PROCEEDINGS OF THE SECOND APN SCIENCE-POLICY DIALOGUE

GLOBAL CLIMATE CHANGE: REDUCING RISK AND INCREASING RESILIENCE

Proceedings of the Second APN Science-Policy Dialogue: Global Climate Change—Reducing Risk and Increasing Resilience

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Acronyms

ADB	Asian Development Bank
APN	Asia-Pacific Network for Global Change Research
APAN	Asia Pacific Adaptation Network
AWCI	Asian Water Cycle Initiative
CDKN	Climate and Development Knowledge Network
GDP	Gross Domestic Product
ICIMOD	International Centre for Integrated Mountain Development
IPCC	Intergovernmental Panel on Climate Change
LEAD	Leadership for Environment and Development
LoCARNet	Low Carbon Asia Research Network
NAPs	National Adaptation Plans
NEC	National Environment Commission, Bhutan
nFP	National Focal Point Member of APN
SCP	Sustainable Consumption Production
SPD	Science-Policy Dialogue
SPG	Scientific Planning Group Member of APN
START	SysTem for Analysis, Research and Training
UNEP	United Nations environment programme
ICRAF	World Agroforestry Centre

Executive Summary

This report provides information on the findings and recommendations from Asia-Pacific Network for Global Change Research (APN) South Asia Science Policy Dialogue on Global Climate Change: Reducing Risk and Increasing Resilience, which was held in Thimphu, Bhutan from 19-21 January 2015. The dialogue was organised by APN and the National Environment Commission of Bhutan with financial support from APN, CDKN and LoCARNet. The three-day dialogue was attended by 50 scientists and policy makers from Bhutan, Bangladesh, India, Japan, Nepal, Pakistan and Sri Lanka.

From 2010, South Asia has shown remarkable economic growth and reduced poverty in the region. However, the environmental impacts, such as extreme events, have caused significant problems in the region. In order to address this, the sub-regional Science-Policy dialogue was held and provided an opportunity for scientists and policy makers to share their knowledge and experience. The dialogue also provided a platform for regional experts and policy makers to share best practices.

Under the theme "*Climate Change: Reducing Risk and Increasing Resilience*", the Science-Policy Dialogue was designed around five activities that incorporated sessions on knowledge-sharing/ management, carousel/café kiosks, roundtable and panel sessions; and participatory games. Three main themes on urban areas (climate impacts & risk reduction); food and water security in the rural context; and low carbon society and sustainable pathways were discussed in the context of rural and urban sectors with a cross cutting theme on sustainability.

The dialogue drew attention to the fact that while countries in South Asia have policies to address climate change issues, the region lacks policy implementation. Communication gaps exist between scientists and policy makers and intermediate agents, such as media, need to take an active role to overcome the gaps. Conducting regular dialogues at the national level was suggested as an action that may benefit both scientists and policy makers to reduce these gaps in communication. This may help transfer scientific outcomes to immediate and future policy planning processes and action.

Research funding agencies may need to consider as much as 30% of financial allocation for research dissemination activities in order to ensure that scientific findings reach relevant end users. Although South Asia has research activities on global change science, more policy analysis research, country specific studies, and nexus studies are needed for better understanding.

Climate change issues are closely connected with climate and non-climate factors. Therefore, future research studies and actions must consider climate change issues with development issues, gender balance, and poverty. Furthermore, to avoid cases of maladaptation, which occurs mostly due to lack of community involvement, work needs to be done at the ground level with communities.

Even though South Asia has short-term capacity development activities; long-term capacity development is needed for disaster risk reduction and to build resilience. Capacity development of scientists and policy makers on communication was noted as a key area to reduce communication gaps and increase knowledge sharing. Furthermore, capacity development of policy makers to understand new scientific knowledge was identified as another area needed. South Asia needs more cooperation among countries to achieve sustainable development while addressing climate issues. Especially, policy makers should consider regional issues together with national issues when formulating national policies.

PART ONE – OUTCOMES & RECOMMENDATIONS

1. Take Home Messages

Communications

- ü There are gaps in transferring scientific finding into policy planning. Scientists need to present their finding in a format that policy makers can easily understand. **More evidence-based science and action-oriented research** are needed to attract policy makers.
- ü **Researchers needed to identify short-term and long-term actions** when delivering scientific outcomes to policy makers.
- ü To motivate scientists to policy-related studies, a mechanism is needed to monitor and evaluate research activities that have been effective at the ground level in developing policy and reward such incentives.
- ü The best approach to transfer scientific findings to policy planning is to hold face-to-face discussions among scientists and policy makers and identify each party's needs.
- ü Climate change research needs to be considered together with development issues, gender balance, and poverty.
- ü There are communication gaps between scientists and policy makers, and intermediate agents need to take an active role to narrow the gaps.
- ü Knowledge gaps and communication gaps are interrelated. Approaches to combine the two should be considered when addressing gaps
- ü There are forums, dialogues, workshops in the region that enhance communications between science and policy. To make effective use of the outcomes of those events, participants should take responsibility to disseminate the information as widely as possible.
- ü There is less interest from policy communities in Science-Policy dialogues compared with scientists. For Science-Policy dialogues to be more attractive, involvement of a champion or well respected person in the country is recommended.
- ü Practitioners need to be considered as key agents in science and policy engagement.
- ü Considering the communication among different levels four key points must consider.

- **ENABLE- Informed decisions**
  - o Collect information and advice from science and inform various levels up to to policy makers for decision-making.
- **WRITE- For people to understand and to act**
  - o First, we need to educate the audience to receive knowledge of scientific findings. Scientific information that is policy-relevant must be written in language that is understandable (layman terms).
- **CAPTURE- Knowledge from practice**
  - o Knowledge is distributed everywhere but needs to be captured and connected between audiences for effective usage.
- **INNOVATE-Double the impact in half of time at quarter the cost**
  - o Need to emphasise the importance of innovation over commercial benefit, which provides solutions for climate change and its impacts.

Science-Policy Engagement

- South Asia has well established policy frameworks and responsible actors to address the climate impacts and risk reduction. However coordination and communication between the actors is lacking. Therefore to understand the effectiveness of the policies there is a need to review policies and implementation strategies.
- To strengthen the process of transferring the science in to action, collaboration between scientists, policy makers and practitioners is very important. Particularly, knowledge creation, processing and dissemination should be connected and considered as one process rather than independent activities.
- Learning from best practices and ongoing experiments has to scale up through wide dissemination. Action or behavior that causes climate change such as human consumption patterns, needs to be changed ina way where we can reduce the impacts.
- Innovative research and capacity building activities are needed to strengthen science and policy collaboration. Especially, national and regional dimensions need to be considered in some situations such as migration where national policies closely connect with regional situations. Therefore, regional science collaboration and advocacy plays a vital role to understand connections between national level and regional level policies
- In context of food and water security past few decades through globalization, market has been move from self-reliance system to demand drive system. However climate change is pushing back to self-reliance strategy. Therefore in future we need to consider new mechanism where national level interest can lead for regional cooperation avoiding conflict between country interests.
- In the field of low carbon society and sustainable development, scientists believed that 2 degree target can be attained in the next 40 years. However, every actor needs to have the same level of understanding to achieve this target. Therefore, solution oriented research and action are needed.

Knowledge Management

- When considering all aspect of climate change, the impact of livelihoods and vulnerabilities need to be highlighted.
- Food and water nexus is very important when considering climate impact and also it highly depended on natural resource availability. In South Asia water availability is the limiting factor for human life and it affect many areas such as human migration. Therefore any actions to resolve the impact of climate change in food and water sector, should consider it as nexus than it as individual.
- Low carbon growth enables survival of the earth system. South Asia aiming for rapid development in future therefore policy makers should consider low carbon growth as the pathway to development.
- Increase the access to research information and enhance the conversation between science, policy and community. More investments are needed in this sector to achieve the effective science, policy and community coordination.
- Climate change should not consider as a national and sub-national issue. Impacts are applicable to global and regional level therefore more opportunities for cooperation and collaboration at the regional level are needed.
- More national level dialogues between stakeholders and communities are needed and outcome of those dialogues should feed to regional level dialogues.

Role of Media & Media Engagement

- Involving media in Science-Policy dialogues will help scientists and policy makers understand how key science or policy issues can attract the public.
- Although media engagement is an important factor to enhance communication between scientists and policy makers, media should be careful to ensure proper interpretation of the facts in their media-related articles and reports.
- To attract media to scientific or policy studies, modified approaches are needed by scientists and policy makers who should relate their findings with real situations that can provide some kind of sensational value to the outcome. Media needs to report what is perceived by the public as "newsworthy".
- Even with limited resources, science can reach end users in two ways: i) Scientists should work closely with intermediary agents such as media; and ii) associating the impact of scientific findings with human issues where policy makers and communities can readily relate to and understand the information being articulated.

Research Needs

- Country- and regional-level policy analysis research
- Proper scientific analysis to identify factors that lead to communication gaps among scientists and policy makers
- Research to identify the best communication strategies and/or innovative communication products to enhance communication and narrow the gaps.
- More nexus-oriented research is needed to understand the relationship among and between water and food security, low carbon initiatives and health
- Research studies are needed to understand how national-level subsidies affect the region
- Research on low carbon future and risk-resilient lands
- Exploring multi-level governance frameworks in South Asia and identifying policy-relevant research areas
- More research on integrated adaptation methods that combine climate and non-climate factors
- Data on groundwater research studies are comparatively low compared to surface water research studies. Especially information on quality and quantity of groundwater data is needed.
- Regional research studies to understand how national-level policies impact at the regional level
- Research on collecting and analyzing data and indicators on resource use and consumption
- Country-specific studies on low carbon development to determine the action and technology needed to achieve low carbon society and which sectors are responsible for this.
- More scientific studies on analysis of how economic regulations may affect the levels of resource use and consumption.

Capacity Development Needs

- Capacity building of policy makers to understand new scientific knowledge and its usage for better policy planning
- While scientists and policy makers understand the importance of communication, they do not have a proper understanding of communication tools and their usage to reach end users. Therefore, there is need for training to improve the understanding of communication.
- Media workshops to train journalists and increase media attention to scientific activity
- Long-term capacity development projects are curial to maintain an effective mechanism for increased resilience and disaster risk reduction.

