Source: Deborah O'Connell, with Damien Farrell, Michael O'Connor, Michael Dunlop

Multi-stakeholder engagement in policy integration [Dr. Daisuke Sano]

Scope

- Role and importance of multi-stakeholder participation in policy integration
- Various forms of multi-stakeholder engagement for policy integration
- Some overlaps but examined from different angles



1

Outline

- An overview of multi-stakeholder engagement
- Climate adaptation and its challenges
- Challenges of multi-stakeholder approach
- Possible responses to challenges

2

Multi-stakeholder engagement

- Why?
  - Participatory process to make robust decision
  - Democratic process to have minority's voices heard
  - Examine the issue from various point of views
  - Sense of ownership of the issue, etc.
- Who are the stakeholders in cross-sectoral adaptation planning?
  - Multiple sectors: already multi-stakeholder (horizontal)
  - Along the decision-making process (vertical)
    - Public sector, private sector, academia, NGOs, media, general public
  - Supporting/ development agencies, networks/initiatives (external)
  - It also could be across generations (temporal)
- Who should be leading the multi-stakeholder engagement in adaptation planning?

3

Climate change adaptation

- A pair of wheels with mitigation
  - Lower cost for early response and successful mitigation action
  - Inseparable - co-benefits/win-win options
- An essential component of sustainable development
  - Needs cross-sectoral (horizontal) and multi-stakeholder along the decision-making (vertical) approach
  - Should fit into green economy, green growth, etc.
  - Should become a norm to "have development done right"
- Not old, but not all new, either
  - Disaster management, crop variety development, etc.
  - Indigenous knowledge
  - Aim to address possible *incremental* impacts from climate change

4

Challenges 1: Technical capacity

- Limitation in climate change forecasts
  - Accuracy of the short-/long-term forecasts by global models
  - Difficulties in down-scaling and inclusion of micro-climate conditions
- Limitation in assessment methodologies
  - Appropriate indicators for economic, environmental, social impacts
  - Lack of appropriate indicators (a single proxy, compound) to evaluate resiliency, adaptive capacity, the effectiveness of adaptive measures, etc.
- Limitation in availability and quality of data
  - Absence of data, insufficient observation points, lack of standardized data collecting methods, etc.

5

Challenges 2: Institutional capacity

- Capacity in climate change forecasts, vulnerability/impacts assessment
  - National agencies, research institutes, universities
- Governance in strategy development, policy making
  - Awareness
  - Insufficient capacity/mandate of office in charge
  - Poor inter-governmental coordination (cross-sectoral), sectionalism ⇒ *Establishment of national climate council, etc.*
  - Immature democratic/ not-so-transparent decision-making, conflicts of interests, corruption, vested rights, rent-seeking behavior, etc.
- Capacity to identify gaps in adaptation measures and assistance needs, to prioritize issues

6

Challenges 2: Institutional capacity (cont'd)

- Capacity in project implementation, project formulation, accessing/managing fund
  - Lack of experience or aid fatigue/ too much dependency on aid agencies
- Difficulties in policy making under *dynamic* circumstances
  - Rapid development in emerging economies
  - Longer-term planning/inter-generations planning
- Lack of common ground for international climate change discussion
  - Free riders

Mainstreaming of adaptation in Japan

A lot more emphasis on mitigation

Comparison of entry of key words between MAFF and MOE

	Ministry of Environment			Ministry of Agriculture		
	GHG	Mitigation*	Adaptation**	GHG	Mitigation*	Adaptation**
2004	30	10	0	1	1	0
2008	78	114	13	1	1	0
2009	86	197	14	31	54	7

Based on the each ministry's annual white paper (relevant chapters only)
*: Only those related to CO2/GHG were counted
**: Only those appear in the context of climate change were counted
Note: There is a tendency that each ministry tries to reduce the description of the other ministries when reviewed (sectionalism)

Challenges 3: Resources

- Financial base
  - Insufficient national budget
  - Lack of access to external fund
- Human capital
  - Insufficient institutional capacity for policy/decision making (Challenges 2) ⇒ Inappropriate resource allocation/management, issue prioritization
  - Insufficient institutional capacity to develop knowledge base
- Knowledge base
  - Insufficient knowledge generation
  - Lack of clearing house of existing lessons and good practices
  - Insufficient exposure to new knowledge
  - Investigation of emerging issues and new problems

Challenges of multi-stakeholder approach (summary)

- Finding a common ground/vision
  - Conflicts of interests among many stakeholders (present as well as future time)
  - Incorporation of the public comments, extreme views, voices of the minority, etc. and/or lack of such procedures
  - Most likely no pareto optimal solution (losers & gainers)
  - Lack or insufficient mandate in office in charge (topic in the next session) >>> one of the critical points in climate change
- Lack of application of decision-making tools
  - Incorporation of more knowledge-intensive and/or cross-sectoral information into policy making (topic in the previous session)
  - Insufficient incorporation of adaptation component in existing approach and framework

Possible responses to challenges

- Application of available tools to gain lessons
  - Community-based, eco-system-based, vulnerability-based adaptation, EIA, etc.
  - Assessment of enabling factors and/or failures
- Development of supporting tools for decision-making with multiple stakeholders
  - Tailor of the existing tools to national/local conditions
  - Tools to formulate win-win/no regret options
  - Decision-making under uncertainties
  - More centralized or decentralized decision-making process
  - Designing more *adaptive* policies

Possible responses to challenges (cont'd)

- Use of available knowledge from supporting mechanisms
  - Adaptation-related network (APAN, AKP, etc.)
  - AECEN's twinning project (south-south/north-south capacity development), etc.

