

FINAL REPORT for APN PROJECT
Project Reference: CBA2010-12NSY-Pradhananga



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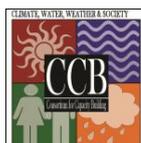
- Making a Difference -

Scientific Capacity Building & Enhancement for Sustainable Development in Developing Countries

International Graduate Conference on Climate Change and People

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Asia-Pacific Network for Global Change Research

International Graduate Conference on Climate Change and People

15-19 November 2010

**Project Reference Number: CBA2010-12NSY-Pradhananga
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PREFACE

The organizers of the conference would like to thank, first and foremost, to the APN for providing the base funding support to convene the event. We also express our deepest appreciation to our co-organizers DHM, CREEW, UY, and AIT for their relentless support, as well as to our co-sponsors, the British Council Nepal, ICIMOD, APMN, HUC, SEI, UNESCO, NTNC, NAST, IAHS, RTS, Prime Life Insurance, and Everest Insurance. Our sincere gratitude extends to our presenters and other resource people for their valuable guidance to and interactions with the conference's student participants. Most importantly, the organizers are well aware and appreciative of the personal sacrifices that many of the students had to make in order to attend the conference. We tried our best to make the event worthwhile for graduates not only for now but for future as well as they pursue their careers.

Dhiraj Pradhananga, SEN

Michael H. Glantz, CCB

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1.0 INTRODUCTION

1.1 Background

The physical and social effects of climate change are already being observed in areas around the world, indicating that both precautionary and prompt actions are necessary. The Fourth Assessment (AR4) of the Intergovernmental Panel on Climate Change (IPCC) has served to catalyze government leaders to take seriously the existing scientific information about human impacts on the naturally occurring greenhouse effect. Each



subsequent assessment has shown indisputably that these effects are growing and now societies must take action to contend with an increasingly warmer climate. Coping with the multiplicity of issues arising from climate change and its impacts requires—indeed, demands—that decision makers, gatekeepers, and stakeholders draw expertise from an interdisciplinary range of fields in science, policy, cultural studies, ethics, and equity. Graduates of universities and colleges today, regardless of discipline, will be immediately involved in high impact decision-making on a range of climate-sensitive issues. These decision makers from industry, government, education, and civil society must be fully prepared to understand and address issues that arise in the future, regardless of past precedent or present for see ability.

Rationale

- Scientific research findings and conclusions are often too technical and jargoned for general understanding and consumption, so they need to be translated into more widely digestible forms.
- The impacts of climate change vary according to age, time, and location, so they need to be discussed comprehensively.
- Climate change should be addressed on a multi-sectoral basis.
- Youth are ambassadors of information and are future decision makers so their capacity must be enhanced.

A key question addressed during the conference was how to cope with variability, extremes, and changes in interactions between weather, water, climate, and society.

Primary Objectives

The primary objectives were developed by The Small Earth Nepal (SEN) and the Consortium for Capacity Building (CCB). They included:

- Equip graduate students with usable knowledge on the importance of multi-disciplinary activities in addressing climate change regardless of their home or academic discipline;

- Mobilize participants to formulate a multinational networking group to develop baseline skills needed to understand climate change mitigation and adaptation measures; and
- Create awareness among local and international communities as well as among social leaders, enabling them to identify their roles in combating the influences of a changing climate effectively.

1.2 Overview of the Conference

The first ever of its kind, the five day *International Graduate Conference on Climate Change and People* was organized in Kathmandu, Nepal from 15 to 19 November 2010. At the conference, seventeen experts from fields as diverse as biodiversity, water resources, climate change science, natural hazards, anthropology, biogeography, policy, equity, and ethics shared their experiences and opinions with one hundred and thirty delegates representing seventeen



countries from Greater South Asia and beyond. The conference focused on multidisciplinary capacity building of graduate students and encouraged participants to engage actively in the lecture sessions, interacting with experts, in group discussions, in panel discussions, and in the formation of a network for communicating with one another beyond the conference on climate change issues. The participants were from a range of disciplines, including climate science, hydrology, sociology, journalism, law, etc. The conference was organized by The Small Earth Nepal (SEN) and the Consortium for Capacity Building (CCB), University of Colorado, Boulder, USA with base funding from the Asia Pacific Network for Global Change Research (APN).

The entire program was organized at the hall of the National Trust for Nature Conservation (NTNC), Kathmandu. The first day kicked off with the formal inauguration session where vice chairman of the National Planning Commission (NPC), the honorable Dr. Jagadish Chandra Pokhrel was the chief guest. In the session, Dr. Surendra Raj Kafle, vice-chancellor of the Nepal Academy of Science and Technology (NAST); Mr. Umakant Jha, Secretary of the Ministry of Irrigation; Prof. Dr. Gordon Young, President of International Association of Hydrological Sciences (IAHS); Dr. Madhav Bahadur Karki, Deputy Director General of the International Centre for Integrated Mountain Development (ICIMOD); and Robert Monro, Director of the British Council Nepal shared their opinion regarding climate change and wished for successful completion of the conference. The session was chaired by Dr. Michael H. Glantz, Director of the Consortium for Capacity Building at the University of Colorado, Boulder, USA. Dhiraj Pradhananga, President of The Small Earth Nepal (SEN) delivered a welcome address to the participants. Over three hundred people, including several national and high profile dignitaries, attended the session.

The formal inaugural session was followed by technical sessions. The technical sessions of the conference provided an opportunity for graduate and undergraduate students to gain first-hand experience on how to deal with global change issues on national and international levels. Most importantly, besides many presentations given by invited lecturers, students were also given a chance to present and share their ideas and opinions. Thus, the conference provided a platform for the graduate students' voices and ideas to be expressed and heard. The conference was organized in such a way to enable increasing participation among graduates each subsequent day, culminating with the two final days when students executed most of the sessions.

2.0 APPROACHES AND METHODOLOGY

The International Graduate Conference on Climate Change and People had set the major objective; capacity building of the young graduate and to achieve such objectives following methods and activities were followed during project. A climate affairs template was used: climate science, impacts, policy & law, politics, economics and equity & ethics. The resources for the conference were mainly drawn from Glantz's publications: *Climate Affairs* (Island Press, 2003); *Heads Up: Early warning systems for climate, water and weather-related hazards* (UNU Press, 2009); "How about a Spare time university?" (WMO Bulletin April 2007).

2.1 Pre Conference Activities

All the details regarding the conference and its follow up was webcasted in Consortium for Capacity Building (CCB) <ccb.colorado.edu>, The Small Earth Nepal (SEN) <smallearth.org.np> websites and conference blog <gradconference.wordpress.com>.

➤ Formation of Committees

An Advisory Committee, Steering Committee, Organizing Committee, and Students' Committee were formed during the project. Consultation meetings with advisory committee guide and provided feedback for the smooth implementation of the project activities. Steering committee and organizing committees organized the conference to fulfil the project objectives. A student committee was formed to foster interest in and value of multidisciplinary multinational networking for weather, climate, and water-sensitive issues of concern to society.

➤ Selection of Participants

All participants, national and international were selected upon a special completion announced in web link of core team and partner organizations. Dedicated and self-motivated participants were invited based on their letter of motivation and commitments. Priority was given to participants from developing countries.

2.2 Conference Activities

Conference was conducted from 15 to 19 November 2010 in Kathmandu, Nepal. The conference included the presentations by National and International resource persons, open discussion, group work, field visit, poster presentation, daily e-newsletter, media coverage and highlights. Students were asked to prepare presentations for discussion on specific topics during the conference days. Student participation and activity was fostered with guidance from the lecturers and resource persons.

Students attending this conference in Nepal and from the Greater South Asia region formed a network and were linked even after the conference. Lecturers and resource people (in situ and virtual) served as mentors during the conference and afterwards via the Internet.

2.2 Post Conference Activities

Production of a conference report, policy briefs and other appropriate documentation targeted to concerned stakeholders at academic/community/management/decision-making levels. The report will appear on Internet websites, including APN's, CCB's and SEN's.

3.0 RESULT & DISCUSSION

3.1 Expert Presentations

DAY 1

Dr. M. H. Glantz – *Climate and Water Affairs: Multidisciplinary Research*

Applications in the Service of Society

Why Climate & Water Affairs?

The idea to look at climate and climate-related issues through the multidisciplinary lens of Climate & Water Affairs was catalyzed by the spirit of the times. That spirit reflects an obviously growing concern about a broad range of climate-related issues that affect society and the environment. In the coming decades, the ability of societies around the world to cope effectively with climate variability, weather, and climate extremes, and the likelihood of global warming and its yet-to-



be-determined effects on precipitation and extreme events, will increasingly be tested and are likely to dominate the concerns of local as well as national decision makers. Glantz suggested that the twenty-first century has a good chance of becoming the "climate century", a century in which climate-related concerns will occupy significant attention for the present as well as successive generations of policymakers.