- ü There are different categories of policy makers. When scientists feed knowledge to policy makers, they should understand this diversity.
- ü In the process of science to action, there are different levels of communities (politicians, investors, general public, etc.) and each community has its own standard of credibility and validation of data.
- ü It is difficult to capture knowledge from practice. Therefore from the beginning, it should be defined what kind of knowledge is to be targeted from practice. Produced knowledge should be based on validated information or data that comes from practice.
- ü Most investment in capacity development is short term. Donors are reluctant to invest in **long term capacity development which is crucial to maintain an effective mechanism** to address disaster risk reduction and build resilience.

2. Recommendations

National:

- ü Sub-national and national-level science-policy dialogues are needed to help gather ideas and experiences from district-level officers that are working at the ground level to address mitigation and adaptation.
- ü Most countries in South Asia have authorised ministries or institutions to take action on climate change. However, one ministry or institution cannot answer all problems related to climate change so there is need for better communication among ministries and between ministries and other relevant stakeholders.
- ü There is currently still a silo-approach to the work undertaken at ministerial levels and more cross-ministerial decision-making is needed.
- ü Countries in South Asia have policies that are related to climate change and adaptation; however policy implementation processes are slow. Therefore, more attention should be placed on implementation processes.
- ü Most maladaptation occurs due to lack of community involvement. Therefore work at the ground level must be considered together with communities so they can adopt the best adaptation practices and avoid maladaptation.

Regional:

- ü Some countries in South Asia, such as Bhutan, lack advanced scientific research and knowledge to integrate scientific findings into national level policy planning. Thus, regional dialogues provide opportunities to gain knowledge from other countries scientific studies.
- ü To effectively address the climate issues regional cooperation is essential. Especially policy makers should consider regional issues together with national issues when they formulate national policies.
- ü There is a need to strengthen regional cooperation and collaboration in data collection, sharing and use for effective response to disaster risk reduction & climate change adaptation.

International:

- ü Research funding agencies may need to consider as much as 30% financial allocation for research dissemination activities in order to ensure proper transfer of scientific findings to end users.
- ü We must continue to emphasise the uncertainty of climate change and its consequences.

Recommendations for future dialogues:

- Dialogues should involve various levels of policy makers from sub-national, national, regional to international levels
- The final decision of policy implementation depends on the political decision. Involvement of politicians is, therefore, crucial in science-policy dialogues.
- More engagement of social scientists and young, early-career scientists involvement should be considered
- In addition to the dialogue itself, field visits to show best adaptation practices may provide stronger influence to participants
- Regional networks and organizations that have similar interest should be involved
- Community or local people are important agents at the implementation stage. Future dialogue may consider engaging them.
- Sessions that discuss outcomes of policy analyses to find interrelationships between policy thematic areas are desirable.

PART TWO – COMPREHENSIVE REPORT

1. Background

The Asia-Pacific Network for Global Change Research (APN) is a network of 22 Member Country governments that has been promoting global change research in the Asia-Pacific region for almost 20 years. APN has been working since 1996 to promote global change research in Asia and the Pacific region. As a result of continuous efforts, APN initiated sub-regional science-policy dialogues to strengthen interactions between the science community and policy makers. The first dialogue was held in Bangkok in 2012 in collaboration with START International and drew over 90 participants across Southeast Asia. The second science-policy dialogue was held in South Asia, in Bhutan from 19-21 January, 2015. A third dialogue and synthesis is planned to be held in late 2015 and 2016, respectively, as part of APN's 20th anniversary celebrations.

From 2010, South Asia has shown remarkable economic growth and reduced poverty in the region. However, the environmental impacts, such as extreme events, have caused significant problems in the region. For example from 1990 to 2008 it affected more than 750 million people in South Asia. (Ahmed, M. & Suphachalasai, S., 2014). To effectively address the environmental impacts, South Asia should, as a sub-region of Asia, jointly address issues and implement effective policies. In order to facilitate this, the sub-regional Science-Policy dialogue provided an opportunity communicate scientists and policy makers to share their knowledge and experience as well as a provided a platform for regional experts and policy makers to share best practices.

2. Activity Summary

The South Asia science-policy dialogue was a three-day event held in Bhutan under the theme "*Climate Change: Reducing Risk and Increasing Resilience*". The dialogue engaged up to 50 scientists and policy makers from South Asia countries of Bhutan, Bangladesh, India, Nepal, Pakistan and Sri Lanka. The dialogue organised by Asia-Pacific Network for Global Change Research (APN) in collaboration with the National Environment Commission, Royal Government of Bhutan and Low Carbon Asia Research Network (LoCARNet), Japan; and Climate and Development Knowledge Network (CDKN), Pakistan.

The dialogue consisted of five sessions that incorporated knowledge-sharing and knowledge management sessions, carousel/café kiosks, roundtable and panel sessions; and participatory games. Three main themes were covered in the dialogue in relation to rural and urban sectors and with a cross cutting theme on sustainability. The topics for the dialogue were selected based on regional priorities stressed by APN's South Asia Sub-Regional Committee and included:

1. Urban Areas (Climate Impacts & Risk Reduction)
2. Food and Water Security in the Rural Context
3. Low Carbon Society and Sustainable Pathways

3. Objectives

- To have a dialogue among scientists and policy makers from South Asia on issues particularly relevant to the region
- To provide scientific input to policy- and decision-making, and strengthen interactions among scientists and policy makers
- To share recent advances in scientific knowledge in climate change as published in the IPCC Fifth Assessment Report (IPCC AR5)
- To consider implications for decision-making and policy communities, inform them of potential

actions to reduce vulnerability and promote effective responses and tools for decision-making.

4. Outcomes

- Participation by 50 scientists and policy makers from South Asia
- Sharing of recent advances in scientific knowledge in climate change as published in the IPCC Fifth Assessment Report (IPCC AR5).
- Identification of gaps in the communication channel between science and policy makers
- Identification of research and capacity development needs in the region
- Publication of a policy brief and a workshop proceedings with a list of recommendations

5. List of Partners

1. Asia-Pacific Network for Global change research (APN) - main organiser and financial donor
2. National Environment Commission, Royal Government of Bhutan - co-organiser providing logistical support for the event
3. Climate and Development Knowledge Network (CDKN) as financial donor
4. Low Carbon Asia Research Network (LoCARNet)t as financial donor
5. Other partnering institutions.
    i. Asia Pacific Adaptation Network (APAN)
    ii. Asian Water Cycle Initiative (AWCI)
    iii. International Centre for Integrated Mountain Development (ICIMOD)
    iv. International Development Research Centre- Asia Regional Office
    v. Leadership for Environment And Development(LEAD)
    vi. Red Crescent Red Cross
    vii. SysTem for Analysis Research and Training (START)
    viii. United Nations Environment Programme (UNEP)
    ix. World Agroforestry Centre (ICRAF)

6. Opening Session

Asia-Pacific Network for Global Change Research (APN), with its partner institutions, embarked on a dialogue: "Global Environmental Change: Reducing Risk and Increasing Resilience" from 19-21 January 2015 in Thimpu, Bhutan. With attendance of over 50 participants, including 38 international participants, and graced with the presence of Her Royal Highness Princess Ashi Sonam Dechan Wangchuck, the Science-Policy Dialogue (SPD) was opened with a traditional Bhutanese Marchhang Ceremony and followed by welcome remarks from Dr. Ugyen Tshewang, Secretary, National Environment Commission Secretariat, Royal Government of Bhutan and Mr. Hiroshi Tsujihara, Director of the APN Secretariat.
In his welcome speech, Dr. Tshewang highlighted the important leadership and role of fourth Druk Gyalpo, His Majesty Jigme Singye Wangchuck in conservation of the environment in Bhutan. He noted that this event was the first in a series of events to be held in Bhutan in 2015 to mark the Sixtieth birth Anniversary of his Majesty, the fourth Druk Gyalpo.

In his opening remarks, Mr. Tsujihara expressed his gratitude to the Royal Kingdom of Bhutan and the National Environment Commission of the Royal Government of Bhutan for hosting the event. His desire for rich discussions among policy makers, scientists and members of civil society to openly share their opinions and experiences on global climate change in the context of risk and resilience was well received by the audience, especially in what was to be the first of a year-long series of important events to be held

in Bhutan to mark the auspicious Sixtieth birth Anniversary of the fourth Druk Gyalpo, His Majesty Jigme Singye Wangchuck, who is a visionary leader and far-sighted, especially in the environment and environmental issues. Celebrating 20 years since the APN was established, Mr. Tsujihara said that membership development and ownership of the APN is moving in a very positive direction and, while Bhutan is the youngest member of the APN, as a nation, Bhutan has come on board with the kind of dynamism, enthusiasm and gross national happiness that APN believes will have very positive effects on all of its member countries in the next 20 years and beyond.

Chair of the Intergovernmental Panel for Climate Change (IPCC), Dr. Rajendra K. Pachauri shared the outcomes of the IPCC fifth assessment report (IPCC AR5) through his video message. First, he expressed his sincere apologies at not being available in person. He noted that IPCC reports provided evidence that (with 95% confidence) warming in the middle of the last century was a result of human activities. "**The universe is one family and impacts of climate change will affect every corner of the world**", he said. Therefore, we have to take action although it may be costly. According to IPCC AR5, , in order to achieve zero or negative emissions, the total cost of 0.06% from Gross Domestic Products (GDP) should be calculated and allocated by each county. However, if countries consider co-benefits that from mitigation action, the total cost may become negative. Humans are the dominant species on earth and has sole responsibility to protect the planet and ensure its rich biodiversity. Bringing lifestyle and behaviors changes, ensuring adequate policy implementation, and taking relevant action by all stakeholders is necessary to achieve gross happiness of the world.

Following the video message, Dr. Linda Anne Stevenson provided an overview of the key objectives and structure of the SPD.

7. Theme One: Urban Areas (Climate Impacts & Risk Reduction)

Urban Vulnerability and Resilience: Managing Risk in a Changing Climate

Dr. Anand Patwardhan spoke on the theme of "Urban Vulnerability and Resilience: Managing Risk in a Changing Climate". In his presentation, he noted that adaptation is a long term process, which involves repetitive action of managing risk. In this process, learning takes place at multiple levels and **it is essential to have strong science-policy interface**. **Vulnerability results from the complex interplay of climate and non-climate factors.** For example, low income informal settlements have high exposure to climate hazards. To achieve long term resilience, economic factors need to be taken into consideration together with climate hazards. **Thus, to build resilience, we need an integrated adaptation process that combines climate and non-climate factors.**

Responses to climate change are already happening at the community level. For example, an APN-funded project (Characterizing Public and Private Adaptation to Climate Change and Implications for Long-Term Adaptive Capacity in Asian Megacities) shows that community level responses already exist to address chronic flooding in Mumbai, India. However, how can we ensure these actions are not maladaptive but contribute to long-term resilience? Thus, **the challenge is how the policy environment supports and facilitates private adaptation.**

Based on the results of the IPCC fifth assessment report, Dr. Patwardhan shared four actions that we **must avoid** in the context of urban resilience.