More broadly,

- Invest on human capacity development and R&D to deal with climate change
  - Education for next generation
  - R&D that induces private sector's involvement
  - Creation of green jobs
- Go beyond adaptation

Integrative Administration and Capacity Building Issues [Mr. Mozaharul Alam]

Overview

Integrative administration and capacity building

- Strong leading department/institutions
- Inter-sectoral/departmental coordination
- Incentives and other logistical issues in inter-unit/department coordination work
- Importance of capacity building work among government personnel for CC integrative analysis and planning

Strong leading department/institute

- Establishment of new institutional setup and/or empowering existing institute/department – national and sectoral
  - Legislation and Mandate – coordination and facilitation
  - Knowledge and Technical Skill – internal and provision for drawing external expertise
  - Financial resources – internal and external
- Example
  - National Climate Change Council, Indonesia
  - National Climate Change Commission, Philippines
  - National Climate Change Council, Cambodia
  - Cambodian Climate Change Alliance (CCCA) – Multi-Donor Trust Fund
  - Bangladesh Climate Change Trust Fund – National Trust Fund

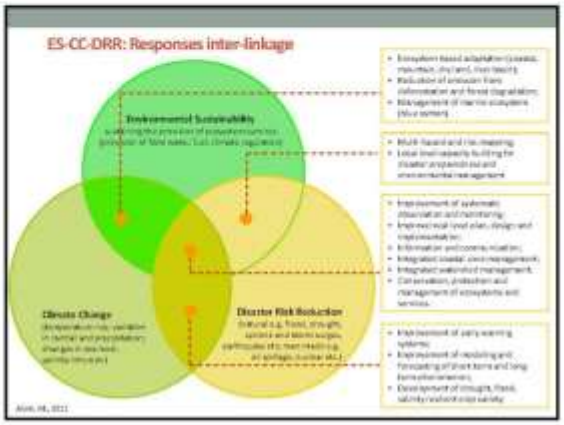
Inter-sectoral/departmental coordination

- Sectors and departments mandates are different but impacts arising from climate change are inter-linked
  - Water and Agriculture
  - Water and Health
  - Agriculture, Food, Nutrition and Health
  - Environmental Sustainability-Climate Change-Disaster Risk Reduction
- Example
  - Multi-sectoral working group
  - Thematic working group

Importance of capacity building

- Sectoral agencies have base capacity to handle their respective sectors, but what do they need to address CC?
  - What does climate change, variability, extreme events etc mean to their respective sector in terms of..
    - impacts, vulnerability, adaptive capacity and so on……
  - Tools, knowledge, technologies to deal with impacts and vulnerabilities
    - Sector and sector support systems
  - What types of capacity building is necessary
    - Different levels (national to local) and different groups (policy to community)

ES-CC-DRR: impacts inter-linkage


ES-CC-DRR: Responses inter-linkage
Environmental Sustainability
Climate Change
Disaster Risk Reduction

Local Adaptation Planning Procedure and Consulting Programs [Dr. Ji young Shin]

Contents

I. Introduction — 1. Backgrounds

- There are definite evidence of climate change and its impacts in every related sector in Korea
  - Temperature increase of 6 major cities are 1.7℃ in 100yr
  - Annual precipitation of 6 major cities are 19% increase in 100yr
  - Rainfall intensity is doubled than 1970s
  - Sea level rise about 8cm in the past 43yr
- Estimates on the impact costs of climate change is about KRW 800 in 2100yr (KEI, 2009) * trillion(1US dollar=1,150 KRW)
- In 2010, Korea established the National Adaptation Strategy and Framework Act on Low Carbon, Green Growth and started to cooperate and communicate with local governments in adaption
- In 2011, local governments started establish their own adaptation plan and now they are in progress

I. Introduction — 2. Objectives of LAP

Definition of Local Adaptation Plan is

a practical and proactive plan in order to help local governments improve their resiliency to climate change impact

- Objectives of LAP is....
  - ✓ Strategies for adapting in changing climate for local governments with considering their own situation
  - ✓ Actions for practical implementation
  - ✓ Chains for linking national adaptation strategies with local level
  - ✓ Process for building adaptation capacity
  - ✓ Measures for developing adaptation awareness and involving various stakeholders