More specifically, Glantz proposed a multidisciplinary education and training program focused on Climate & Water Affairs. This program encompasses education, professional training, and research and application aspects related to the following six areas: Climate and Water Science, Climate Impacts on Ecosystems and Societies, Climate Policy and Law, Climate Politics, Climate Economics, and Climate Ethics and Equity.

Climate Science objectives are (1) to understand the climate system, (2) to understand its components and their interactions, and (3) to recognize society as a key component. Climate Impacts on Ecosystems and Societies encompasses both managed and unmanaged ecosystems. Societal impacts

include both direct and indirect impacts of climate on human activities, and of society on climate. A wide array of issues can be explicitly discussed and explored under Climate Policy and Law, including regulations pertaining to the climate system, which incorporate laws dealing with air pollution, transboundary transport of pollutants, ozone depletion, tropical deforestation, and so forth. Climate Politics refers to the pathways pursued by competing decision makers and interest groups, from local to global. Climate Economics encompasses how a government's, a group's, or an individual's economic well-being might be influenced directly and indirectly by climate variations on all time scales. This includes the economic impacts of severe weather events.

Is there a moral responsibility for countries that have climate favorable to sustained agricultural production to assist those countries whose climate regimes are more problematic for sustained and reliable agricultural production? Are seasonal forecasts equitably distributed just because they are placed on the Internet? The study of Climate Ethics and Equity can be used to examine and possibly change the inequities that exist among different climate-sensitive sectors, regions, and groups in society. A key concern of environmental ethics is the conflicts involving inter- and intra-generational climate-related issues.

Establishing Climate & Water Affairs activities will enable students to concentrate part of their education and training in areas of research, impact assessment, and policy implications that center on climate-related issues. Students will thus be better prepared to work in water resources, industry, agriculture, fisheries, mining, insurance, education, health, civil defense, government agencies, and disaster prevention, each of which is climate-sensitive.

Dr. Madan Lall Shrestha – *Is our Climate Changing? A Physical Science Perspective*

Climate is usually defined as average weather, or more rigorously, as the statistical description of weather in terms of the mean and variability of relevant quantities over a period of time ranging from months to thousands or millions of years. The climate system is a complex, interactive system of the atmosphere, land surface, snow and ice, oceans and other bodies of water, and living things. The system consists of various components that interact nonlinearly. The climate system is analogous to an engine and solar radiation is the main energy source to drive this earth-atmosphere engine and climate system. If the earth system gets more radiation than it gives away, it warms; if it loses more than it gains, it cools. In other words a change in the radiation balance affects the earth-atmosphere system. There are three fundamental ways to change the radiation balance of the earth: (1) by changing the incoming solar radiation, (2) by changing the fraction of solar radiation that is reflected, and (3) by altering the long-wave radiation that is reflected back toward space. The last two are the major processes in changing the energy balance of the earth atmosphere system as a result of the increase in the concentration of greenhouse gases in the atmosphere. Natural influences as well as human activities are acting as drivers of climate change, giving rise to climate perturbations.



The process whereby thermal radiation emitted by the planet is absorbed by atmospheric gases and reradiated back to the earth is called the greenhouse effect. Atmospheric trace constituents like carbon dioxide (CO₂), nitrous oxide, water vapour, aerosols, halocarbons, etc. are the main greenhouse gases contributing to climate change; if we did not have greenhouse gases, however, the earth's temperature would stabilize at around -18°C, making the planet uninhabitable. The major problem is that some greenhouse gases, in particular CO₂, have long residence times in the atmosphere and their concentration is increasing. Furthermore, CO₂ emitted in 1960, for example, is different from CO₂ emitted in 2006 because the earth's atmospheric system does not have the same capacity to cope with the additional CO₂ emissions of 2006 in comparison to those from earlier periods. Thus, more emitted CO₂ remains in the atmosphere, so today's carbon dioxide emissions are more critical than those from earlier times. Water vapour and CO₂ from the oceans and forests as well as methane from wetlands and melting permafrost are the primary constituents causing the naturally occurring greenhouse effect. As economies develop, industries burn fossil fuels such as coal, oil, and natural gases. Increasing human population has necessitated greater food production with large populations of ruminant animals and more rice paddy fields, both of which emit methane. Methane and the CFCs used in refrigeration and in other industrial processes are also greenhouse gases. Such human interventions have altered the make-up of the atmosphere, and by their radioactive effects have also enhanced the natural greenhouse effect.

A change to one part of a system can cause particular effects to other parts of the system; additional changes induced by the response to the primary change can, however, amplify or dampen the effect. Such secondary consequences are called feedback mechanisms. For the climate system if an initial climate response that is caused by an initial climate forcing is amplified, it is called a positive feedback, but if the initial climate response is reduced by the climate system, then it is a negative feedback. Because of these feedbacks it takes decades to centuries for the earth to fully adjust to increases in greenhouse gas emissions. So, even if greenhouse gas emissions were to stop today, the planet would continue to warm by about 0.6°C over the next century because of greenhouse gases already emitted into the atmosphere as a result of human activities.

Surface temperature data indicate that the 27 warmest years since 1850 all occurred in the 30 years period between 1978 and 2007. 2009 ends the warmest decade on record. An IPCC statement on global warming (Fourth Assessment Report, 2007) stated that the "Warming of the climate system is unequivocal, as is now evident from observations of increases in global average air and ocean temperatures, widespread melting of snow and ice, and rising average sea level." Data from 1896 to 2007 on the rising global temperature record suggest that it takes more than a century for warming to occur. That the global temperature is rising generates a problem for policymakers. For example, as the global temperature rises there is more water vapor in the atmosphere, so the impacts of climate change include impacts on water resources, agricultural production, land use patterns, and human and ecosystem health. Potential impacts also include changes in precipitation patterns, soil moisture, runoff, and evaporation rates. Warmer summer temperatures, less snow pack and decreased precipitation lead to enhanced continental droughts and tropical cyclones. Also to be expected are more frequent warm days and nights and fewer cool days and nights. Currently, glaciers are melting and floods are occurring even in desert areas. Overall, one can see that climate change causes both environmental and societal impacts.

To study future climate change one must use a climate model. A climate model is a very sophisticated tool that includes a representation of complexity and non-linearity in nature and integrates them computationally; such effects cannot be treated analytically. Model simulations estimate that the earth may warm as carbon dioxide emissions continue to increase unabated. Scenarios that assume people burning more and more fossil fuels provide estimates at the top end of the temperature range, while scenarios that assume greenhouse gas emissions growing relatively slowly yield lower temperature predictions. The cost of addressing climate change is manageable, while the cost of not doing so is unaffordable. Even if the costs of addressing climate change were manageable, for developed countries, countries in the developing world could not afford its societal and economic impacts.

Dr. Juan F. Arratia – *Energy and Climate Change: The Carbon-Free Energy Challenge*

Since 1900, human population worldwide has gradually increased with significant exponential growth occurring over the entire century. If this growth rate continues, the population of the world in 2100 will reach 11-12 billion. If we examine the causes of global climate change from 65 million BC to the present, we can see that the amount of anthropogenic sources of greenhouse gases such as carbon dioxide, methane, and nitrous oxide (and in the 20th century, manmade CFCs) in the atmosphere



increasing steadily since the onset of the Industrial Revolution in the mid-1700s. The correlation of temperature observations between human generated greenhouse gases and those emitted from natural causes clearly indicates that human contributions to global warming are accelerating.

Aside from the adverse impacts on climate of the burning of fossil fuels such as coal, natural gas and oil reserves are depleting. As a result of these factors attention has begun to shift towards the development of renewable energy sources. Possible solutions to the carbon-free energy challenge include but are not limited to the following: (1) carbon neutral energy, (2) nuclear power, and (3) sustainable/renewable energy sources. tons of CO₂.