- DON'T lock-in to solutions that give near-term benefits but pose long-term risks
- DON'T wait for better "projections", it may action being implemented that is either too early or

too late

- DON'T encourage inappropriate risk taking
- DON'T undertake any action that **ignores local relationships, traditions, traditional knowledge** or property rights, or which ignore equity and spillover issues, this may lead to eventual failure

He listed actions that are needed by scientists and policy makers for better interactions.

By Scientists	**By Policy makers**
· New disciplinary knowledge - to better understand responses to climate change	· Move towards long-term adaptation and mainstreamed action
· New cross-disciplinary and interdisciplinary knowledge - define correct Indicators and measurement/proper institutional design for governance	· Leverage approaches such as ecosystem-based adaptation that reduces climate risks while providing other co-benefits
· New approaches for knowledge generation and use where practice and theory can co-evolve.	· Enable learning to be built into project design, so that interventions strengthen the evidence base
· Include implementation actions by creating networks and partnerships among scientific, stakeholder & decision-making communities	· Seek integrated approaches that lead to climate-resilient development pathways

Understanding Urban Vulnerability and Resilience – Perspectives from IPCC Fifth Assessment report

Mr. Ali Tauqeer Sheikh, Director of Asia CDKN shared his view by raising three questions:
First, why focus on South Asia? South Asia has the highest ratea of population growth and urbanization. Poverty is another main problem in the region and is closely interlinked with climate change vulnerability. Further, the urban poor are most vulnerable due to inadequate access to resources. For example, due to rises in food prices, urban wage for labour has become more unstable and vulnerable.

Second, what does the IPCC 5th assessment reports say about South Asia? The report identified the main risks for the south Asia region are increased riverines, coastal and urban flooding, which causes damage to infrastructure, livelihoods and settlements. Further it increased heat-related mortality. Water and food security are other serious issues in south Asia due to drought.

Third, what specific action is needed? The report explains that the level of adaptive capacity is low - especially at the local government level. Therefore, there is a need for capacity development for better policy implementation in the field of adaptation. There are ongoing short and long term approaches to manage climate risk by governments, private sectors and communities. Efforts in these approaches should be doubled with the aim of achieving zero emissions and eliminating poverty.

Urban Landscapes and Governance: Responding to Disaster Risk and Communicating Decisions

Mr. Naseer Kashani, Director General of Environmental Protection Agency of Baluchistan shared his experiences on responding to disaster risks in Pakistan. A total of 36% of the Pakistan's population live in urban areas. The mean estimate of annual cost of urban environmental damage in Pakistan is about 222 billion Pakistan rupees or 10 million USD. Pakistan has implemented several policies and legal frameworks to address risk. The National Disaster Management Authority (NDMA) is the lead agency at

the federal level with offices at provincial level (PDMAs) who effectively coordinate and manage action in case of any disaster.

In responses to disasters, the media plays a dynamic role on disseminating reliable and timely information to the public to overcome unnecessary fear and fatalities before, during and after a disaster. In addition, city authorities have the following key responsibilities to improve disaster response;

- Ensure proper urban planning where risk reduction and adaptation measures are considered
- Increase capacity of various departments to cope with any kind of disaster
- Strengthen response, recovery and development mechanisms and actions Advocate urban risk reduction measures into district and regional policy planning
- Prepare hazard zoning plans, assess multi-hazard vulnerability and integrate disaster risk reduction elements into it;
- Establish city-level disaster preparedness committees

The round table discussion session that followed on climate impacts & risk reduction in urban areas emphasised the following:

- Most investment in capacity development is short term. Donors are reluctant to invest in **long term capacity development which is crucial to maintain an effective mechanism** to address disaster risk reduction and build resilience.
- A visual picture on adaptation and its consequences provides better understanding to communities. Therefore, best practices and replication of those in appropriate situations needs to be promoted in the region.
- South Asia policy makers need to address climate change together with poverty in an integrated way.
- Although there is coordination between governments, stakeholders and media in disaster management, improvement is needed to achieve quick and effective coordination.
- Science and technology improvement is crucial to enhance prediction accuracy and quick evacuation before a disaster occurs
- More awareness raising is needed that focuses on **knowledge and action measures lacking in disaster prevention and adaptation**
- Governments and city planners need to consider growing population as a factor for future smart city and adaption planning
- A change of energy source to renewable energy is essential in South Asia. Citizens should lead the action and adopt low carbon consumption patterns.
- Resource distribution processes lack efficiency in South Asia and create more urban waste
- Carbon tax policies are needed to strengthen action toward reducing emissions.
- Practitioners need to be considered as key agents in science and policy engagement.

Café Kiosk discussion on Urban Areas (Climate Impacts & Risk Reduction)

Café kiosk discussion session was held under three aspects of urban areas: i) Science and policy, ii) knowledge management, and iii) communication. Key points drawn from the discussions are outlined:

Café Kiosk 1 - Science and Policy

South Asia has sufficient policies to address climate change issues; however the region lacks policy implementation. For better implementation, there should be key political willingness and financial resource allocation. Moreover, people willingness or mind set also has to align with these actions for effective result.

Scientific research capacity differs from country to country in South Asia. Bhutan needs more in-country research capacity and other countries such as India, Sri Lanka and Pakistan already have existing research capacity. Therefore, scientific research capacity is needed based on country requirements.
Location-specific risk and new potential factors must be considered in new city planning. In an example from Japan, several years ago the city planning process considered increasing the number of automobiles but did not consider an aging population, an unforeseen factor in city planning. There should be better coordination among different infrastructure institutions for effective management; however South Asia presently lacks this type of coordination.

Closer communication between scientists and policy makers is required. Various activities such as think tanks are appropriate to enhance the communication. Finally, the question of governance and the need for governance to be built in from the beginning arose.

Café Kiosk 2 - Knowledge Management

The discussion session considered two main factors in knowledge management:

- What kind of knowledge is needed based on the situations?
- How is the knowledge useful to its audience?

In response to these questions, participants identified existing gaps in the area of knowledge management for urbanisation and climate change.
Relevant local knowledge for appropriate audience is lacking. **Hence a mechanism or platform to transfer local knowledge is necessary**. In the research field, a lot of knowledge has been generated. However, due to lack of time and resources, this knowledge has not been disseminated. As such, a two-way knowledge management mechanism needs to be instilled, where two-way communications can be realized and information can flow from researcher to user and user to researcher.

There is a disconnect of knowledge dissemination among policy makers between relevant agencies. As an example, local governments will receive knowledge for disaster management but the financial ministry will not be furnished with the same knowledge. This leads to mismatches between resource allocation and required action. Thus, taking lessons from Japan and Malaysia, practitioners in South Asia need to consider issues theoretically and develop solutions accordingly. Finally, not all knowledge products from research are valuable to policy makers for implementation. For this reason, policy makers should be engaged in ongoing research activities to identify the knowledge they require for better action.

Café Kiosk 3 –Communication

Participants at the communication kiosk noted that knowledge exists and it needs to be transferred to local governments and communities. Starting from peer-reviewed journal articles and scrutinising the information flow to communities, although there are technical reports and summaries, existing data in journal articles and government records are not easily accessible to communities and the general public. The public receives information via mass media, social media and through mobile phones however the

media cannot transfer all knowledge to public. Therefore to transfer existing knowledge to the public, intermediary agents have to play an active role as scientific communicators.
Individual migration or individuals who move from one field to another helps reduce communication gaps between fields. As example would be of a hard-core scientist becoming a mediator scientist may create new pathways and flow of information.

Roundtable Discussion on Kiosk Outputs

Prof. Ho Chin Siong shared his experience on transferring science knowledge to action. He noted that scientific outcomes should be delivered to policy planners with a model that shows suggested action, the cost, predicted results, and effectiveness of proposed action leading to solutions. In addition, scientists should enhance their communication skills where they can maintain regular communication between policy planners and implementers where it helps to transfer science results into action.

Mr. Ali Tauqeer Sheikh noted that we are requesting policy makers to integrate development with adaptation action. However policy makers needed to understand the uncertainty of global change science. As an example, infrastructure development is carried out in the hope it is sufficient adaptation. However, infrastructure development is only a factor in adaption. Like this forum, we must continue to emphasise the uncertainty of climate change effects and it consequences.

Dr. Mandira Shrestha recalled that most maladaptation occurs due to lack of community involvement. Therefore we have to do some ground level work to inform communities about adaptation options and understand what adaptation options they implement.

Dr. Anand Patwardhan drew attention to three key factors;

1. There are different categories of policy makers. When scientists feed knowledge to policy makers, they should understand this diversity.
2. In the process of science to action, there are different levels of communities (politicians, investors, general public, etc.) and each community has its own standard of credibility and validation of data.
3. It is difficult to capture knowledge from practice. Therefore from the beginning, it should define what kind of knowledge is to be targeted from the practice. The produced knowledge should be based on validated information or data from practices.

Daily Media Round-up on day one accomplishments

As a journalist, Mr. Peter William Janssen noted that all topics discussed under the theme of urban adaptation and climate change would not directly be of interest to media. Unfortunately, climate change becomes a hot topic to media when a climate-related catastrophic event occurs. Therefore, scientists should use journalists or the media carefully, where it can deliver the message of uncertainty of climate change effects using little certain fact. From the present discussions, two scopes may be of interest to the media. That is, climate change should be considered together with poverty and development aspects. In addition, generally any plan such as a development plan, city plan and energy development plan are newsworthy topics. Thus, scientists can review these plans scientifically and articulate benefits or drawbacks from a scientific perspective.

Ms. Sahana Ghosh shared her view saying that scientists should consider linking their findings with community voices to attract the media. This could be about how and which community will be effected as a result of a particular scientific issue. In South Asia, there is a lack of regional cooperative studies on

urbanisation, for example. This includes exploring how people migrate from one country to another and how this affects regional cooperative issues.