II. Framework for CCA in Korea — 1. Adaptation Policy

- Framework Act on Low Carbon, Green Growth and enforcement ordinance enters into effect on April 14, 2010
- Plans that directly related to CCA are Green Growth Five-year Action Plan, Basic Plan for Coping with Climate Change, National Climate CCA Master Plan

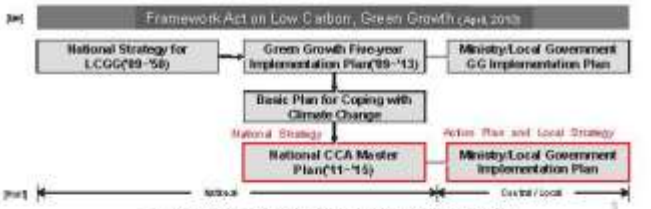


Fig. Climate Change Adaptation Policy Framework in Korea (KEI, 2010)

II. Framework for CCA in Korea — 2. Facilitating factors for LAP

- Introduce Top-down Approach to cope with Climate Change
  - Korea composed a National government adaptation committee with 13 ministries to implement the National Adaptation Strategy
  - Ministry of Environment(MOE) is in charge of the NAS and supporting local governments
- Build up Ground for Adaptation : Policy and Budget
  - In August, 2010, Korea has established the National Climate Change Adaptation Master Plan by Framework Act on Low Carbon, Green Growth and set up the committee to implement the NCCAMP successfully
  - In 2011, MOE allocated about 4billon(USD) in supporting local government adaptation plan
- Establish a National Task Force Center for Adaptation
  - MOE launched a national task force for climate change adaptation , Korea Adaptation Center for Climate Change(KACCC) in 1st July 2009 at KEI
  - MOE and KACCC are working closely to support successful local adaptation plan

II. Framework for CCA in Korea — 3. Preparing for LAP in national level

Central government launched supporting programs for LAP with KACCC in 2010

- Systematic and various supporting programs that helps local governments to enhance their adaptation knowledge and build adaptation capacity
- Supporting programs are divided into 3 categories and now is in 2nd phase

	Guiding & Consulting	Informing	Communicating
	To help local governments prepare for climate change by recommending easy-to understand preparedness based on resources, tools, examples and communication		
Phase 1 (2010)	• **LAP Guideline** • **LAP Pilot studies**	• Inventory of adaptation policy options (national)	• **Workshops, seminars** • Online community : website
Phase 2 (2011)	• LAP Consultation • Impact and risk assessment manual for adaptation	• Climate change projection • Risk assessment • Updating inventory (local and other nations)	• Workshops, seminars, expert forum • Online community : website

Fig. Supporting programs for LAP by National government

Two-pilot projects, showing what is LAP

- Example of adaptation planning in local level
  - Seoul metropolitan city Adaptation Plan - Health and Hazards
  - Incheon metropolis – Coastal and Sea
- To develop a adaptation planning guideline for local governments

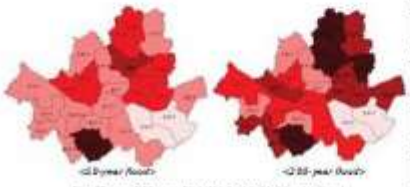


Fig. 50-year 200-year Flood Vulnerability Map in Seoul

Fig. Process of Adaptation Plan in Local Level

Guideline for developing LAP

- By updating 2009 guideline with experience of 2 pilot studies, local authorities can establish more realistic and efficient adaptation plan
- Guidebook begins with introduction(ch1), LAP related concepts and definitions (ch2&3), LAP process and methods(ch4), each sector planning methods(ch5)

Fig. 2010 LAP guideline

Fig. Process of Developing LAP Guideline 2010

Sharing adaptation knowledge and communicating with stakeholders

- Hold meetings, workshops, seminars to share knowledge, know-how with experts, national/local governors and citizens
  - Share knowledge from who already experienced LAP
  - Find issues in preparing and planning LAP by communicating with local governments with national
- Bring out adaptation issues by publishing news letters

National government draw picture of how to manage LAP

- Under National Adaptation Strategy MOE is in charge of leading LAP with local government
- Local government promoted LAP with national government(MOE) and related organizations
  - Korea Meteorological Administration(KMA), National Institute of Environmental Research(NIER), Korea Adaptation Center for Climate Change(KACCC)

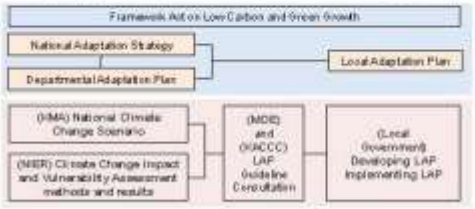


Fig. LAP system in Korea and related organizations

There are 5 principles in developing LAP

- Integration of Policy
  - Adaptation is based on various sectors therefore locals should consider the linkage between related sectors
  - Adaptation policy is not a new one so locals should firstly find-out what adaptation policy they have nowadays
- Double-sidedness of Climate Change
  - Impacts of climate change has both negative and positive sides
- Participation of Stakeholders
  - Adaptation is related to various sectors stakeholders therefore communicating with stakeholders while developing LAP directly connected to successful implementation of LAP
- Focusing on Local Issues
- Feedback mechanism of Adaptation Planning
  - Locals should aware uncertainty of climate change therefore monitoring and assessment must be take account into adaptation plan