As for nuclear power, meeting our energy needs today would require the construction of a new one-GigaWatt electric nuclear fission plant every day for the next 50 years. Sustainable/renewable energy sources are hydroelectric, tidal and oceanic currents, geothermal, wind power, biomass, and solar energy. These resources are freely available but still they remain insufficient. Globally, a potentiality of 4.6 Terawatts (TW) in hydroelectric energy, 2 TW in wind energy, 30 TW of oceanic and geothermal energy, and 600 TW in solar energy exists. Lawrence Berkeley National Laboratory in the USA is implementing the Helios Project with an effort to develop methods to **store** solar energy in the form of renewable transportation fuel. Other laboratory projects include the generation of bio fuels from biomass and from algae, as well as a direct conversion of water and carbon dioxide to fuels using solar energy. At present, the critical need for the earth is sustainable and carbon-free energy. Among the carbon-free solutions, the sun alone could meet the carbon-free energy challenges, if new, inexpensive photovoltaic or solar technology were made available or if a new chemical process were

discovered to create fuels and a system of optimization to produce and consume energy were implemented.

Dr. Lareef Zubair – Are Regional Ecosystems Changing? Rates of Environmental Change Can Societies Cope?

The change in regional ecosystems is evident – they change day by day, within and across seasons, from year to year, over decades, and so forth. These changes result in a dynamic equilibrium. Now, the question arises that whether there is undue change that shall disturb this dynamic equilibrium, in other words, have the rates of change become dangerous to the viability of the ecosystems and to the human populations that depend on them? These are fair questions to pose in that there has been unprecedented change in the last couple of human generations, such as demographic pressures, climate variability and change, and changes in land cover and land use. The rates of these changes are particularly high in South and Southeast Asia, home to over a quarter of humanity. These questions those are so broad and complex to be answered in a useful way if taken in their entirety. Hence, considering cases of ecosystems will be far more easier to understand. Case studies are presented for the following categories:



- Oceanic and Coastal Change: Sea Surface Warming and Dying Coral Reefs over the Maldives
- Terrestrial Biodiversity: Asian Elephant Survival with a focus on Sri Lanka
- Atmospheric: Haze (Asian Brown Cloud) over Southern Asia
- Eco-Social Changes: Infectious Diseases (Malaria & Dengue) Transmission in Sri Lanka

These cases showed that the rates of change have been so dramatic that ecosystems have begun to change in ways that undermine their vitality and ability to sustain themselves in the longer term. Large-scale changes such as decreases in Himalayan snow cover, increases in the Indian Ocean temperature, and changes to the chemical composition of the atmosphere show how there is a compelling need for transnational cooperation across Greater Southern Asia. We learned, for example, the following from the case studies:

- Development plans were written and implemented without serious consideration of their environmental and social impacts;
- The health of ecosystems are poorly monitored;
- The “precautionary principle” is not followed;
- Transnational environmental impacts are neglected, especially as there are no transnational or regional mechanisms to undertake cross-border impact analysis, data sharing, monitoring, or response;
- National security and development-based arguments and personal gains for decision makers often trump sensible decision making that considers environment and social impacts; and

- Affected citizens either don't have adequate mechanisms to monitor what is happening or their voices are not heard by decision makers.

The question then becomes “can societies cope with these rates of changes?” Of course, not all ecosystems are changing dangerously and not all societies are limited in their capability to respond, yet there are pivotal ecosystems that are of great importance and require attention across national and international jurisdictions and boundaries. However, historical and traditional adaptive measures of societies and of ecosystems may not be adequate for rapid changes in the future. The systems have come under enhanced stress to the extent that their resilience is being undermined while their vulnerability has increased. Governance and technological capacities have not been oriented toward adaptation and there are issues of public involvement.

There have also been instances of engineered vulnerability: some economic development programs have led to increased risk of environmental and social perils for those residing in downwind or downstream. The proposed Sethusamudaram Project, which cuts a canal between Sri Lanka and India to enable large ships passage, serves as one such example.

In order to develop resilience to these changes by way of developing the capacity of citizens to respond to such issues (before they become threats) requires citizen science, citizen environmental, and citizen environmental justice perspectives and movements across Greater South Asia. Environmental justice is the most neglected area of concern but this perspective is critically important, as the most marginal groups in a given society are often the most adversely affected by environmental change. Today, there has been an increase in resources availability for coping with environmental change. The resources allocated for adaptation practices should ensure decentralized coping capacity and vulnerability reduction. To be effective with such an agenda, civil society and environmental groups must find common cause with scientific, development, and human rights agendas both locally and across the region.

Dr. G.H.A.C Silva – *Modeling the Hydrological cycle I: An example of Usable Science*

A model is a simplified representation of a real world system. It comprises different key aspects, which are numerical measures of its characteristics, and consists of a logical set of operations. A hydrological model is a combination of different processes associated with the hydrological cycle. Keeping a natural balance of water is a constant challenge due to excessive usage of water resources. On the other hand, unplanned human intervention because of land use changes adversely influences the hydrological cycle where the natural balance among its components have been seriously affected.

The selection of a suitable hydrological model depends on the desired time scale, desired output, hydrologic quantity, obtainable data, available computing power, and so forth. Different models are used, ranging from simple to complicated to highly sophisticated. The selection of an appropriate model should be undertaken by considering factors such as convenience of use, required accuracy, output temporal resolution, and affordability. Regardless of the model chosen, every model must satisfy the fundamental hydrologic concept of water balance.

Hydrological modelling includes various steps such as a detailed study of a basin, hydrologic as well as geographic data investigation, and a selection of suitable modelling approaches and calibration

procedures. Depending on the complexity of a model, parameters are adjusted to verify model outputs with a set of observations. In the process, model users should have a good understanding about sensitivities and uncertainties associated with parameters and also different approximations made during the computational process.

Hydrology is closely related to various other natural processes, physical infrastructure developments, and other human interferences to the environment. Thus, a hydrological model is a useful tool in the assessment of environmental impacts that could result from a natural or human-induced change/alteration of natural environments and for the design and prediction of probable extreme scenarios that could and do result from climate variability.

DAY 2

Dr. M. H. Glantz – *Reports Card for Climate Change: From the Stockholm Conference on the Human Environment (1972) to the IPCC (2007)*



To better understand contemporary governments' concerns about a human-induced global warming of the earth's atmosphere it is instructive as well as necessary to identify some of the key reports that preceded the IPCC. This is important because many younger generations (from youth to those in their forties, including young professors) are most likely unaware of the existence of the content of such reports. To date, many

environmental reports have been undertaken by many countries. The reports to which I refer are UN and also US reports. My "Reports Card for the Environment" is as follows: 1 C, 3 Bs, 1 A, and 1 Incomplete. The letters in the subtitle are meant to be a play on the practice in the US and in other countries to use letter grades in assessing students' schoolwork. But here the reports to be discussed are not actually given a grade or ranking as in school, with an "A" being the best grade and a "C" being a poor grade, according to how good or accurate they were in their findings. Here, the letters simply refer to the first letter of the environmental report. The reports to be noted here are the following: 1 C = the Club of Rome's *Limits to Growth* (1972); 3Bs = Willie Brandt's *North-South Commission* (1980), Gerald Barney's *Global 2000 Report* (1980), and the Brundtland Commission's *Our Common Future* (1987); the 1 A = *Agenda 21*, which was related to the 1992 UN Conference on Environment and Development (UNCED), better known as the Earth Summit in Rio de Janeiro, Brazil; the 1 Incomplete is a reference to the ongoing IPCC Assessment Reports. To be honest, without the many environmental assessments that preceded it, the IPCC AR4 report would not have been recognized for its achievement, which is one of the main messages of this presentation: as Newton said, each generation of researchers stands on the shoulders of their predecessors (as well as those of their contemporaries).

Glantz noted that “Time, tide, and now global warming” wait for no one and that these three processes are now converging at a rate that is threatening many settlements and ecosystems along coastlines worldwide. The climate, despite existing uncertainties, is changing whether people believe the scientific assessments or not. There are increasing levels of greenhouse gas (GHGs) emissions resulting from the burning of fossil fuels (e.g. coal, oil, and natural gas), high rates of tropical forest deforestation (forests that at one time were referred to as the “Lungs of Earth”), and increasing methane releases as permafrost thaws. As a result, sea level is rising, Arctic ice is melting at rates faster than projected, warm ecosystems are moving upslope to higher altitudes, and infectious disease vectors are shifting towards the poles. The reality is that there is no place to hide on the planet from the consequences of human-induced climate change. No longer is climate change just of interest to scientists; it must be considered for the well being of civil society. In fact, “greening” human activities (that is, making activities more in harmony with the natural environment) has become big business and has sparked a race by corporations worldwide to capture a lion’s share of the renewable energy market along with the development of thousands of other “eco-friendly” products.