8. Theme Two: Food and Water Security in the Rural Context

Agroforestry: Food and Nutritional Security in South Asia

Dr. Syed Rizvi Regional Director for South Asia World Agroforestry Center started his presentation by stating that climate change adversely affects food production through more frequent drought, floods, typhoons, high and low temperatures. Crop damage is more frequent and safety nets need to be incorporated. Agroforestry is one sector that can provide a safety net for food demand and help modify the microclimate for garden crops under harsh climates.

Considering the present situation in South Asia, malnutrition prevalence rates for India, Pakistan, Bangladesh and Afghanistan is above the Sub-Saharan African countries. This means that South Asia is suffering from food insecurity similar to that in the Sub-Saharan African countries. Further, average consumption of fruit and vegetables in South Asian is significantly lower than the minimum recommended daily intake of 400g/person. Therefore, South Asia needs to take action to overcome these challenges.

The following are suggestions to address food security through agroforestry.

- **Food and nutritional security requires a range of interconnected agricultural approaches,** including, the biofortification of staples, and the cultivation of a wider range of edible plants that provide more diverse diets.
- **Increased access to food through increasing income level of the people.** The production of timber and other agroforestry tree products for markets provide income to purchase food.
- **Increased access to energy.** In rural areas the main energy source for fuel is wood, which consumes significant time for collection. Increasing access to energy will provide more time for other income-generating activities.
- In South Asia **child nutrition is closely related to food security.** One opportunity to influence child nutrition in the region is through home-grown school feeding programmes that link schools with local agricultural producers to promote more diverse and more nutritionally-balanced diets.
- **Increase investment to develop new tree lines and cultivars with high yields and provide quality products** under smallholder production conditions.
- **Enhance government attention to agroforestry** through policy support, advocacy, value addition, processing and marketing support
- Harvesting and processing of crops are mostly carried out by women. The income women receive from these activities are more likely to be used to purchase food for household consumption than incomes received by men. Thus **approaches to resolve food security issues should emphasise the role of women.**

Water Security in South Asia

Professor Toshio Koike from Asian Water Cycle Initiative (AWCI) made the presentation under the theme of water security in South Asia. He noted that the water cycle is a key component and closely connected with agriculture, food, health, energy and biodiversity. Further, climate change has become another factor that affects the water cycle. AWCI is, therefore, exploring a new framework that takes an

integrated & coordinated approach to the water cycle and adaptation, mitigation and development goals for better water management.

The Asian monsoon has caused serious damage to Asia and impacts food security in the region. There is a crucial need for better prediction and projections. Also future studies are need on the nexus between water, energy, climate change and biodiversity. Economic and social value has to be integrated into to these projections. An integrated approach provides effective information for decision making. Regional cooperation and data sharing is important for the better prediction.

Perspectives on Adaptation Challenges for Food and Water Security from the Policy Community

Mr. Tenzin Drugyel from Ministry of Agriculture & Forests of Bhutan talked about climate change & food security in Bhutan. He stressed that although Bhutan has high forest land cover, Bhutan is still vulnerable to climate change. For example: during the ice blast in 1996, farmers lost 80-90% of their rice harvest; in 2000, some areas in Bhutan faced heavy precipitation for example Pling- 449mm, Tala-500 mm and Gedu-520 mm rainfall within 24 hours; and Bhutan has 2674 glacial lakes, 24 of which are potentially dangerous. Because of this, the government of Bhutan has already established national-level policies to address these climate change challenges.

In the context of food security, storage facilities are one of the main problems in Bhutan. Good storage facilities with efficient management are crucial for timely food supplies during unforeseen food shortages. While sustainable land management technologies are being promoted, there is limited adoption by farmers. On water security, there is growing water demand due to the municipal -Water Act that to prioritises water for drinking, sanitation and irrigation. Presently, 0.5% of the total budget is allocated for research and development, however a specific research agenda to address the effects of climate change is absent in Bhutan.

Although Bhutan has policies to address food and water security issues, Bhutan needs to undertake the following action to achieve food and water security

- Evaluate and adopt genetic resources (plants and animals) resistant to biotic and abiotic stresses including drought, pests and diseases.
- Improve availability of water for food and animal production.
- Develop and promote Integrated Plant Nutrition Management System (IPNMS).
- Develop and institutionalise pest and disease surveillance and forecasting system for crop and livestock across agro-climatic zones.
- Establish a reliable network for food distribution and cold storage facilities in each region
- Develop, strengthen and implement an efficient seed production system.
- Construct and maintain reliable farm road networks for food distribution.
- Promote off-season vegetable, cereal and other grain production and sustainable harvesting of Non-Wood Forest Products (NWFP).
- Institutionalise mechanisms to share climate change information-data on rainfall, temperature and satellite images.
- Introduce and implement clear policies on food security and climate change.

Café Kiosk discussion on Food and Water Security in the Rural Context

Café Kiosk 1 - Science & Policy

During the first kiosk discussion on food and water security, the main concern was **sufficient food production and accessibility of food at affordable prices.** Participants felt there is inefficiency in food distribution systems in South Asia. Therefore, produced foods are not reaching consumers promptly at affordable prices. Food waste is another factor that results from ineffective distribution systems. Food waste reduction during food distribution and storage is one step towards achieving food security in the region.

With increasing number of climate change issues, most nations are moving into national self-reliance systems for food security. However, food security connects with water security, which is very much a regional issue in South Asia. Furthermore, to achieve a self-reliance system, nations tend to encroach of the land of neighboring countries, which may cause national security risks and affect regional peace. **Therefore, there is a need for national regulations and new approaches to achieve self-reliance without impacting regional and global water and food security.**

South Asia'a economy depends heavily on the agriculture sector. Due to climate change there is increasing risk on future investments and employment in the agriculture sector. Thus, participants identified **the need for policy to support investment and risk management in the agriculture sector.**

Advanced technology is essential to introduce drought resistant crops and effective distribution systems. However, these technologies should introduce to farmers together with the basic science that lies behind the technology. In terms of food security and the level of security needed; participants agreed this was complex and to gain a better understanding, a **nexus of food, water, energy and health needs to be adopted.** Considering the price of food and water, national level subsidies is crucial. The level of subsidies such as agriculture product subsidies or fuel subsidies will affect total consumption. **Especially, regional research studies are needed to understand how national level subsidies effects region.**

Café Kiosk 2 - Knowledge Management

In terms of knowledge management of food and water security studies, the most important fact is **the need for effective data sharing that will ensure reliability, visibility and quick transformation of data**. In addition, the system should allow data sharing among institutions and between countries in the region. Such a system might also identify agents responsible for data collection and dissemination. Furthermore, assessment of collected data should be implemented to ensure validity and integrity of the data. In order to maintain such system, participants felt that capacity development is a key element.

Information demands from various stakeholders (such as decision makers, communities and investors) and easier access to information should be considered with knowledge creation and dissemination. Sufficient knowledge based on demand is another factor. Mostly scientific knowledge is not available everywhere at the same level. Borrowing/using knowledge from other regions is the most reliable solution. Applicability of the knowledge to any specific country or area will require careful consideration. There are two clear gaps in knowledge management related to food and water security. First, there is a **disconnect between various institutions that require knowledge**. Especially in crop planning, various institutions such as agriculture and irrigation departments should share their knowledge for better planning. This rarely happens in South Asia. Second, is **the disconnect between knowledge produced and knowledge used**. Think tanks and the media can play an active role to reduce these knowledge management gaps.

On the issue of water security, water equity is an important factor in South Asia as some countries are sharing the same river system. **Data on groundwater research studies are comparatively low compared with surface water research studies. Especially information on quality and quantity of ground data is needed.**

Roundtable Discussion on Kiosk Outputs

The first facilitated discussion of the second day addressed food and water security. The main ideas expressed were:

- Nepal needs integrated analysis which addresses Water, Food, Agriculture and Agroforestry. Further coordination between authorities is important to effectively address the issues.
- Consider the need of advance technology we have to ensure that rural communities can assess to those introduced technologies.
- In the agroforestry sector, for better use of science we have to integrate it with traditional knowledge. Many of ongoing research activities are trying to multiply the traditional knowledge with science
- Home garden systems are one of the best approaches to address food security in South Asia. Producing food for consumption in the surrounding environment will reduce food waste through transportation and distribution.
- Although Bhutan has well distributed irrigation systems, water is not available all year round and, therefore, the government has introduced farm ponds and small reservoirs to enhance the effectiveness of irrigation systems.
- For effective communication on climate change issues we have to understand that interactive communication approaches are expensive because it reaches a wider audience. Communication is a bridge to the gaps between knowledge and actions.
- Water is one limiting factor of the life, there is need of depth discussion on how water availability link with human settlement and migration.
- It is common in the South Asian to have bilateral agreement address food or water security issues. However there is need of active regional platform who can take leadership to transfer the science to regional policy development

9. Theme Three: Low Carbon Society and Sustainable Pathways

Can Asia leapfrog? Lessons Learnt from Japan's 40 years

Prof. Shuzo Nishioka from Low Carbon Asia Research Network (LoCARNet) delivered his presentation emphasising the need for transition to low carbon society within 50-100 year to achieve 2 degree target. He highlighted that without mitigation action the global mean surface temperature might increase by 3.7°C to 4.8°cover the 21st century. Moreover, considering the population growth by 2050 and per capita CO_2 emissions, significant reduction is essential from developing countries to avoid 2 degree temperature rise. Presently, Asia maintains high economic growth rates and continues making new investments. It is predicted that in 2050 GHG emissions in the Asian region will account for half of the global total. Considering such situation it is difficult for developing countries to achieve low carbon development path with high energy-dependent technologies. Therefore, **developing countries need to seek a unique and innovative development path which allows achieving huge transition without scarifying the development goals.**

Prof. Nishioka shared experience from Japan where it shows better planning during the development stage can contribute to future low carbon society. The Tokyo Metro System was introduced 80 years ago before automobile age comes. Now Tokyo is least car dependent city where it has advanced public transportation system with low emission. In other hand, cities like Los Angeles highly depend on automobile which cannot be easily converted to low carbon city. If Asian cities consider effective public transportation in their city planning, Asia can achieve the transition towards to low carbon society in future. Developed countries such as United Kingdom, United States of America, Germany and France have achieved the economic growth while reducing the energy intensity (Energy / GDP) in the 20th century. As late comer's Asian countries have advantages of adapting low carbon technologies and society. Therefore capturing and adapting such opportunities will allow developing countries lead low carbon societies.