LAP Guidebook suggests 5 step LAP development procedure and operates feedback system that lowers uncertainty of climate change

- Step 1 : Prepare the Ground and Order Research Project
  - Attract mayors interest
  - Find the best institute who knows the regional issues well
- Step 2 : Build Task Force Team for LAP
  - Consist of officials and stakeholders act as an advisory group
- Step 3 : Develop LAP
  - Analyze climate change from past to present and Predict future climate change
  - Review previous studies and gather related information
  - Assess impact and vulnerability of the region
  - Set the strategic direction and goals
  - Plan adaptation options
- Step 4 : Publish and Notify LAP
  - Set draft LAP
  - Public hearing and communicating with stakeholders
- Step 5 : Implement LAP with Monitoring and Assessment

LAP diagnosis current status and predict future situation and contains appropriate solutions for locals to adapt in changing climate

- Indentify planning areas relevant to climate change
- Scientific overview of climate change and its impacts
- Survey recognition and overall conditions for adaptation
- Scope the climate change impacts to local major sectors
- A climate change vulnerability assessment
- Overall strategic direction and sector goals
- Potential adaptation actions and prioritize actions by sector

KACCC launched advisory group to support developing LAP and promote local authorities to build their adaptation capacity

- While advisory groups progress consulting they should keep in mind that...
  - ✓ Consider LAP purpose
  - ✓ Consider local's own situation
  - ✓ Consider subjects are professional or not, and accurate or not
  - ✓ Consider the connectivity of each adaptation sector
  - ✓ Consider the linkage between LAP with national adaptation strategy
  - ✓ Consider feasibility of LAP

40 specialists in each 10 sector, a wide range of adaptation sector, are in advisory group

- Specialists in various adaptation sector are participated in LAP Advisory group
- Advisory group specialists are in academic, business area in each 10 sector
  - Sector divides into health, disaster, agriculture, forestry, marine and fisheries, water, ecology, climate, industry and energy, education and public relations, as same as national adaptation strategy sector specific
- Advisory group consults local authorities and planning organizations by
  - ✓ Holding teleconference, workshops, written paper and direct visiting
  - ✓ Cooperating with related internal, international, intergovernmental organizations and NGOs
  - ✓ Publishing guidelines and supporting related information

Consulting steps are closely linked with LAP procedure

- Step 1 : Prepare the Ground
  - Organize advisory group and set-up objectives, direction, systems etc.
- Step 2 : Guiding overall adaptation planning procedure and methods
  - Related concepts and definitions
  - Overall LAP procedures and systems
- Step 3 : Carry out sector specific / step-by step advise
  - Climate analysis and prediction
  - Impact and vulnerability assessment
  - adaptation options
- Step 4 : Synthesize monitoring results and assess LAP
- Overall Step : Monitoring

- Local authorities are still in progress of developing their own adaptation plan
  - Vulnerability assessment results provided in September, 2011
  - Every 16 locals host interim report in October and November
- 1st adaptation plan in local level will be finished in February, 2012 and after this local governments are going to start implementing adaption programs
- Consultation on developing LAP would be changed into supporting local authorities to implement their adaptation programs
- KACCC supporting program is in phase 3 when 2012
  - Update guidebook with using LAP results
  - Operate online information sharing system(adaptation policy inventory tool kit)
  - Monitoring progress of LAP and assessing LAP

Holistic approach in mainstreaming climate change adaptation into policy planning - A perspective from Thailand [Mr. Suppakorn Chinvanno]

Topics

Holistic approach in mainstreaming climate change adaptation into policy planning - A perspective from Thailand

- Climate change adaptation: Fundamental concerns
- Mainstreaming climate change into policy & strategic planning
- Holistic approach in climate change planning
- Conclusion - Food for thought about climate change adaptation planning

Climate change adaptation: Fundamental concerns

- Putting climate change adaptation into proper context
- Various aspects of climate change adaptation
- Matter about scale

Climate change adaptation: Fundamental concerns

Putting climate change adaptation into proper context

Adaptation to changed climate vs adaptation to climate change

Climate change adaptation: Fundamental concerns

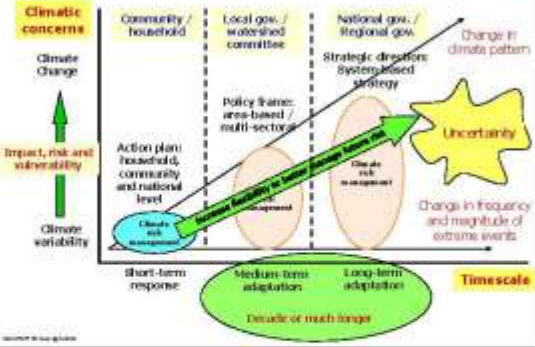
Various aspects of climate change adaptation

Multiple levels of adaptation:
Household / Community / Provincial / National / Regional

Multiple approaches of adaptation:
Individual / Collective

Multiple methods of adaptation:
Engineering – technical solution / Social – livelihood – economic aspect / Institutional aspect/ etc.