The Reports

The first modern report on the environment was the Club of Rome’s *Limits to Growth* (1972). It is a model-based trends report on population growth, industrialization, malnutrition, depletion of non-renewable resources, and environmental deterioration. The second major report on the environment was The Brandt Commission report in 1980. It called for the transition from an oil-based world economy to one with sustained renewable energy resources. Another “B” is the Barney “Global 2000 Report” which warned that by the year 2000 the globe would be severely stressed because of more people, more pollution, less stable ecosystems, more vulnerability, and impoverishment of natural resources. It was commissioned by US President Carter in 1977. When President Reagan came to office in 1981, he purged the Barney Report from all government offices. His administration saw the environment as something to be exploited not protected. The third “B” is the Brundtland Commission Report (1987). This document stated that “our common future ensures sustained progress through development without bankrupting the resources of future generations.” It linked economic growth and sustainable development and energy corporations to environmental issues. Attempts to “marry” exploitation with conservation of the environment (including the Earth’s climate) continue today with varying and limited degrees of success. The one A is *Agenda 21*, which is linked to the Earth Summit in 1992. This report highlighted that “humanity is at a defining moment in history.” Moreover, it discussed disparity within and between nations, increased poverty, hunger, ill health, illiteracy, ecosystems, and integrated environment and development. The IPCC reports are a work in progress, so the “I” is an “incomplete”. It stems from work by the ongoing IPCC (Intergovernmental Panel on Climate Change), which began in 1988 and continues today as a joint activity of the UN WMO and UNEP. The first IPCC report (AR1) was issued in 1990; AR4 was issued in 2007. AR5 is to be completed in 2012, the year the Kyoto Protocol ends.

In addition to these key reports, other reports were issued that presented insights into how governments might deal with the climate change issue. The UN Stockholm Conference was held in 1972. At the time, several of today’s environmental concerns—ozone depletion, global warming, and tropical deforestation, for example—were not mentioned. Nevertheless, it sparked considerable worldwide interest about the degraded state of the planet’s resources and the need to consider ways to protect the environment. This conference was followed by other UN conferences on food, population, water, desertification, habitat, science, and technology, including the first world climate

conference, which was held in 1979 in Geneva. In retrospect, this was an amazing decade for the UN system.

In 1970 many top scientists met in a workshop at MIT, a top American technological university. They produced a published report (1970) called *Study of Critical Environmental Problems* (SCEP) that touched on potential global atmospheric problems. It concluded that “global problems do not necessarily need global solutions” and that “in the foreseeable future advanced industrial societies will probably have to carry the major burden of remedial action.” Similarly, a second MIT study, *Study of Man’s Impact on Climate* (SMIC, 1971), recognized that “a global temperature increase produced by human injection of heat and CO₂ may lead to dramatic reduction, or even elimination, of Arctic Sea ice. This study would be useless if we did not believe that society would be rational when faced with a set of decisions that could govern the future habitability of our planet.”

In my view, the unsung hero of climate change research—and now understanding—is the conference *Our Changing Atmosphere: Implications for Global Security* (Toronto, June 1988). That conference witnessed the birth, so-to-speak, of the IPCC process. At the conference, one group called for a 20% cut in 1988 global carbon emissions—and they were called radicals! Perhaps, looking back, it was the right thing to do then, and the cutback on the use of fossil fuels would have already begun, along with a slowing down of GHG emissions: a missed opportunity.

A concluding thought: “To know the road ahead ask those coming back.” If we look at history, in every prior century, one dominant country has existed. For example, the 19th Century has been referred to as the British Century because of its control of the seas; the 18th Century might be the French Century, the Dutch century was the 1700s, the 16th century was the Spanish, the 15th century the Portuguese. The 21st Century, I contend, will belong to no country [NB: Google search the phrase “whose century is the 21st Century?” for surprising answers]. It will be the Climate Century, in which life will go on trying to cope with the vagaries of climate variability from year to year and season to season, with extreme meteorological and hydrological events, and with a changing climate. Climate issues will continue to dominate our news headlines throughout the current century.

Dr. Ashutosh Mohanty – Greater South Asia’s Regional Impacts of Climate Variability, Change, and Extremes

The Himalayan University Consortium (HUC) consists of thirteen universities from the Hindu-Kush Himalayan region, and altogether twenty-four universities globally, all working for mountain development and related issues. Under the HUC Scholarship Programme, 30 Masters Scholarships are provided to promote young researchers and faculty from Afghanistan. Among the thirty scholars of the HUC, ten students are doing research on climate change.



Greater South Asia is the storehouse of 12,000 km³ of freshwater and 34 biodiversity hotspots. It is also the largest and most populated region in the world, with forty-six countries covering 30% of world land and 60% of world population. The region is the most poverty prone, not only because of climate change impacts but also because of other concerns. 70% of the people live in rural areas, and 75% of

the population is in poverty, dependent on agriculture and natural resources. They are most affected by climate change.

We need the young people to develop their skills and contribute to the development and sustainability of the region. Coastal communities are the most vulnerable; 80% of their biological diversity and ecosystems have been lost. Because of climate change, there is an increase in pest attacks and loss of forest products, as the pressure from both climate and human activities increases. There is also degradation of ecosystems and loss of biodiversity as well as damage to infrastructure, human settlements, and communications. From now on, particularly the young generations should take preventive actions and spread this message to other people. Therefore, there is a need of consciousness from policymakers, administrators, scientists, and researchers. They have to work together and develop solutions. This is the scenario, and we have to make it our challenge.



Mohammed Arifur Rahman, one of the participants from ICIMOD presented comments on the effects of climate change and glacial melting for Bangladesh. He mentioned the two river basins in Bangladesh, the Ganga and the Jamuna. Due to glacial melting, huge amounts of water come into Bangladesh. The soil type is of coarse materials and for that reason irrigation is needed in huge amounts. Huge amounts of water are accumulated in the middle portion of Bangladesh

during monsoon because of its flat topography, while in the dry season huge amounts of sand particles are accumulated in the same place. The river systems in Bangladesh accumulate 82.4 million tons of sediments. The average water level is 10.84m in 2010, while in 2007, 2008 and 2009 the average water level was 9.35, 8.94, and 8.41m, respectively. Thus, the present water level is 2m higher than in previous years. Riverside sand and silt mass accumulations (known as *char* in Bengali) are home to over 5 million people in Bangladesh. CEGIS (2000) found that on average 5% of the Bengali population or 6.5 million people live on the *chars*, covering almost 5% of the total land area of the country. The *char* dwellers depend mainly on agriculture and agriculture-related activities. Opportunities for off-farm activities are marginal. The harvest period of several crops like maize, sweet potato, ground nuts, pulses, and rice is the month of April. On the other hand, the sowing of some crops like jute seeds has not been possible because of the inundation of agricultural lands.

Sediqullah Reshteen, also from ICIMOD, presented on the effects of climate change in Afghanistan. He spoke about his conversations with his father about climate change: questions were difficult to answer especially in the context of Afghanistan where both human as well as natural crisis prevails. In Afghanistan, there are plenty of water resources. Of the total available supply of water, 40% of surface water and 48% of ground water are used for drinking purposes; however, these resources are already affected by climate change. Only 13% of Afghanistan has access to safe drinking water. Comparatively, there are tangible changes occurring in Afghanistan's five river basins in terms of snow coverage, forested area, water levels, and so on. The water resources, which are the major



sources of irrigation, have also been affected by climate change. Thus, climate change has impacted agricultural production. Even though Afghanistan has good water resources, its snow cover has been severely affected by climate change. The problem has been made even more severe because of the human-made crises in the country.

Keynote Speech

Dr. Gordon Young - *The Challenges of Global Water Management in 2020: Focus on the Himalayan Region*



The primary issue is water for human well being—for food and for health issues. Other secondary issues are the issues of water for social development, for energy development, for economic and industrial development, for sustainable natural ecosystems and the hazards of floods and droughts. The sharing of water in river basins and aquifers is a trans-boundary water issue. We are familiar with the problems of drinking water scarcity and the need of water for sanitation. The Millennium Development

Goals (MDGs) have two particular goals— to assure access to drinking water and access to sanitation. MDG 7 states that the proportion of the population not served by clean drinking water and adequate sanitation should be reduced by half in the twenty-five year period between 1990 and 2015. However, most of the counties today are not being able to reach the goal. Many schools in Least Developed Countries (LDC) do not have facilities for safe drinking water or sanitation. Education is very important for the economic and social development, and the lack of water in schools may affect the development process.