Policy perspectives on Sustainable Consumption and Production in South Asia

Ms. Janet Salem Project Officer from UNEP started her presentation noting the fundamental difference between scientists and policy makers and the importance of having constructive dialogue between them. For effective use of scientific information in policy planning both scientists and policy makers must first agree on what they need to know in order to decide and how the information can be structured in a way that is usable for decision making. Therefore, science-policy interface is critical to support decision making.

In the field of sustainable consumption and production, it considered different policy options related to consumption side, production side and crosscutting. Several policy initiatives and activities already exist in the SCP filed where a science-policy interface is needed. For example 10 Year Framework of Programmes on SCP (Rio+20), South Asia Forum on SCP, SWITCH-Asia (implementation of SCP policy and projects) and also ensuring sustainable consumption and production patterns is one of sustainable development goal .

Sustainable consumption and production is critical for South Asia region because growing resource use and environmental impacts. Reducing waste and increase the effectiveness of resource usage is the key to achieve low carbon society. **Data and indicators on resource use and consumption are critical at all levels of decision making, therefore future research may focus on such issues.**

Green Policy and Mainstreaming Environment and Sustainability into Development Programmes

Mr. Ugyen Tshewangy, Secretary of National Environment Commission Bhutan presented national experiences and initiatives on green policy, mainstreaming environment and sustainability into development programmer in Bhutan. Bhutan is following its National Environment Strategy or "The Middle Path", which aims to reach economic development without any impact to the environment. He emphasized that Bhutan gives more priority to Gross National Happiness (GNH) than to Gross Domestic Product (GDP). The environment is one of four pillars of GNH.

Mainstreaming is mostly about collaboration, changing ways of thinking, and expanding capacities of line agencies to integrate environment, climate change and poverty issues in their policies, plans and programmes. More than half of Bhutan's GDP comes from sectors that are directly or indirectly dependent on health of our environment. Therefore, Bhutan has national goal to maintain 60 percent of the land under forest cover for all time. 23.2% of Bhutan's population are in poverty and 98.1%live in rural areas. The livelihood of the poor heavily depends on the environment and the poor directly suffer

from environmental hazards. For this reason, positive linkages between the environment and poverty reduction will make the vulnerable poor more resilient to environmental hazards.

Presently, the government of Bhutan has introduced Economic Development Policy and Foreign Direct Investment policy which promotes low carbon society. For example, exemption of Sales tax (ST) & customs duty (CD) on import of electric cars/hybrid cars and cars that runs on renewable energy including their spare parts. Sustainable consumption and production (SCP) is another strong complement to Green Policy and the plans of Bhutan. For instance mainstreaming SCP into national policymaking, governance and planning, and greening public office practices through paperless operations.

During the round table discussion session on low carbon society and sustainable pathways, the following ideas were expressed:

- There are several sectors/fields (such as emissions data, sea level rise and renewable energy, etc.) that scientists study in relation to low carbon society. Therefore, **it is necessary to have a dialogue among scientists as a first step, before a science and policy dialogue. This will help to provide a clear overview to policy makers on how various sectors/fields are interrelated and what the co-benefits are in adapting a low carbon development strategy.**
- Low carbon development is interconnected with a number of fields; therefore cooperation among responsible organizations is essential for decision-making.
- Scientific information is useful for priority setting. When science provides information, it should include expected outcomes as well as actions that are required for achieving those outcomes. "IF" statements are, therefore, more important to get attention for decision-making.
- Levels of sustainable consumption depend on available resources, what is removed and how these impacts the environment.
- Sustainable consumption production targets are not aimed to limit consumption levels; but to enhance the quality of life with limited resources.
- While we emphasise the impacts on future generations, we do need to think about the present generation and the challenges we are facing due to climate change especially for the most vulnerable communities, which are the poor.
- Present and future action should consider the high impact that economic and social issues have on achieving low carbon society.

Café Kiosk discussion on low carbon society and sustainable pathways

Café Kiosk 1 - Science & Policy

Based on present observation, scientists believed that transition towards low carbon society is possible. There is general information on how and when it can be achieved. However, to make this kind of transition happen **there is a need for country-specific studies**, where specific information can be delivered on what actions are necessities, which sectors are responsible and when it can be achieved. When delivering such information, scientists should also inform the levels of uncertainty of the scientific evidence.

To make the transition, there is a need for change in regular systems. Some countries have undertaken exercises and it has been shown that 60% of transitions can be achieved though behavioral changes, while the other 40% would need specific objectives. Technology can assist to achieve LCS transition; however **identifying country specific or site specific technology is crucial.**

Considering sustainable consumption and production, economic policies are closely connected such as taxation and consumption level. Presently, most tax systems are bound to income levels and provide discounts for production processes. Moreover, there are various regulations in place that control consumption such as banning use of certain products. More scientific studies are needed to analyse how **economic regulations may affect levels of consumption and resource use.**

Developing more scientific evidence on aforementioned sectors will helps to develop country specific targets for achieving low carbon society.

Café Kiosk 2 - Knowledge Management

Obtaining a low carbon society is a major challenge for South Asia and there are many options to achieve LCS. However, the main issue is how knowledge management can help to attain it. First there are many levels of society, from consumers to policy makers, which must be considered in knowledge management. Second, is that in addition to science and technology, we have to learn from policy experiments and business models. Third, is the application of existing knowledge**,** which is currently weak, experiences and usages.

Café Kiosk 3 – Communication

There are different types of research such as consensus-based research, collaborative research and elementary research. However not all research considers advertising as a competitive factor to reach end users. For example, fossil fuel industries have made massive investment on advertisement to be in completive market. Science does not have such investment to reach out to an audience. Therefore, resource allocation for communication activities in science is needed. On the other hand, with limited resources science can still reach its intended audience by implementing two actions. First, **work closely with an intermediary agent such as media; and second articulate the impact of scientific findings to the general populace (i.e. incorporate the human impact factor) so that policy makers and communities can readily absorb.**

Discussion identifies three main roles that required by policy domain; setup regulation, enforcement, and develop capacities for better implementation. Finally, people cross over from science to policy or policy to science will help to reduce the communication gaps between science and policy.

Roundtable Discussion on Kiosk Outputs

During the roundtable discussion on kiosk outputs the following points were stressed:

- **For better use of scientific knowledge in policy planning, scientists and policy makers should gather regularly and discuss scientific findings, possible scenarios and required immediate action. Outcomes of such discussions will aid policy planning process, modify existing policies and create new action plans.**
- Low carbon development options should consider development challenges that South Asia is facing.
- Still there is enormous room for innovation; especially in the area of policy experiments. There is easy access to business articles and there should similarly be access to policy articles where information on policy experiments could be found.
- There is less consideration from the scientific community on the information that is required by policy communities. Most scientific studies are carried out based on scientific interest, and not to gain attention from policy makers. Scientists should consider focusing on problems and providing

information that is required by policy communities in order for change to happen.

- Scientists should collaborate with policy makers at the implementation stage (not as front player but as back player) rather than implementing their responsibilities after scientific outcomes are published. One possible approach is maintaining close collaboration with policy makers; this may help to ensure that scientific outcomes have reached stages from policy planning to implementation.
- Most of scientific facts have been explained in the IPCC reports. Therefore, national level research needs to focus on what the best possible approaches to achieve low emissions are in the national context.
- The present discussion session clearly shows that there is communication gap between scientists and policy makers. Thus it is vital to provide an overview of communications and how they can be used effectively. Better understanding will reduce communication gaps.

Daily Media Round-up on day one accomplishments

Ms. Sahana Ghosh noted that the second day of the discussions explained many scientific facts on food and water security and low carbon development. In relation to the topic of food security, comparing Africa and Asia malnutrition levels and gender or women's roles in food security are interesting fields to the media. However **more examples on best practices are needed to attract a general audience**. Bhutan shared some adaptation challenges and showed the importance of increasing the efficiency of existing systems. Such initiatives may attract media and public attention.

Mr. Peter William Janssen said that some scientists are afraid to combine sociology aspects to scientific outcomes as it may destroy the "real" outcome of the research. However, he emphasised that **adding a sensational value (wow factor) to scientific outcomes will make the topic more attractive to an audience than delivering a pure scientific fact.**

PART THREE: GAME SESSIONS

During the dialogue two games were played in order provide clear overview of the complexity of climate risk management decisions and explore a range of plausible future scenarios that we may face due to climate change. The original games developed by Red Crescent Red Cross were modified to match to audience and time allocation. "Paying for Predictions" was facilitated by Dr. Anand Patwardhan and "Dissolving Disasters" was facilitated by Prof. Buddhi Marambe.

The game discussion session highlighted the following points:

- Gaming provides a very interactive platform for all participants through its entertaining nature.
- Gaming provides a clearer picture of real situations of how preparedness and early action can prevent or reduce the effects of disaster although at a financial cost.
- Confidence level of prediction or forecast varied from person to person and earlier actions mostly depended on confidence level of participants.
- For decision making, people used different approaches. Heuristics approach is not a bad approach and people tended to use it all the time. However, when we apply a heuristics approach to decision-making in disaster management, we need to have a better understanding of their impact.
- Concepts of risk and uncertainty may seem complex. However, we need to have explicit ideas of risk and uncertainty. Further, every decision-making step involves risk and uncertainty, including daily activities.

An analysis of 29 game feedback forms shows that 85% of participants agreed considering opportunity to improve the outcome they have change their strategy from first round to end of the game. Therefore it shows that **to promote any early action for a disaster, it needs to show how the outcomes can be improved by implementing early action**. A total of 62% of participants observed other participants' strategies before changing their own strategy. In addition, 69% of participants agreed that they conferred with others on a team strategy when taking action. These results explain that people tend to observe others who attempt to adopt different strategies for better survival. Further, people tend to select cooperative strategies to reduce the impacts of a disaster in a community-like style.

Total participants who strongly agree or agree that Limitations of their initial strategy	45%
Total participants who DO NOT agree that Limitations of their initial strategy	41%
Total participants who strongly agree or agree that there is opportunity to improve his/her outcome	86%
Total participants who DO NOT agree that there is opportunity to improve his/her outcome	3%
Total participants who strongly agree or agree that they observed other people's different strategies	62%
Total participants who DO NOT agree that they observed other people's different strategies	28%
Total participants who strongly agree or agree that other players are commented on his/her strategy	41%
Total participants who DO NOT agree that other players are commented on his/her strategy	45%
Total participants who strongly agree or agree they Conferred with each other's on a team strategy	65%
Total participants who DO NOT agree they Conferred with each other's on a team strategy	17%

PART FOUR: BRIEFING OUTCOME OF THE DIALOGUE

Where we have been and where we should go ….