Matter about scale – different levels of adaptation



Mainstreaming climate change into policy planning

- Uncertainty about future
- Paradigm shift in climate change adaptation planning process
- The story of Lao-oi district, Kalasin Province, Thailand

Mainstreaming climate change into policy planning

Can we really tell the future?

Dealing with uncertainty is not about trying to make certainty out of uncertainty, but to be prepared for various circumstances, even unlikely situation

Mainstreaming climate change into policy planning

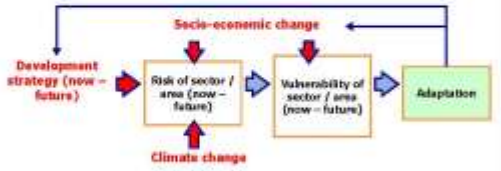
The way forward:

Paradigm shift in climate change adaptation planning ....

Future climate projection	Future climate change impact analysis - sector	Vulnerability analysis	Adaptation options aim at solving future problem – maintain status quo

Mainstreaming climate change into policy planning

Alternative approach: from impact-based to risk-based assessment



Mainstreaming climate change into policy planning

Alternative approach: Area-based / Community-based approach

Mainstreaming climate change into policy planning

Story of Lao-oi district, Thailand – Mainstreaming climate change into climate risk management strategy

Climate risk management strategy will put community into different context – different risk profile

Mainstreaming climate change into policy planning

Current context: wet-season rice / community is located along river

Climate risk – farmer vulnerability

- Exposure: Flood before harvest / 7-8 times in a decade
- Sensitivity: Rice has low tolerance to flood
- Coping capacity: Dry season rice – partially / government compensation / seasonal migration

Mainstreaming climate change into policy planning

Strategy to cope with current climate risk

New farming practice - Won't fight with flood – change to dry season rice – use water from main river through pumping station and underground pipe system

Path leads to dead end?

Mainstreaming climate change into policy planning

Strategic move to cope with current climate risk leads to different context and different risk & vulnerability profile

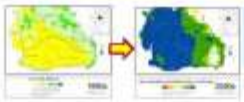
Future context: Dry-season rice practice

- Exposure: Drought / heat
- Sensitivity: Rice has low tolerance to drought / heat
- Coping capacity: Limited – single source of water supply

Mainstreaming climate change into policy planning

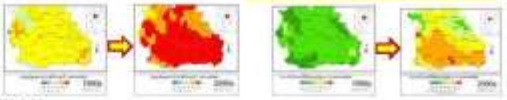
Will such strategy leads to new problem – wasteful investment?

Warmer and longer summertime – reduced river flow whilst crop water demand could be higher to compensate higher evapotranspiration



Increase rainfall in rainy season suggests higher flood risk
Strategy heading toward right direction

But current response to climate risk may not sustain under warmer and longer summertime in the future



Mainstreaming climate change into policy planning

Adaptation: alternative in strategy implementation
Alternate source of water resource – harvest water during flood season for dry season agriculture

Mainstreaming climate change into policy planning

Conclusion:

- Adaptation in reality >> linkage between present and future / the smaller the unit of analysis – the stronger linkage with the present

Holistic approach in climate change planning

- Why holistic approach?
- Cross sectoral concerns
- The story of Krabi Province, Thailand
- Gaps in policy planning

Holistic approach in climate change planning

Climate change adaptation planning under multiple threats

Issues of concern:

- Climate is one of the changes among many
- Multiple stressors
- Multiple Stakeholders
- Context change over time

Milind Kandlikar
Institute for Resources, Environment and Sustainability, University of British Columbia

Anshuj Sagar
John F. Kennedy School of Government, Harvard University

Holistic approach in climate change planning

Why holistic approach?

- Society / a landscape is a complex system – consist of various sub-systems / sectors
- Different sectors have different concerns
- Different sectors response to risk / pressure differently
- Thus, response of a sector may affect the others
- Planning for climate change adaptation in the context of society / landscape would ensure harmonized climate risk management of different sectors

Holistic approach in climate change planning

Multiple dimensions of climate change

- Climate change is not uniform across space and time - overlook multiple dimensions of climate change in various aspects:
  - Magnitude – change in range of weather pattern
  - Frequency – change in return cycle of extreme weather event
  - Distribution over time and space
    - Temporal – e.g. length of season, onset – end of season, distribution of weather parameters over time
    - Geographical – e.g. area of hot area / distribution of weather parameters over geographical area

Different areas / systems / sectors have different concern on future climate change

Holistic approach in climate change planning

Cross-sectoral concerns: Different sectors have different concern about future climate change

Some sectors may be directly affected, but some me be affected along the chain of consequences of climate change

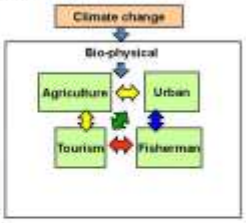
Holistic approach in climate change planning

Cross-sectoral concerns: Different sectors have different concern about future climate change

Shift and change in seasonality / rainfall distribution / etc.