Water is needed for energy (hydroelectric power generation) and for irrigation. Nepal does not have sufficient electricity production, largely depending on inadequate runoff that greatly affects the quality of life and economic development of both urban and rural population. Many developed countries have much less rainfall than developing countries, so developing countries can build dams, reservoirs and other artificial storage container where water can be stored for use in dry periods. Canada has overcome insufficient water supplies in this manner. Such infrastructure projects also reduce the risk of flooding. The productivity of Zimbabwe, for example, is tied with its water management. Though water is extremely important for ecosystems, it continues to be polluted by sewage dumps and oil spills. The Nile and the Brahmaputra are both transboundary waters—how can they be shared? Aquifers should be shared equally in nature. Food, health, economic development, energy—all these have interrelations between countries that share common water sources; however, relations may be relatively different from one country to another, depending upon their priorities. It is important to deal with variations in waters with respect to time and space because if we know what is going to happen in the future then we can manage water more effectively. Ground water is very important in those countries where there is less availability of surface water. Artificial water supply

management can be a boon for agricultural production and economic development, which is in most countries directly dependent on water management policies.

The global temperature is increasing as an impact of climate change; however, the rate of degree of increment is in debate. Precipitation is very difficult to predict due to the variability in precipitation in different areas. With the increase in temperature, glaciers, snow, ice, and permafrost are decreasing; however, the disappearance of permafrost can lead to easy mining of minerals from the soil. Exploring the changes in the water cycle due to climate change, some lakes, as in the case of Lake Chad in Africa, are getting smaller in size due to extreme evaporation of water and decreased precipitation. Soil moisture, however, is very difficult to track globally. Ground water is not actually affected by climate change but over-pumping results in pressure on ground water levels. Glaciers, snow, and permafrost in the mountains are highly temperature dependent, and because temperature has risen and mountain climates are changing, spring comes earlier and that has a great impact on the flood regimes. Increasing evaporation is largely dependent on increasing temperature and this affects the water cycle. Several studies have provided evidence that evapo-transpiration is increasing on average across large areas of Asia and North America. As societies become richer, they spend more money to fulfil their luxurious desires with often water-intensive products like swimming pools, washing machines, artificial fountains, etc.

Economic development is the driver of life. Another driver is the flow of aid from the developed countries to developing countries. The population explosion is now so far beyond control that it has emerged as the single most powerful force driving government policy. It has been predicted that there will be about 8 billion people on earth in the next ten years (although some countries, as in the case of most countries in Western Europe, are not facing population explosions); globally, however, population is increasing in developing countries. Migration of people from rural to urban areas also leads to difficulty in water management in urban areas.

The major water issues in 2020 will be Integrated Water Resource Management (IWRM) , adaptation to changing circumstances can be incorporated into national and world plans, and water quality that affects human health and ecosystem integrity can be improved. Declining water availability, particularly in urban areas, may result in more intense and extreme events. Over-pumping of ground water in areas not significantly compensated by recharge has become a major issue, like in Rajasthan and Gujarat in Northwest India, for example, led to aquifer losses of 109 cubic Km in a 6 year period. Coastal populations are also extremely vulnerable to sea level rise and to degradation. Governments should decentralize water resource management to the grass root level people for more effectiveness.

Dr. Dinesh Raj Bhuju – *Climate Change, Biodiversity Risk, and the Human Race*



For many years, I had the impression that the dinosaurs were slow, clumsy, and stupid cold-blooded animals that needed a second brain in the pelvis just to walk. Because of this impression, I avoided dinosaur images (e.g. stamps, pictures etc.) in my collections during my school days. I have found, however, the young school children these days love to collect

dinosaurs as toys. For them, dinosaurs are fast, graceful, smart, brilliantly colored, and skilled animals that crawled 65 million years ago on the earth. I came to understand that these divergent impressions were made by two different portraits of the dinosaurs: the first impression was from the writings of Charles Knight, while contemporary impressions derive from the likes of John Gurcha, Douglas Henderson, and Bob Bakker. Most importantly, Spielberg's *Jurassic Park* has imprinted a positive outlook towards those extinct, massive animals.

As a science communicator, I once reported a story about the extinction of the dinosaurs and talked about the Impact Hypothesis. The Impact Hypothesis was so popular during the 1980s that it was even forwarded by no less a person than Nobel Laureate Physicist Luis Alvarez, whose son, Walter, was a geologist who set out to determine once and for all the dinosaurs' fate. The scientist father and son meticulously calculated the blast of an asteroid with a diameter of 6 miles, a velocity of 25000 miles/hr, and an explosion containing 10,000 times the power of all nuclear arsenals in the world today combined, determining that such an impact would have wiped out most life on earth. Recently, I came to know the work of Bill Clemens, a professor at the University of California at Berkeley who has suggested a gradual disappearance of dinosaurs due to climate change. Scientists are now convinced that climate change caused the extinction of dinosaurs and that the asteroid impact was but the final nail in their coffin.

Peter Ward (1995) in his book *The End of Evolution* described how tectonic movements and climate change ultimately bring about the demise of species. During the last 570 million years of earth history, the time since the advent of creatures with skeletons on the earth, there have been about fifteen mass extinctions. Of these, two are classified as great events, in the sense that they completely reorganized the ecosystems in the sea and, more relevant to humanity, on land. The first great mass extinction occurred 245 million years ago and the second occurred 65 million years ago (the latter ended the dinosaur era). Like its predecessor, the second event was caused by several factors, including climate changes and sudden change in sea levels.

What about the next great mass extinction? Many scientists dispute whether extinction is currently taking place at all, suggesting that we are currently facing the prospect but have not yet begun the experience. Peter Ward believes that the Third Event of great mass extinction is well underway, having started with the dawn of the last ice ages about 2.5 million years ago. Since then, rates of extinction have accelerated. In some ways, we are experiencing a scenario very much like the dinosaur-killing second event of 65 million years ago, when a biosphere already stressed by rapid changes in climate and sea levels was knocked into a mass extinction by the impacts of an asteroid. The Third Event, as Peter Ward puts it, started with the appearance of *Homo sapiens* on the earth because they have devastatingly intensified the exploitation of natural habitats.

The example of Mayan Civilization on Mexico's Yucatan Peninsula throws light on how climate change can lead a human society into disastrous social and economic crisis and finally collapse, no matter how prosperous such a society had been in its history. Many Mayan ruins, with their great temples and monuments, still lie surrounded by jungle. In its height of prosperity, it is estimated that the population of the civilization reached between 30 to 140 million. According to Jared Diamond's *Collapse* (2005), climate changes (droughts) and environmental damage (deforestation) did contribute

to the Mayan collapse in Central America. Around 760 AD, there began the worst drought in the last 7,000 years, which peaked around the year 800 AD and created severe food crises that led to social chaos and political failure. By the time Cortez and his Spanish Army passed through the site in 1524, the vast population of the Maya had dwindled to around 30,000.

Human settlements are expanding around the globe. One may find staple crops and vegetables growing at surprisingly high altitudes in the Khumbu Region of the Nepal Himalaya (e.g. barley at 4,350m, buckwheat at 3,930m, vegetables such as radishes, turnips, onions, and peas at 4,359m, and potatoes at 4,700m (Bhujju et al. 2010). Global warming may help these species grow at higher altitudes, but such fortunes may be few and short-lived, with the area losing a majority of its native species. It is estimated that if the present amount of CO₂ doubled, nearly 70 per cent of species may perish.

Some initiatives have been carried out to determine whether the climate change is contributing to vegetation shifts in the Nepal Himalaya. In one such study in the Manaslu area in central Nepal, new recruitments of seedlings and saplings in the tree line ecotone were found. Species limits have advanced from 3,673m asl in 1958 to 3,841m asl in 2007 with a total of 168m upslope shift at the average rate of 34.29m per decade (Bhujju et al 2010). Similar results were observed from other sites in Manaslu and Langtang.

Climate change, as a natural phenomenon, is neither new nor unusual. As we know, climate change occurs sometimes gradually and at other times quickly. Similarly, global warming and global cooling follow each other. Our concern today, however, is the rate at which this process is taking place and the reasons behind it. Since the beginning of the industrial revolution there has been a sharp rise in fossil fuel consumption releasing CO₂ and CH₄. Human activities such as deforestation and the use of inorganic fertilizer are also contributing to the release and increment of CO₂ and NO₂, respectively. Global average temperatures have increased 0.7^oC since 1860, evidence of the effects of anthropogenic emissions of greenhouse gases.

We may not be able to correct the past history but we can learn to correct our future course. We should not allow climate change to lead us to the brink of collapse because of our own misdeeds.