Summary of Café Kiosks on Science & Policy

Dr. Joyashree Roy

The flow of the programme was well structured, especially the media roundup session at the end of each thematic discussion. This provided an opportunity to understand how media is attracted to science or policy themes. As an example, some discussions that were held in the dialogue are important to science, however those themes are not interesting to the media. Therefore, as a scientist or policy maker we have to identify key points that may attract the media when we need to involve them.

1. South Asia has well established policy frameworks and responsible actors to address climate impacts and risk reduction. However coordination and communication between the actors is lacking. Therefore to understand the effectiveness of the policies there is a need to review policies and implementation strategies.

2. To strengthen the process of transferring science into action, collaboration between scientists, policy makers and practitioners is very important. Particularly, knowledge creation, processing and dissemination should be connected and considered as one process rather than independent activities.

3. Learning from best practices and ongoing studies have to be scaled up through wider dissemination. Action or behaviour that can cause climate change such as human consumption patterns, need to be changed in a way that impacts can be reduced.

4. Innovative research and capacity building activities are needed to strengthen science and policy collaboration. Especially, national and regional dimensions need to be considered in some situations, such as migration, where national policies closely connect with regional situations. Therefore, regional science collaboration and advocacy play a vital role in understanding connections between national-level and regional-level policies

5. In the context of food and water security, in the past few decades as a result of globalisation, markets shifted from self-reliance systems to demand-driven systems. However, climate change is causing a shift back to self-reliance systems. Therefore, in future we need to consider new mechanisms where national-level interests can lead to regional cooperation and, therefore, avoiding conflict between country interests.

6. In the field of low carbon society and sustainable development, scientists believed that 2 degree target can be attained in the next 40 years. However, every actor needs to have the same level of understanding to achieve this target. Therefore, solution-oriented research and action are needed.

Considering the three main thematic areas, the following research problems were identified as common themes that need more solution-orientated research.

- Everyone understands and argues that co-design is an essential step. Therefore, more research is needed to identify the best ways to develop a co-design research activity.
- Enhancing the understanding of science of multilevel governance. How the national security related governance mechanism will effect to neighboring countries. For instance, how the fuel subsidies regulations of one country effect to others.
- Increase capabilities of decision-making under uncertainty
- Learning lessons from best practices
- Pro-poor/pro-growth policies can deliver low carbon growth

Summary of Café Kiosks on Knowledge Management

Mr. Ali Sheikh Tauqeer

The following three main points summarises the discussion on Knowledge Management:.

Point One:

- When considering all aspects of climate change, the impact of livelihoods and their vulnerabilities need to be highlighted.
- The food and water nexus is very important when considering climate impacts and is highly dependent on natural resource availability. In South Asia, water availability is the limiting factor for human life and it affects many areas such as human migration. Therefore, any action to resolve the impact of climate change in the food and water sectors, should consider them as a nexus rather than individually.
- Low carbon growth enables survival of the earth system. South Asia is aiming for rapid development in the future and, therefore, policy makers should consider low carbon growth as a pathway to development.

Point Two:

Climate change and its impacts are absolute issues, therefore while we are addressing those issues we need to consider the following challenges:

- Increase access to research information and enhance the dialogue between science, policy and communities. More investment is needed in knowledge management to achieve effective science, policy and community coordination.
- Climate change should not be considered as a national or sub-national issue. Impacts are applicable to global- and regional-levels; and, therefore, more opportunities for cooperation and collaboration at the regional level are needed.
- More national-level dialogues between stakeholders and communities are needed, and the outcome of such dialogues should feed into regional-level dialogues.

Point Three:

The kiosk discussion session discovered a lot of factors related to climate change. But there may have been an action gap (gap between what was discussed and future action) when it comes to implementation. Therefore, ideas that were relayed during kiosk sessions need to be considered as possible collaborative research ideas and recorded.

Summary of Café Kiosks on Communication

Dr. Anshu Sharma

The dialogue discussed various factors that contribute to climate change and how they can be addressed effectively. The group considered different levels and actors involved in the process such as policy makers (who have power and sit at the top of the policy process), science (rich in knowledge with solid evidence), community (distributed everywhere) and media (important and powerful). However, the private sector - one of the contributors to climate change - was not viewed as a stronger partner to talk climate change. Considering communication among and between different levels, four key points deserve consideration.

1. **ENABLE- Informed decisions**
   Collect information and advice from science and inform various levels up to to policy makers for decision-making.
2. **WRITE- For people to understand and to act**
   First, we need to educate the audience to receive knowledge of scientific findings. Scientific information that is policy-relevant must be written in language that is understandable (layman terms).
3. **CAPTURE- Knowledge from practice**
   Knowledge is distributed everywhere but needs to be captured and connected between audiences for effective usage.
4. **INNOVATE-Double the impact in half of time at quarter the cost**
   Need to emphasise the importance of innovation over commercial benefit, which provides solutions for climate change and its impacts.

Dr. Mandira Shrestha (ICIMOD)

Considering the structure of the dialogue it gave opportunities to learn from the presentations. This followed with discussions and expression of personal views under the Café Kiosk sessions. In addition, games provided a better understanding of consequences of decision-making and the risks that can be taken under situations of uncertainty.

In the context of urban areas in South Asia, the average population and population growth has been increasing and the urban poor are more vulnerable to climate change. Therefore, effective urban planning considering the nexus between climates changed and urbanisation is needed that can be applied to mega cities or small cities. Capacity building to address risk is required at all levels. Risk reduction measures need to be adopted and effective risk communication should also be given consideration.

A total of 35% of the world's undernourished live in South Asia and food insecurity is a major problem in the region. Although some countries have adequate water resources, they are not available when required. Thus, advanced technologies in the areas of food production, water harvesting, and water management are essential to the region. **To resolve food- and water-related issues there needs to be transboundary collaboration, benefit sharing, and mutual trust and confidence between neighbor countries**.

South Asia is rich in policy and poor in implementation. To strengthen implementation, political will along with resource allocation is needed. Furthermore, coordination and cooperation between various agencies and institutions is required for proper implementation. The timeline between planning and implementation is another factor that requires consideration to ensure timely implementation.

An effective communication channel is required to transfer information between policy makers and communities so that all parties are engaged and able to fulfil their requirements. Knowledge intermediaries, such as NGOs and media play an important role in communication.

Based on the discussions held at the dialogue the following are important points to consider in order to strengthen future science and policy linkages:

- There is a need for innovative research that integrates science and local knowledge for more robust evidence for policy planning.
- There is a need to allocate more resources in order to enhance knowledge uptake and better dissemination.
- Capacity building is central for knowledge uptake and action for climate change adaptation and mitigation. Therefore regional-, national- and local-level capacity building must continue.
- Regional cooperation and collaboration in data collection and sharing needs to be strengthened
- Effective gender response to disaster risk reduction and climate change adaptation.
- Promoting ownership through joint projects, co-design, co-production and co-delivery.
- Knowledge platforms, international cooperation and public private partnerships are vital.

"What we have learned to facilitate better science-policy interaction"- Voices from South Asia member countries

Bangladesh (Prof. Giash Miah, APN Scientific Planning Group Member for Bangladesh)

The South Asia Science-Policy dialogue addressed three main themes of climate impacts, food and water security, and low carbon society, which are the most prominent topics in the region. Kiosk discussion sessions provides an effective platform for participants to express their opinions and helped us to explore areas under the three main themes. The knowledge gathered during the dialogue will be imparted to Bangladeshi students as well in national-level science-policy dialogues. Although there was policy makers' participation, greater policy maker participation would enhance the dialogue and lead to further success.

Bhutan (Ms. Peldon Tshering, APN national Focal Point for Bhutan)

A quality research outcome will not automatically lead to the development of effective policy planning and implementation. **For effective application of scientific results to policy planning, there needs to be a communication mechanism to translate findings into a format that policy makers can easily understand**. In this regard, as a policy maker, I believe simple, non-technical language is more attractive. In addition, cross-cutting issues such as gender, disasters, and climate are fundamental drivers and should recognized. In practice, we need to identify a dynamic method to combine all aspects and understand the general public view for better policy implementation.

During the dialogue, it was identified that to transfer scientific knowledge to policy, scientists and policy makers need to gather, discuss and identify each parties' needs. This dialogue has provided an opportunity to identify needs. For example, Bhutan lacks the capacity to undertake advanced research activities and this regional dialogue has provided Bhutan with an opportunity to learn from other countries' research findings. For future dialogues we need to consider emerging issues such as sustainable consumption and production.

Nepal (Mr. Mahendra Kumar Thapa, APN national Focal Point for Nepal)

Nepal is the fourth most vulnerable country to climate change and the government has implemented its National Adaptation Programme of Action (NAPA) to address these vulnerabilities. The country has also established five scientific committees for different sectors (agriculture water, etc.) hold monthly meetings together to gather their input and advice for policy planning and implementation. The Nepalese government believes that this new process will help reduce knowledge gaps and improve policies in Nepal.

Discussions in the science-policy dialogue concluded that climate change issues related to urban areas is the most critical problem in South Asia and there are knowledge gaps between scientists and policy makers in each and every sector. However, agendas to address these gaps are essential. On the other hand, we have to consider the limitations of policy makers and their surrounding agents. Policy makers need to apply scientific results to resolve emerging issues, such as effective forest management, without affecting human rights and food security of the nation. Policy makers need to learn new knowledge such as new and advanced food preservation methods to address food security.

Effective communication between scientists and policy makers is required. Scientists must provide their suggestions in a concrete and simple way where policy makers can understand and apply it to policy planning. In this regard, capacity building activities for relevant stakeholders and to build cooperation among them. **Our role is not only to raise issues concerning existing gaps but also to bridge those gaps and take the necessary action**.

India (Dr. Murali Kallur, Indian representative)

The dialogue provided an opportunity to gather knowledge on adaptation plans from countries in South Asia and their implementation strategies. Further, South Asia countries' are aware of climate change and they are trying to establish policies to address the challenges that climate change presents. However, all country representatives have agreed that existing policies need to improve to effectively address the challenges. Policy implementation is an essential step for South Asia. Furthermore, policy analysis is needed and it should identify policy coverage, number of policies, and effectiveness of those policies. This type of analysis may deliver more tangible results.

For future regional dialogues, APN may consider inviting SAARC and South Asia Co-operative Environment Programme (SACEP) networks that involve senior policy makers in South Asia. Participation of policy representatives from India would have been better.