Coastal erosion / water resource / ecosystem integrity / Natural hazard / etc.

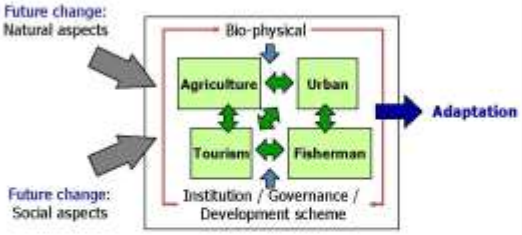
Agriculture / Fisheries / Forest ecosystem / Tourism / Urban / Etc.



Different sectors are at risk by different climate change

Holistic approach in climate change planning

Planning adaptation strategy should base on holistic view on future change: Cannot take climate change as isolate issue



Holistic approach in climate change planning

Shift and change in seasonality / rainfall distribution / etc.

Coastal erosion / water resource / ecosystem integrity / Natural hazard / etc.

Agriculture / Fisheries / Forest ecosystem / Tourism / Urban / Etc.

Water allocation policy / market condition / migration / public infrastructure / etc.

Climate change

Bio-physical

Agriculture

Urban

Tourism

Fisherman

Institution / Governance / Development scheme

Socio-economic change

The story of Krabi Province, Thailand

Climate scenario

Climate change

Shorter rainy season

Stronger monsoon season

Sea level rise

Longer tourism season

Less water to support agriculture

Higher dependency on coastal ecosystem

Aquifer contamination

Tourism

Agriculture

Coastal community

Urban

Migration

Higher water demand

Less fresh water to maintain coastal ecosystem

More tourists

More palm oil plantations

Tourism promotion

Bio-fuel promotion

Socioeconomic scenario

Socio-economic change

Example of case study in Krabi province Thailand

Final report: http://www.start.org/downloads/thailand_full_final_report.pdf

The story of Krabi Province, Thailand

Climate change

Shorter rainy season

Stronger monsoon season

Sea level rise

Longer tourism season

Less water to support agriculture

Higher dependency on coastal ecosystem

Aquifer contamination

Tourism

Agriculture

Coastal community

Urban

Migration

Higher water demand

Less fresh water to maintain coastal ecosystem

More tourists

More palm oil plantations

Tourism promotion

Bio-fuel promotion

Socio-economic change

Fragmented planning by mandate of each government agency – cross sectoral issue is neglected

Holistic approach in climate change planning

Conclusion:

- Holistic approach in climate change adaptation planning may require new or enhance institutional arrangement to cover cross-sectoral issue

Conclusion - Food for thought about climate change adaptation planning

Food for thought about climate change adaptation planning

- Mainstreaming climate change adaptation into development plan & holistic approach may require paradigm shift in planning process
- Mainstreaming climate change into sectoral planning is still necessary – need to address strategic direction under future circumstances
- Climate change adaptation is not about plan to fix problem in the future under today's context
  - To ensure that strategy with long-term effect will sustained under climate change condition
  - To ensure that climate risk management strategy will still be applicable option in the future
- Climate change adaptation is a continuous process – NOT static planning. Need to be reviewed and revised over time.

Thank you

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How to prioritize climate change adaptation measures? [Dr. Yeora Chae]

Contents

Ⅰ. Introduction

1. Research needs

- Even if stringent global GHG emissions reductions prove to be successful, further climate change seems to be inevitable (IPCC 2007)
- Climate change impacts will be unevenly distributed and put additional pressure on social-ecological functions and structures.
- Policy makers at national and local levels have begun to initiated dedicated adaptation practices to counter adverse impacts.
- Formal planning for climate change adaptation is emerging rapidly
- To maximize the benefit of adaptation, prioritizing adaptation options are essential

2. Research tasks

- To investigate adaptation measures and plan
- To categorizes adaptation options
- To analyze methodologies for evaluating adaptation options
- Multi-criteria analysis, cost-benefit analysis, etc.
- To develop a methodology for prioritizing adaptation options

Ⅱ. Climate change adaptation

1. Objective of adaptation: What is successful adaptation?

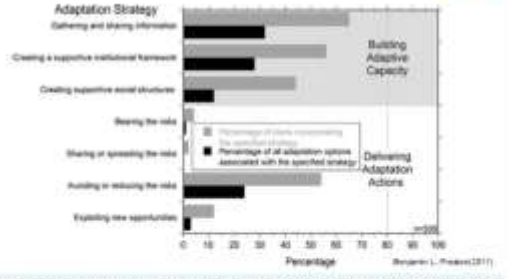
- To maintain climate-related risks at present level
- To reduce risks from present level if current risks are unacceptable
- To minimize exposure of most vulnerable population