Dr. G.H.A.C Silva - *Practicum on Science Modelling and the Hydrologic Cycle II*

(Attended by those students interested in hydrological modelling)



Block-wise use of TOPMODEL (which uses a topographic index) and Muskingum-Cunge method (BTOPMC) is the core module of the University of Yamanashi Distributed Hydrological Model (YHyM). YHyM/BTOPMC has already been successfully applied to many basins, large to small, temperate to tropical throughout the world. YHyM/BTOPMC is a physically based distributed hydrological model particularly developed for large river basins. It includes four main sub-models, which are the

topographic sub-model, the runoff generation sub-model, the flow routing sub-model, and the parameter identification sub-model. In addition, there are many supplementary sub models: meso-scale precipitation model, potential evaporation model, snow and soil freezing model, sub-surface model, sediment movement model, inundation simulation model, water quality model, and water use/control model to compute different hydrological processes. The topography model is based on the surface topography of the given area. For many topography-based models including YHyM/BTOPMC, the direction of surface water flow is assumed to be determined by surface topography. Runoff generation of BTOPMC is based on the excess overland flow generated at each grid cell. In the flow routing sub-model, the Muskingum-Cunge method is adopted. Potential evapotranspiration in BTOPMC is estimated by Shuttleworth and Wallace method, which is an extension to the Penman-Monteith method. It is also applicable for estimating evaporation from interception. Publicly available climate and vegetation data sets have been used for evapotranspiration estimation. The model performance is statistically evaluated by the Nash-Sutcliffe Efficiency and volume ratio of simulated to observed discharge. Digital Elevation Map (DEM) is the most important input data for runoff simulation using the YHyM/BTOPMC model. A free DEM of the whole world called GTOPO30 (30 arc second resolution, approximately 1 km) developed by United States Geological Survey (USGS) is available, but its quality is inconsistent for some regions. A much higher quality DEM from the Shuttle Radar Topography Mission (SRTM) is also freely available for most of the globe and represents elevation at a three arc-second (about 90 m) resolution. Land use, soil type data also obtained through publicly available data sets. The structure and parameters of YHyM/BTOPMC lead to the advantage of both lumped and distributed models. The YHyM/BTOPMC model is available for training at <http://www.gcoe.yamanashi.ac.jp/e/va.html>.

DAY 3

Gregory Pierce – *Indigenous Knowledge*

Various types of people are constantly engaged in problem solving for climate and other issues. But only some of them are called ‘scientist’. What is scientific knowledge, and what is knowledge construction? The assumed concept of scientist persists at certain scales and within certain knowledge spaces in a process of knowing & sharing culture. We remain very myopic in our understanding of what knowledge is. Today’s ‘science’ in this world is driven by hunches, inspirations, personality quirks, irrational passions as much as it is by numbers and data. It is as much a ‘calling’ as an objective enterprise. Indigenous knowledge is merely subjugated knowledge, a different way of knowing the world. It is knowledge as a process of prescriptive action not as content. It is often spiritually informed, socially embedded, and wholly interconnected between people and environment. It is highly functional, actionable, and adaptable. What one can think is directly proportional to how one thinks. Traditional knowledge is generational knowledge composed of empirical observations, with explanatory, practical, social, and spiritual elements; it is scientific knowledge that is dynamic adding to an accumulating body of knowledge, and evolving in such a way that lessons of the past remain relevant in the present. Attendance to a multi-scalar world provides more nuance & complete understanding of the dynamics of change, providing greater resilience and adaptability to climate

change and strategies for more robust decision-making, from the local to the global. One case study done in the Mongolia is a good example that reveal parameters salient to understanding local climate change by using local scale science knowledge that has been either ignored by or inaccessible to standard climatological analyses. Today's knowledge claims about future climate to be negotiated into decision making, its incapacity to adapt to increasing rates of change in cultural & environmental systems, de-legitimizes knowledge systems and the role of participatory frameworks.

Muratly Duishonakuanov - *Recent Glacier Changes and Glacier Hazards in Kyrgyzstan*

The changes in glacier area and glacier hazards in the vicinity of Kyrgyzstan are the result of climate change. Three areas have been selected to show the changes in glacier extent. Measurements were used to determine the glacier mass balance, and remote sensing was used to study physical changes using high-resolution images. To compare recent glacier changes over the same time period (approximately 30 years) across various areas of the Tien Shan Mountains, 17 Corona photographs taken between 1968 and 1971 and 4 Landsat Enhanced Thematic Mapper Plus (ETM+) images taken between 1999 and 2002 as well as ALOS images were used. By observing data from 1990 to 2005, one can easily see that glacier ice is melting and that glacier areas have decreased. In different mountain regions like Pskem, Ile-kungoy, At-Bashy, Se-Fergana, and Teskey, glacier area loss had been observed by 23%, 15%, 9%, 4%, 8%, respectively, from 1970 to 2000, while from 2000 to 2007, the observation in the glacier area loss were, respectively, 6%, 4%, 3%, and 0%. Glacier mass balance loss occurs mainly during the ablation period or in summer time. Glacier lake formation in different mountain locations has become a serious and growing hazard because of the danger of Glacial Lake Outburst Floods (GLOF). In the Zyndan River, the discharge of 2006, 2007, and 2008 showed an increased pattern of discharge, indicating a greater melting of the glaciers. Lake Petrov, located near a tailing lagoon, is one glacier lake. The downstream area is highly populated, so if the volume of the lake increases then the hazard increases in many places. This lake, having a volume of 60.3 ml. cubic meters, a maximum depth of 63.9m, a total perimeter of 17.0 km, and a surface area of 3.9 sq. km, presents a serious future hazard for downstream settlements. The annual retreat of the Petrov Glacier from 1869-1957 was 15.1m/yr, while in the period 1999-2006 it retreated 61.4m/yr. One can see the calving of the Petrov Lake in a photo. Interviews revealed that local people have little information about GLOF hazards, which means that education and knowledge transfer are the biggest necessities for the people. People are living below the river basins but most of them do not even know where the threatening glacier lake is. Everyone must be made aware about the hazards of melting glaciers.



S. H. M. Bapon Fakhruddin – *Disaster Management and Early Warning Systems*

It has long been recognized that if society could have advanced information on weather, the adverse effects associated with it could be minimized. Prevalence of traditional forecast practices in various parts of the world reflects the demand for translating scientific information into local information and long-range forecasts to manage uncertainties associated with climate variability. Past experiences have suggested, however, that a wide gap exists in flood forecasting and community level responses to such forecasts. A proper interpretation of probabilistic forecast information empowers individuals and communities to respond appropriately to a threat in order to reduce the risks of death, injury, and property loss and damage.

The presentation focused on end-to-end EWS factors and indicators for EWS, warning communication and dissemination systems, channels for communication and challenges and regional integrated multi-hazard early warning systems. The history of EWS says that until the 1980s, EWS was focused on saving the lives of people. After the 1990s, however, it was focused on saving lives and livelihood systems and currently it is emerging with new forecast technologies. The components of EWS are very complex, including collection of data, dissemination of data information from one country to another through the GTS (Global Telecommunication System) network governed by the WMO (World Meteorological Organization), hazards detection, and generation of warning information and its dissemination to regional, national, and local levels.

There have been failures in the dissemination of hazard warnings. Some failures are due to language barriers, localization, SOP (Standard Operating Procedures), lack of public awareness, lack of communication, lack of equipment, etc. The 2004 tsunami grabbed a lot of attention over the last couple of years but now the memories have faded and there is not much donor support and little government initiative to keep funding the early warning system for tsunamis. Such constraints always hinder early warning systems.

There are different stages of a warning system: short-term weather forecasts (7-10 days), seasonal forecasts (6 months), and climate forecasts (50-100 years). As for the forecast taking longer time, people do not value highlighting uncertainties. This is not the limitation of scientists. This is the limitation of science itself because science is not able to provide early state accurate forecasting. There are potential uses of forecasts. In the 1980s, for example, people talked about El Nino forecast as a trend but in the 1990s they found that El Nino outlooks have potential uses for tropical countries like Indonesia and the Philippines.

The Regional Integrated Multi-Hazard Early Warning System for Africa and Asia (RIMES), established on 30 April 2009 under the Agreement on the Cooperation on Regional Integrated Multi-Hazard Early Warning System for the Afro-Asian Region, is an international, inter-governmental, non-profit organization mandated to provide regional early warning services and to build capacity of its member states and civil organizations to respond to early warning systems.