Pakistan (Mr. Sajjad Ahmed, APN national Focal Point for Pakistan)

Communication plays a key role when interacting with scientists and the general public. In addition, effective communication tools and strategies are required to address climate change issues. The game sessions provided an insight into disaster preparedness, which essential in any situation either by game or in real scenarios. APN should continue regional scientific studies and capacity development of policy makers to help developing countries address climate change issues. Finally, the dialogue also provided opportunity to learn about Bhutan's cultural value, civilisation, architecture and lifestyle.

Sri Lanka (Prof. Buddhi Marambe, Sri Lankan representative)

Considering Sri Lanka, the use of scientific findings can be approved at the ministry level as there are panels of scientist in the policy planning process. As example of this is an APN funded project whose outcomes were used to prepare the 2013 National Agriculture Research Policy (NARPol) and the 2012 National Climate Change Policy (NCCP) in Sri Lanka. The government of Sri Lanka has identified the private sector as another stakeholder that needs to be involved in the science and policy relationship. The government has been taking action to engage the private sector in research investment by providing a 300% tax incentive.

Effective communication is key to transfer scientific knowledge to policy and also to transform policy into practice. However, despite best efforts to improve the communication, the present dialogue has identified that serious gaps in the communication channel remain. Therefore, we must identify productive communication strategies and identify relevant stakeholders to transfer messages. Further, national-level level policy dialogues should conduct and outcome of those dialogues should incorporate with regional dialogues and distribute. Finally, I believe that APN, as a network that engages scientists and policy makers, clearly understands the need for informed science in the policy planning process and is continuously making efforts to provide policy-relevant science outputs to policy makers.

On the way forward for two-way approaches in science-policy engagement- Participants voices….

Via roundtable-style commentary, participants provided their opinions and feedback on the Science-policy dialogue and on the way forward for science-policy interactions. The following comments were noted:

- Knowledge transformation between science and policy needs to be improved in a clear and understandable way. Intermediary approaches may be effective in addressing this.
- The SPD led to effective discussions, the outcomes of which should be presented in a policy brief.
- Individual country setup should be considered and followed when developing policy options.
- Participants should be responsible for delivering the outcomes of the science-policy dialogue back to their respective countries and distribute among relevant stakeholders.
- Two days of discussion is insufficient to share the best practices, regulations and strategies of each country to address climate changes.
- The dialogue was a great experience as a representative from a regional network in Asia, particular in terms of take home messages. Mainly the point made by Dr. Saleemul Huq to bring policy makers and scientists into one platform. Other country representatives should consider this as a best practice and replicate in their respective countries. This can also be said for communicating activities and messages from the present dialogue at different levels and among different types of stakeholders.
- The effort made by APN in promoting science and policy linkages is appreciated. For the future, APN should continue the effort and consider following: Address urbanisation, low carbon initiatives, water and food security as triangle (nexus) issue; enhance access to relevant information through widening the communication among science and policy communities; and 3) engage all levels of stakeholders at sub-national, national, regional and international levels.
- Participants should identify the important messages gleaned during the dialogue and share these with relevant stakeholders.
- There are gaps in the communication channel between science and policy and need to get engage others (outside science and policy) for better communication.
- Research activities should be initiated in order to identify factors that cause ineffective

communication and provide suggestions for improvement.

- The dialogue provided a different experience through its game sessions and in the application of knowledge management and interactions with others. An important take-home message is the urgent need of policy review. Considering government perspective, policy implementation is more important than policy formulation. Climate change issues, vulnerability and adaptation is the same across all levels from sub-national to international. Direct communication between responsible authorities is vital.
- While appreciating the APN effort, research development activities at the country level needs to be enhanced. Researchers are required to identify short-term and long-term actions and deliver the information to policy makers. Policy makers should have the capability to understand and use scientific findings in an effective way during the decision-making process. This may lead to a meaningful approach to reach a 2^{oC} target.
- Sri Lanka has been taking initiatives on linking science with policy in various sectors including climate change, biodiversity and chemical waste management. However, communication gaps remain and intermediary agents could play an active role to narrow these gaps. The dialogue between science and policy needs to continue at national and regional levels.
- Games sessions provided an active atmosphere to the dialogue and it should modify to fit to national level content and use at national level dialogue. Being engaging in APN for more than seven years, I believed present dialogue is the most attractive and active meeting I have been participated.
- The dialogue provided information on how scientists and policy makers can work together. **As a policy maker scientific knowledge from different areas is needed to reflect in policy planning and for sharing among the policy community**.
- The main take home message is we need more research especially area such as 1) How to use low carbon future and risk resilient lands 2) Explore multi-level governance framework in South Asia region and identify policy relevant research areas, and 3) search for additional communication product that can use to enhance communication.
- The dialogue provided knowledge in areas of climate impacts, risk reduction in urban areas, food and water security, low carbon initiatives and sustainable consumption patterns. When considering science and policy linkages, both knowledge gaps and communication gaps are interrelated. To address those issues a combined approach needs consideration.
- In the next science-policy dialogue it would be useful to include a site visit where the local host country can showcase their best practices or successful stories on risk and resilience. This will motivate participants and encourage them to take messages back to their home country.
- Policy analysis and reviews are needed in the field of climate adaptation in each respective country. In future dialogues, consideration should be given on planning sessions to discuss outcomes of policy analyses and find the interrelationship between policy thematic areas.
- The involvement of media as participants in the dialogue was unique and allowed other participants to glean some information on how media operates when it comes to media coverage of newsworthy topics.

- The dialogue provided a pool of information on science and policy relations. Many important factors were addressed concerning recommendations for better science policy interaction.
- The dialogue conveyed **the message that public engagement through media is an important**

factor in communication, and this could change the view from negative to positive, and enhance media engagement. All participants have an obligation to disseminate the outcome which we learned during the dialogue.

- More themes on regional flavor and concrete examples of good practices should be discussed in greater details in future science-policy dialogues.
- There are regional databases and organisations that have similar interests and more specific themes - such organisations could be engaged in future science-policy dialogues to explore options for data interlinkages.
- Interaction can be built with regional networks such as APN and other centres in ICRAF and these centres will be encouraged to interact with APN.
- APN's contribution left a positive impression on contribution to building regional networks and trust.
- While some scientists make attempts to **integrate scientific finding to policies, based on the dialogue discussions, scientists must find betters methods to transfer the outcomes to end-users.** Finally involvement of media as a participant is a best initiative than media coverage.
- For future dialogues, social science and greater involvement of young scientists should be considered. For any dialogue, it is better to discuss one research agenda and divide into sub-topics rather than have different agendas.
- APN should explore a mechanism to monitor and evaluate research activities that have resulted in action at the ground level.
- Inviting different stakeholders from diverse area will make dialogue more fruitful and attractive.
- The discussion over two and a half days identified the importance of bringing scientists and policy makers together in one platform and identifying their respective needs to strengthen the science and policy interaction.
- The present SPD has stressed **the need for more evidence-based science, action research, communication and outreach.**
- More discussion is needed in urbanization, food and water.
- The policy world has a perception that climate scientists are against development. But, sustainable development is good and is also inevitable considering the needs to reduce disaster risk.
- In the context of climate change, South Asia faces greater impacts. Considering the policy domain in South Asia, ministries of climate change or disaster reduction cannot provide all of the solutions and, therefore, better communication is needed among relevant stakeholders.
- **In the communication channel we can see growing confidence on using intermediary agents and the media to transfer science information, although it needs careful consideration by all. It is worth considering to have science and media dialogues to ensure better understanding of each party.**
- Normally, researchers talk about the importance of communication and its involvement in scientific research. This said, there is lack of clarity among both scientists and policy makers on what "communication" actually is in the science-policy context. Through the kiosk discussions, the following were discussed: 1) What is communication; 2) Types of communication; and 3) Scale of communication that needs to reach different stakeholders. As agreed at the communication café kiosk, there is a need for proper understanding by scientists in communication issues and strategies that could effectively reach end-users.
- Holding a training workshop for scientists on communication involving media and communication experts from different field such as infographics and public speaking could be

useful.

- Further, science advisors to high-level prime ministers or presidents should be involved in future dialogues in order to share their experiences of transferring science to policy. Media workshops may be another tool worth consideration to address effective communication. For example, UNEP and the government of Viet Nam held a workshop for media and it was considered a successful approach.
- **APN or other regional organizations should take leadership to identify and list science communicators in South Asia region. This would be invaluable information** for scientists and policy makers in the region.
- Another option would be to organize an annual or biannual conference that recognizes a scientist who has significantly contributed to policy planning. This would create motivation among scientists in the region to develop policy-related scientific outcomes**.**
- The dialogue identified three main actors in the process of transferring science to policy - scientists, policy makers and the media. Local communities and public engagement is also important in this forum to get a complete picture of the process of science to policy implementation.
- At the science and policy interface, sharing information through PowerPoints is not the best approach. Telling stories is a better way to get record messages in peoples' minds. For example, at the annual conference on community-based adaptation in Kathmandu, global adaptation investment was a point for discussion (the present rate is 90% allocation for mitigation and 10% for adaptation). The conference distributed the message that global resources needs to allocate 50% for adaptation. In addition, from total adaptation allocation 50% should be distributed to the most vulnerable countries especially targeting the most vulnerable communities in those countries.
- An approach in Bangladesh to enhance the quality of scientific research at the national level is by creating a consortium involving the government, NGOs, and research institutions who work in the field of climate science. One approach was training young scientists to produce internationally recognised publications. A second was to hold monthly meetings among the consortium members to enhance communication between scientists. The third was to establish a web portal to share information on ongoing research and past research activities and their outcomes.
- Especially considering the role of funding organizations such as APN and CDKN, the main aim is to invest to produce high quality research. However for effective use of scientific outcome; we need to allocate 30% of research funds to disseminate the information to the policy makers and end users through communication.
- One approach that Bhutan is following to enhance the science and policy interaction and awareness is by involving a leader in the process – this person could be considered a champion or well respected person in the country in a particular field. For Example, the Queen of Bhutan is the patron of the environment and she has helped us engage with policy makers and other bodies for making decisions and raising awareness. This has proven to be an effective approach in Bhutan and a better approach for transferring messages among relevant stakeholders.
- The dialogue provided an opportunity to learn new knowledge and share experiences. Organising similar dialogues at the sub-national and national levels could also provide a platform to connect scientists and policy makers and build cooperation among them. In addition, sub-national level platforms would allow for ideas and experiences to be collected from all district level officers working at the ground level to address mitigation and adaptation.