- cost effectiveness
- equity: distribution of benefit
- sustainability

2. Classification adaptation strategies

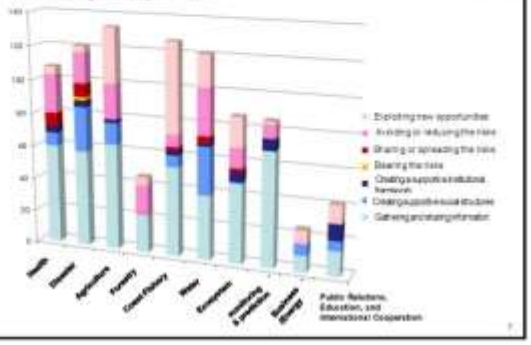
Strategy	Example
Building Adaptive Capacity	
Gathering and sharing information	Undertaking research; collecting and monitoring data; and raising awareness through education and training initiatives
Creating a supportive institutional framework	Changing standards, legislation, and best practice guidance; and developing appropriate policies, plans and strategies
Creating supportive social structures	Changing internal organizational systems; developing personnel or other resources to deliver the adaptation actions; and working in partnership
Delivering Adaptation Actions	
Bearing the risks	Manage retreat from sea-level rise and/or flooding
Sharing or spreading the risks	Insurance and/or hedging against uncertainty
Avoiding or reducing the risks	Upgrade of existing infrastructure; installation of new infrastructure; changing the timing and/or location of activities and enterprises; bolstering emergency and disaster management responses
Exploiting new opportunities	Adjust behavior to take advantage of changing climatic conditions; deploy a new technology and/or practice; engage in a new activity or enterprise

3. The percentage of adaptation strategies

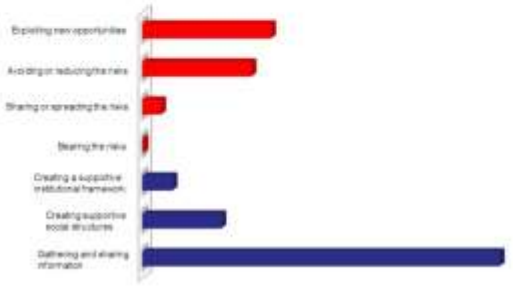


The 'percentage of plans incorporating the specified strategy' represents the proportion of the 57 adaptation plans that had at least one adaptation option consistent with a given adaptation strategy (UKCIP 2008).

4. The Current Situation of Korea adaptation strategies (group)



5. The Current Situation of Korea adaptation strategies (type)



Ⅲ. Prioritizing adaptation options

1. The process of evaluation in adaptation

1) Identification of core stages in adaptation planning from the decision science and development evaluation literature
2) Identification of critical planning processes associated with each planning stage that can be used as evaluation criteria
3) Selection of adaptation plans for evaluation
4) Scoring of plans against evaluation criteria
5) Categorization of adaptation options embodied within plans

Benjamin L. Preston et al.(2011)

2. The process of evaluation in adaptation (Han, 2007)

1) Organizing stakeholder group
2) Listening stakeholder's opinion in pre-assessment
3) Building adaptation assessment framework through legal, social, political process
4) Vulnerability assessment
5) Identification of priority option through stakeholder's agreement
6) Public hearing

3. The feature of evaluation in adaptation

1) Benefits of adaptation occurs far future and uncertain.
2) Hard to measure benefits of adaptation
3) Benefits of adaptation may be realized by combination of options: hard to measure each option's individual benefit
4) Climate change impacts would differ depending on physical, economic, social condition: regional, sectoral analysis required.

4. The criterion of evaluation in adaptation

- Climate change impacts & risk
- physical, economic, social condition
- feature of adaptation options
- Cos-benefit analysis
- main-streaming
- Environmental aspect
- **legal aspect**
- Policy aspect

Sergio Margulis et al.(2008)

5. Relevant criteria for adaptation assessment

[illegible]

6. Summary of Assessment methods

[illegible]

7. Role of adaptation evaluation

1) Ensuring reduction in societal and ecological vulnerability:

One of the key aims of climate adaptation is to reduce the vulnerability of human and natural systems to the effects of climate variability and change.(or, in other words, the avoidance of 'dangerous' climate change)

2) Learning and adaptive management:

Climate adaptation is fundamentally a process of social learning.

3) Need for accountability in an evidence-based policy environment:

From a governance perspective, investments in adaptation and the outcomes they achieve must be transparent.