To design early warning information, factors to be considered are the recipients of warnings, their location, their job, the time of day, the season (if it is peak tourist season, for instance), their dependency on different types of communication, and their way of understanding and accepting the warning in order to receive messages (in terms of language in multilingual countries and emerging generational issue). The flow of warning information is done at regional, national and local levels. Warning communication technologies at regional levels are GTS of the WMO, satellite communication systems, phones, back up communications, satellite telephone systems, and the Internet. The warning

communication technologies at the national and local levels are broadcasting systems (tsunami warning towers, announcement towers, provincial radios, broadcasting, VHF/HF radios, police cars, temples, mosques, indigenous uses of bamboo sticks or drum beating), telecommunication systems (landline phones and mobile phones) and interpersonal communications (door to door). Each form of communication has its strengths and weaknesses. Some systems are sophisticated and fast, and some are rudimentary and slow. If a system fails, another system can be used, so multiple communication systems should be used.

No single method of warning will reach all, so strategy is needed to integrate and support multiple methods. There is need of collaboration among private entities, stakeholders, governments, local authorities, and communities to ensure that warnings are accessible to and understood and acted upon by local populations.

Ranjan Shrestha – *Disaster Preparedness Technology and Innovation*

Disasters like floods, earthquakes, droughts and forest fires are inevitable, and we cannot avoid facing them regardless of the measures we take. In almost thirty years, from 1980-2008, Nepal recorded 10,444 deaths from natural disasters, with an average of 360 people dying each year. The average loss of property is \$44 million dollars per year. These numbers indicate that disasters are affecting our societies and lives. Nepal is a small part of the world, and if we collect data from around the globe this number multiplies by thousands of times.



We cannot always prevent such disasters from happening, but if we work properly, we can reduce their effects. We need information and data analysis to prevent such events from happening or to reduce the effects of such events. The solution should be practical and should be feasible in terms of energy, infrastructure, communication, and cost. To account for all of these problems, Real Time Solutions (RTS) has developed a system called WSCADA (Web-based Supervisory Control and Data Acquisition).

The first focus of WSCADA is real time Data Acquisition. To forecast a disaster, we need data. And when it comes to data collection, it needs to be from all different locations at extreme ends. It is not always possible to use the data where it is produced. Data from different sources need to be collected from various locations, where they are analyzed, processed, and then finally provide results. WSCADA provides a mechanism to collect such data in individual data loggers which are energy efficient (can be run on Solar Panels) and store data for a period longer than 5 years. Connected to the data loggers is a network of various sensors that can be sampled at rates as high as a sample per minute. The WSCADA system can be used to interface any kind of sensors that can range from a simple analogue sensor to a complex digital sensor.

The data collected would not be of any use, until they can be transmitted to a central location for further processing. And the quicker it gets to the central location, the faster one gets the results and the more time one has to act upon it.

WSCADA uses an online system to transmit the collected data on a pseudo-real time basis. For its transmission mechanism, it uses the GPRS network or the CDMA network or both, whichever one is available from the service provider at the site. In such cases, where no network services are available, satellite communication is used. The advantage of using such networks is that they are available at any time of the day, they provide a two-way channel of communication, and they are very cheap. The amount of data collected by the data loggers, when transmitted over a CDMA network or GPRS network, would cost as much as NPR 100 a month, even when transmitted on pseudo Real Time (\$1 US dollar = 70 NPR).

The WSCADA system then consists of a central database that stores information from all the stations. The central server collects, validates, and processes the data as soon as they are received. This produces basic results that are enough to trigger warning levels at the centre. The messages are passed to the distributed Remote Units that are themselves partially intelligent and can provide alerts based on the information they have collected and the information they have received from the server and everything happens in Real Time. Local level alerts might in such cases be sufficient to trigger alarms to warn people of an upcoming flood or a GLOF.

The WSCADA system is feasible technology-wise, energy-wise, geography-wise, and cost-wise. The configuration of the system is also possible remotely, providing little or less operational knowledge on the part of local observers who might not be technically capable to operate such systems. These are “install and forget” kinds of systems.

SCADA systems have been in place for a number of decades now. The recent development in technology has made it possible to use such systems in day-to-day use. The innovation that has been brought in with WSCADA makes it practical to use such systems that can be put into place to help us be better prepared for natural hazards.

Tek Jung Mahat - *Youth and Mountain Climate Change*



The International Centre for Integrated Mountain Development, ICIMOD, is a regional knowledge development and learning centre based in Kathmandu, Nepal serving the eight regional member countries of the Hindu Kush-Himalayas: Afghanistan, Bangladesh, Bhutan, China, India, Myanmar, Nepal, and Pakistan. Globalization and climate change have an increasing influence on the stability of fragile mountain ecosystems and the livelihoods of mountain

people. ICIMOD aims to assist mountain people to understand these changes, adapt to them, and make the most of new opportunities while also addressing upstream-downstream issues. ICIMOD supports regional transboundary programs through partnerships with regional institutions, facilitates

the exchange of experience, and serves as a regional knowledge hub. ICIMOD strengthens networking among regional and global centers of excellence. Overall, ICIMOD works to develop economically and environmentally sound mountain ecosystems to improve the living standards of mountain populations and to sustain vital ecosystem services for the billions of people living downstream – now and into the future.

As a follow up of the recommendation of the Sustainable Development of Mountain Areas of Asia (SUDEMAA) Conference of 1994, which was Asia’s regional response to Chapter 13 of Agenda 21 adopted at the Earth Summit in Rio de Janeiro, Brazil in 1992, the Asia Pacific Mountain Network (APMN) was established by ICIMOD in 1995 as a knowledge-sharing platform connecting individuals and organizations interested in SMD (sustainable mountain development) issues in the wider Asia-Pacific region. APMN’s greatest strength is its diverse and still growing user-base: 2,100 individuals and some 300 organizations from the Asia-Pacific Region interested in learning about SMD issues facing the region, in promoting the Mountain Agenda, and in catalyzing actions for SMD at all levels. Since 1995, APMN has served as a dedicated platform for knowledge capture, exchange, synthesis, and dissemination on SMD. It has facilitated networking, partnering, and dialogue among users; supported capacity building activities; and established advocacy and policy linkages, thereby contributing to putting mountain concerns of the region on the regional and global map. Today, APMN is a recognized regional brand in mountain development, reaching out to users and civil society beyond ICIMOD’s 8 regional member countries.

Since climate change is affecting almost every sector of society, it is not wise to rely on existing mechanisms to address all these problems. In this context, youth can be an ice-breaker by improving community awareness; advocating climate action at local, national, and international levels; promoting research and climate resilient development; enhancing institutional mechanisms; putting pressure on national governments and international communities to make them give proper attention to climate change; and, most importantly, identifying missing links and communities that are still excluded from discussions on climate change in order to reach and enable them.

APMN formally introduced “Youth Engagement in SMD (‘Y4SMD’): Preparing the next generation of leadership in SMD” with an e-discussion on ‘Young Can Do’ in April 2009 and the launching of a report on International Youth Day (IYD) in August of that year. Since then, a number of programs have been implemented with the objective of improving the existing knowledge base, strengthening networking among youth and early career professionals, developing capacity, and eventually mainstreaming youth efforts to ensure better intervention in different UNFCCC meetings and at the Rio+20 conference in 2012.

S.H.M. Bapon Fakhuruddin – *Climate Risk Management: Coping with Uncertainty*

Management of risks, including climate-related risks, is not completely new. Societies have long evolved fairly sophisticated coping mechanisms to deal with the positive and negative impacts of climate. Nomadic pastoralism, for example, as a way of life and living in



harmony with nature, evolved partly as an adaptation measure against harsh climatic conditions. Central to the coping mechanism of nomadic societies is the rapid movement of herds to areas with better pasture conditions and water sources, particularly in exceptionally dry periods. Drought-prone societies have developed a whole range of mechanisms, such as crop switching, diversification, rainwater harvesting, and pursuing alternative means of livelihood altogether.

When the coping capacity of societies is breached and proves inadequate, societies rely on and expect their institutions to intervene and buffer the impacts of climate shocks. And precisely for these reasons, institutional capacities to deal with challenges brought about by climate variability on different timescales (seasonal, inter-annual, decadal, and multi-decadal) have to be built. Institutions have employed several approaches in the past, such as providing agricultural inputs (seeds, fertilizers), loans, and food relief provisions. To some extent, they have ameliorated the impacts of climate shocks, but they all proved unsustainable and inadequate in the long term. Therefore, societies have to retool and evolve or develop new ways and means of enhancing the capacities of institutions to buffer climate shocks through a climate risk management (CRM) approach that makes systematic, effective, and routine use of climate information.