- The dialogue provided an opportunity to understand national and regional level interests on climate change issues as well as the technology needed to address climate change. **As a policy maker the difficulties on mainstreaming and connecting science to policy are well understood. Therefore, these types of dialogues are helpful to understand the needs.** In addition, considering the policy planning process, normally policy makers focus on national-level interests and do not have a clear understanding on regional-level issues. This kind of regional dialogue provides opportunities to understand other countries' needs as well as needs at the regional level. As one of provision of APN, which is linking science and policy, we need to continue our efforts to bridge the gaps.
- After listening to speakers and the personal thoughts from all participants, APN has provided a good platform to learn from others in the region. Considering climate issues, regional cooperation is an important factor because any action taken by one country may affect its neighboring countries.
- When policy makers plan policies they mostly depend on real present facts that affect their respective nations. Perhaps sometimes science is not always considered. Therefore, we need evidence-based science that can link to policies as well as experts who can effectively incorporate scientific outcomes into policies.

Media Round-up

- While climate change is an interesting topic, it is no longer "a selling point" to media as there is still a degree of suspicion among journalists. For news agencies and media audiences to take notice, journalists need to write based on real situations. As such, **scientists and event organisers may want to consider having real site visits when they want to sell their findings. For example, if a country were to have an irrigation problem that affects the community, stories can be created that cover scientific facts and real impacts**. This kind of modified approach may glean more attention than a regular workshop or conference.
- Climate change issues have been seen as human rights issue as well as a context of climate refugees. Real scenarios are always popular among media and increase their interest. For example AWCI collaboration effort on regional analysis on water and low carbon society approaches were interested topics that I grabbed during present discussion. Initiative that taken by Sri Lanka on engaging media is a good learning experience for other countries to use of media to transfer scientific to general public. Finally, **I believed that scientists and policymakers that participated to this dialogue understand importance of media and it is not bad or scary tool.**

Appendix 1-Agenda

Global Climate Change: Reducing Risk and Increasing Resilience

19-21 January 2015, Thimpu, Bhutan

AGENDA

DAY ONE: 19th January 2015	
Registration	
08:00-08:45	Registration of delegates and invitees
08:45-09:00	All delegates take their seats
Opening Ceremony	
09:00-09:10	Arrival of Her Royal Highness Ashi Dechen Yangzom Wangchuck
09:10-09:20	Marchhang Ceremony (Traditional Opening Ceremony)
09:20-09:35	Welcome Remarks Dr. Ugyen Tsewang, Secretary, National Environment Commission Secretariat
09:35-09:45	Welcome Remarks Mr. Hiroshi Tsujihara, Director, APN Secretariat
09:45-09:55	Group Photograph All participants have a group photograph taken
09:55-10:20	Refreshments
10:20-10:35	Setting the Scene – Objectives and Participants' Roles Dr. Linda Anne Stevenson, APN Secretariat
10:30-10:55	Participants Self Introduction Facilitated by Dr. Linda Anne Stevenson, APN
10:55-11:10	Video Message from the Intergovernmental Panel Climate Change (IPCC) Dr. Rajendra K. Pachauri, IPCC Chair
Session One: Urban Areas (Climate Impacts & Risk Reduction) **Co-Chairs for the session: Dr. Madan Lall Shrestha and Dr. Saleemul Huq**	
11:10-11:40	Rapid Talks **1.** Urban Vulnerability and Resilience: Managing Risk in a Changing Climate (10 min): Dr. Anand Patwardhan, University of Maryland, USA and Indian Institute of Technology, Bombay, India **2.** Understanding Urban Vulnerability and Resilience – Perspectives from IPCC AR5 (10 min): Mr. Ali Tauqeer Sheikh Director, Asia, Climate & Development Knowledge Network (CDKN) **3.** Urban Landscapes and Governance: Responding to Disaster Risk and Communicating Decisions (10 min) Mr. Naseer Kashani, Director General Environmental Protection Agency (Baluchistan)

11:40-12:30 Panel Discussion Session

Facilitator	Dr. Mandira Shrestha
Panelist 1	Dr. Anand Patwardhan
Panelist 2	Mr. Naseer Kashani
Panelist 3	Mr. Ali Tauqeer Sheikh

12:30-13:30 Lunch

13:30-15:00 Participatory Games on Climate Risk/Resilience Courtesy of the Red Crescent Climate Centre

Leaders/Facilitators: Anand Patwardhan, Linda Stevenson, Taniya Koswatta & Others

15:00-16:00 Knowledge-Sharing Café Kiosk

Café Kiosk 1 - Science & Policy Led by Prof. Joyashree Roy	Café Kiosk 2 - Knowledge Management Led by Ms. Hina Lotia	Café Kiosk 3 - Communication Led by Dr. Anshu Sharma

16:00-17:00 Roundtable Discussion on Kiosk Outputs

Led by Co-Chairs for the session (Huq, Shrestha) with summaries from the Kiosk Leaders (Roy, Lotia and Sharma)

17:00-17:30 Daily Media Round-up on Day's Accomplishments

Led by Co-Chairs for the session (Huq, Shrestha) with perspectives from Media participants: Peter Janssen and Sahana Ghosh

HOUSEKEEPING AND CLOSE SESSION FOR DAY ONE

19:00-21:00 Welcome Reception Dinner

DAY TWO : 20th January 2015

Session Two: Food and Water Security in the Rural Context

Co-Chairs for the session: Prof. Giashuddin Miah and Mr. Naresh Sharma

09:00-9:30 Rapid Talks

1. Agroforestry: Food and Nutritional Security in South Asia (10 min)

Dr. Syed Javed Hasan Rizvi; Regional Director for South Asia World Agroforestry Centre

2. Water Security in South Asia (10 min)

Professor Toshio Koike, Asian Water Cycle Initiative, Japan

3. Perspectives on Adaptation Challenges for Food and Water Security from the Policy Community (10 min)

Mr. Tenzin Drugyel, Ministry of Agriculture & Forests, Royal Government of Bhutan

09:30-10:30 Panel Session

Facilitator	Prof. Buddhi Marambe
Panelist 1	Dr. Syed Javed Hasan Rizvi
Panelist 2	Prof. Toshio Koike
Panelist 3	Minister Norbu Wangchuk
Panelist 4	Mr. Danduraj Ghimire

10:30-11:30 Knowledge-Sharing Café Kiosk Session Two

Café Kiosk 1 - Science & Policy Led by Prof. Joyashree Roy	Café Kiosk 2 - Knowledge Management Led by Ms. Hina Lotia	Café Kiosk 3 - Communication Led by Dr. Anshu Sharma

11:30-12:30 Roundtable Discussion on Kiosk Outputs

Led by Co-Chairs for the session (Miah, Sharma) with summaries from the Kiosk Leaders (Roy, Lotia and Sharma)

12:30-13:30 Lunch

13:30-15:00 Participatory Games on Climate Risk/Resilience Courtesy of the Red Crescent Climate Centre

Leaders/Facilitators: Prof. Buddhi Marambe, Linda Stevenson, Taniya Koswatta & Others

Session Three: Low Carbon Society and Sustainable Pathways
Co-Chairs for the Session: Dr. Puja Sawhney and Mr. Muhammad Mesbnhul Alam

15:00-15:30 Rapid Talks

1. Low Carbon Development and Sustainable Consumption and Production in South Asia (10 min)
   Prof. Shuzo Nishioka, LoCARNet, Japan

2. Policy perspectives on Sustainable Consumption and Production in South Asia
   Ms. Janet-Amani Salem Programme Officer, Resource Efficiency and SCP

3. Green policy and mainstreaming environment and sustainability into development programmes
   Dr. Ugyen Tshewang, Secretary, National Environment Commission Secretariat, Royal Government of Bhutan

15:30-16:00 Panel Session

Facilitator	Prof. Ho Chin Song
Panelist 1	Prof. Shuzo Nishioka
Panelist 2	Ms. Janet-Amani Salem
Panelist 3	Dr. Ugyen Tshewang
Panelist 4	Prof. P.R. Shukla

16:00-16:45 Knowledge-Sharing Café Kiosk Session Three

Café Kiosk 1 - Science & Policy Led by Prof. Joyashree Roy	Café Kiosk 2 - Knowledge Management Led by Ms. Hina Lotia	Café Kiosk 3 - Communication Led by Dr. Anshu Sharma

16:45-17:30 Roundtable Discussion on Kiosk Outputs

Led by Co-Chairs for the session (Sawney and Alam) with summaries from the Kiosk

	Leaders (Roy, Lotia and Sharma)
17:30-18:00	Daily Media Round-up on Day's Accomplishments Led by Co-Chairs for the session (Sawney and Alam) with perspectives from Media participants: Peter Janssen and Sahana Ghosh
	HOUSEKEEPING AND CLOSE SESSION FOR DAY TWO

DAY THREE : 21st January 2015

	Session Four: Briefing Outcome of the Dialogue Co-Chairs for the session: Dr. Ugyen Tshewang and Dr. Linda Anne Stevenson
09:00-09:40	Sharing thoughts "Where we have been and where we should go …." Dr. Joyashree Roy (10 min) Dr. Anshu Sharma (10 min) Mr. Ali Sheikh Tauqeer /Ms. Hina Lotia (10 min) Dr. Mandira Shrestha (ICIMOD)
09:40-10:00	Sharing thoughts (3-minutes for each national Focal Points of South Asia) "What we have learned to facilitate better science-policy interactions…" Prof. Giash Miah (SPG Bangladesh) Ms. Peldon Tshering (nFP Bhutan) Mr. Mahendra Kumar Thapa (nFP Nepal) Dr. Shrinivas Badigar (India representative) Mr. Sajjad Ahmed (nFP Pakistan) Prof. Buddhi Marambe (Sri Lanka representative)
10:00-10:30	Refreshments
10:30-12:00	Roundtable Dialogue Each participant will have the floor for 1 minute and provide their remarks on way forward for two-way approaches in science-policy engagement
12:00-12:20	Media Round-up/Conclusion Led by Co-Chairs for the session (Dr. Ugyen Tshewang) with perspectives from Media participants: Peter Janssen and Sahana Ghosh
12:20-12:30	Closing Remarks Linda Anne Stevenson, APN Secretariat Dr. Ugyen Tshewang, Secretary, National Environment Commission Secretariat and host country
	HOUSEKEEPING AND END OF THE DIALOGUE

Appendix 2-Participant list

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