8. Progress on Adaptation

Frédéric Gagnon-Lebrun and Shardul Agrawala(2006), "Progress on Adaptation to Climate Change in Developed Countries", OECD

Legend

Coverage

Quality of discussion

10. Multi-criteria Analysis for Adaptation Option

Criteria and indicator	Rating
Win-win options Does option address current climate variability and future climate change?	1= uncertainty 2= based only current 3= Both current and short term (3-5 yeas) 4 = medium to long-term (more than 5 years)
Existing risk management Is the option consistent with existing risk management activities?	1= No 2= consistence in short term (extreme event) 3= consistent in long term (average change) 4= both short and long term
Cost effectiveness Can costs and benefits of option be easily determined?	1= very difficult 2= difficult 3= easy 4= very easy
Adaptive flexibility Does the option focus on narrow range of future scenarios, or allow flexibility of response?	1= no, irreversible 2= limit flexible 3= flexible 4= very flexible and easy
Unintended impacts Potential negative spin-off impacts beyond targeted activity?	1=Adverse impact 2= uncertain 3= no impacts 4= benefit impact
Practical considerations Is the option practical and feasible for implementer?	1= unfeasible, impossible 2= More problematic 3= Relatively simple 4= more easily
Knowledge level How certain we are in predicting a particular change in hazard and its impact?	1= uncertainty (less 10%) 2= low certainty (10%~30%) 3= medium certainty (about 50%) 4= high certainty (more than 80%)
Policy Coherence Does option reflect local and national DRR / adaptation plans or studies?	1=only long-term or only medium term need 2=long and medium term need 3= short term need 4= both above all
Emission Reduction Potential Does option have technology potential for removal and GHG emission reduction	1= no 2= low 3= Medium 4= high
TOTAL	[illegible]

- 11. Selection criteria for adaptation options (Klein et al. 1997)
  - # of countries, or population affected by climate change impacts
  - probability of climate change risk
  - Irreversible higher cost impacts
  - Tendency on mal-adaptation
  - Long-term projects like infrastructure

- Urgency
- No-regret characteristics of options
- Co-benefits of other sectors and domains
- Mitigation effect

IV. Identifying evaluation criteria

1. Selection of evaluation criteria

- Previous studies
- Recommendation from other institutions, organizations
- Expert survey

Expert survey

- Experts: adaptation scientist ( ), Policy analysits ( ), policy makers ( )
- Evaluation criteria, concepts, assessment methodology, etc.
- Selection among criteria

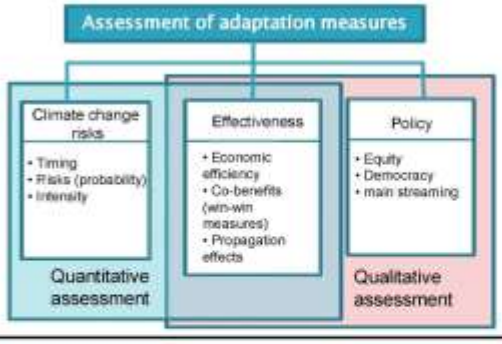
2. Evaluation criteria

Evaluation criteria		
Climate change risk	Climate change risks	Climate change risks (Probability)
	Climate change impacts	# of people, area effected by climate change
	Timing	Timing of climate change impacts occur
	Intensity of climate change	# of mortality, morbidity, damage cost ($)
Policy	Equity	Consideration of vulnerable group
	Democracy	Consensus on stakeholders' opinion
	main-streaming	- Identification of ways to adaptation can be institutionalized or embedded into existing or new policies and plans
Effectiveness	Economic efficiency	Cost, effectiveness, benefits
	Co-benefits	Exploitation of synergies
	Propagating effect	Communication and network

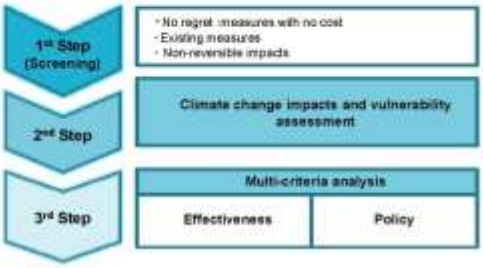
2. Evaluation criteria

Evaluation criteria		Analysis methodology
Climate change risk	Climate change risks	Quantitative analysis: Vulnerability analysis; Climate change impact assessment
	Climate change impacts	
	Timing	
	Intensity of climate change	
Policy	Equity	Qualitative analysis; Multi criteria analysis, AHP, BAP
	Democracy	
	main-streaming	
Effectiveness	Economic efficiency	Quantitative analysis: cost benefit analysis
	Co-benefits	Quantitative analysis
	Propagating effect	Qualitative analysis

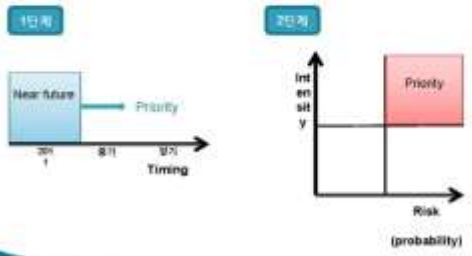
6. Prioritization of climate change adaptation measures



7. Assessment steps



8. Climate change impacts and vulnerability assessment



V. Further steps

- Expert survey on evaluation criteria, relative weight, assessment scale
- Pre-test on adaptation plan
- To build a prioritizing framework for sectoral adaptation options