Climate is changing; however, frequency, intensity and rate of change vary with time. There are many techniques and tools available to deal with climate change that accommodate all sorts of systemic approaches to deal with the uncertainty in order to implement and address climate-based natural disasters at the community level, as climate and society interactions are not just a matter of an individual but a concern to everyone. People discover new ideas about addressing these climate change issues when problems strike. For instance, in 1877 the first famine code was established in India because of deadly droughts. The Green Revolution and then employment-generation programs were later developed. In 1979 contingency cropland programs were introduced to mitigate crop loss and curb hunger issues in the country. In 1987, watershed approaches were developed as a major component to impede drought impact phenomena. From these initiatives we can see that society has responded for many years in a step-wise fashion to cope up with hazards and to minimize the loss of lives and livelihoods. Likewise, in Indonesia, whenever there is an El Niño year, there is less crop production, so planners developed a linear correlation through which farmers could approach different measures like irrigating or cropping pattern differently to maximize yields even during difficult years.

When there are natural calamities or climatic vulnerabilities, the poor and developing countries are hit hard. In terms of economic loss the rich nations are greatly vulnerable. If we look at the major earthquake that took place in Italy last year, the economic damage was more than Pakistan's earthquake because they consider everything to be of high value. But in terms of livelihoods, they can cope resiliently in the short term; they can stabilize so as to move back to their normal (pre-disaster) level. When developing countries suffer losses, it may take more than twenty years for them to return to a pre-disaster "normal". Nevertheless, there is hope. We have coping mechanisms, mitigation, adaptation and even prevention practices, as we are also advancing in our technology to understand these climate variations and changes. There have also been a lot of developments for real-time monitoring systems, like satellite methodologies, to track the nature of causes and impacts. Thus, we can better understand the changes that are happening and can predict what changes might occur. Also, there are lots of new generation system analysis tools available like travel-kits and impact assessments, indicating alternative management processes, practices, and crop-ecosystem dynamics.

Risk is everywhere so we should understand the risk areas and avoid them and, for this, communication with community stakeholders is very important in dealing with uncertainties. To understand the real problems on the ground we need to interact with the people to incorporate useful climatic information into decision-making processes. Thus, we need information which is localized, timely, easily understandable, and user-oriented. After that, we should do hazard assessments that include the regional history of hazards, how people were affected, how many were affected, the areas in which they were affected, what their causes were, what the frequencies were or how often they faced that kind of hazard. After that there are vulnerability and impact assessments to find out who was most heavily affected. Were households, communities, or agriculture systems most affected? A capacity assessment is then required because we must understand how much capacity the society actually has: if we do not know its baseline, then we do not know how much we can build up its capacity. Following that, we should do an adaptation deficit analysis to predict the acceptable risk for that area.

A hazard matrix can be used to show the causes, frequencies, durations, and intensities of different hazards. After that, hazard maps can be generated such that the local people understand the hazards and vulnerabilities. We can show the historical profile or timeline of occurrence as well as the damage, and can draw seasonal calendars as hazard calendars. These will differ from community to community, country to country, and month to month. We can then generate some impact assessment matrices that indicate frequencies and severities of casualty. With that kind of information we can draw in a matrix. We can work on problem analysis at a personal level, at a household level, and at a community level in order to come up with some hazard-related coping mechanisms for communities.

DAY 4

Gregory Pierce - *How about a SpareTime University?*



SpareTime University (STU) as an educational concept for those people who may not have access to the traditional schooling system, who cannot financially afford school fees, or who do not have the time for traditional schooling. It is a concept that offers “usable science” for all people regardless of their time, prior opportunities, or the remoteness and location of their life. This notion is developed through the concept of AAU— accessibility, adaptability, and usability.

Accessibility means that educational material provides timely and relevant information for people tailored to their specific location. With the development of new and affordable media technologies, information is readily available to anyone at their current location. The second ‘A’ signifies adaptability of the education system, while ‘U’ stands for the usability. This concept makes educational

information more broadly accessible. Similarly, it takes advantage of “teachable moments”. Some benefits of such an informal education system in comparison to more formal education systems was discussed. For example, the existing formal education systems in our modern society lead to learning limitations of “certain subjects in certain places at certain times.” Furthermore, formal education systems promote limited access, local influence, and a limited view of what knowledge is and of what is relevant in the twenty-first century. SpareTime University, on the other hand, encourages knowledge directed towards Anything, Anyone, Anytime, Anywhere, Anyway. Even more, STU could be a tool for global climate adaptation. Traditional culture and local communities are often victims of the whims of climate and weather; STU empowers and enfranchises community-based adaptation strategies, regardless of age, locality, or prior education experience.

DAY 5

Dr. M.H. Glantz – *Geoengineering the Global Climate System: Science, Politics and Equity*

Geoengineering means different things to different people. The traditional definition of it has been “any action to modify the earth’s surface”, usually with the intent of better serving societal wants as well as needs. It encompasses small- to large-scale modifications of the earth’s land surface. Today, geo-engineering, as it has been popularly and increasingly used in the past decade or so, has come more and more to refer only to large-scale, deliberate modifications of the planet’s atmospheric circulation. Such projects would be undertaken in an attempt to counteract the foreseeable negative consequences of global warming that would result from uncontrolled GHG emissions and their increasing concentrations in the atmosphere.

Throughout history, societies around the globe have sought to dominate nature in general and local and regional climates, specifically. These societies have sought to modify the climate system to better meet their climate-related needs and wants (e.g. to grow desired crops in places where they do not naturally occur with water brought in from other locations).

In the USA, people have tried to modify tropical storms and hurricanes, but so far they have not found success. Such attempts are not without adverse consequences. For example, if scientists manage to divert potentially damaging hurricanes away from land, they would likely deprive locations in Central America and the Caribbean of the needed precipitation that comes from those tropical storms.

Most societies around the globe manage to cope with their existing climate conditions, even their extremes. However, in the future as the climate warms and different regions witness new climate characteristics, societies may have difficulty in meshing existing human activities with regionally and locally changing climates. A growing number of atmospheric scientists and policy makers have been calling for geo-engineering schemes to be developed and tested because of their belief that policymakers around the world will be unable to agree to control their national GHG emissions; indeed, international negotiations on climate change are deadlocked. As a result of this deadlock, such well-intentioned individuals believe that climate change throughout the twenty-first century has become inevitable and that extraordinary measures are needed to combat it and mitigate its adverse

consequences. Some attempts at planetary geo-engineering have already been tested in the environment as well as in computer models.

Many people think that solutions to our environmental problems are to be found in the development and use of new technologies: Technology is the answer: but we must first ask, "What is the question?" Geo-engineering is an attempt at a silver bullet (a one step) solution. There can be no single idea, however, that will end global warming, slow it down, or control it. The public and its political representatives seem to have a blind faith (or should I say, hope) that technology can and will save them. Technology has certainly provided people with a good life and tools with which to cope in the face of a constantly changing climate. Technology has been used to protect us from the wrath of natural vulnerability in climate, water, and weather. It has also enabled us to take from nature the natural resources that are needed for economic progress. Sadly, however, there are numerous examples in time and in space recounting the human uses and abuses of the natural environment, often through technologies, that in turn have created many of the reasons we are now in need of even newer technologies. In other words, technology is a two edged sword cutting both ways, for good and for bad.

Some of the geo-engineering schemes proposed to stop global warming include but are not limited to the following: carbon sequestration below the earth's surface and in the sea; iron particles in the ocean to generate algae blooms to absorb carbon from the air; large-scale tree planting worldwide; a flotilla of thousands of ships to roam the global ocean in order to whiten low level clouds by evaporating sea water; depositing large amounts of aerosols into the stratosphere in order to mimic a volcanic eruption which would cool the atmosphere temporarily, and investing in renewable energy. Let us discuss carbon sequestration by using trees. We do not have enough natural trees, so researchers have developed metal trees "planted" along roadsides to capture carbon emitted from cars. It works, but the problem associated with it is the cost of installation, and it does not address the root problem—the increasing emissions of carbon dioxide. Therefore, what can be done?

What is first needed is a realization that we have pursued a path of energy use that has created a major environmental problem, climate change. Before we resort to playing with the atmosphere, experimenting really, we should reassess our energy and landscape policies. Playing with the global climate system is dangerous, as scientists do not know if there are thresholds that are really tipping points for adverse and irreversible atmospheric changes.

Returning to an earlier carbon era does not necessarily bring us the same climate of the past that we liked. Reducing carbon dioxide emissions to levels of a more favourable climate period will not get us to the same climate of that earlier period. Even if all emissions were stopped today, we have already emitted an amount of greenhouse gases that are sufficient to warm up the earth for at least the remainder of the twenty-first century. All we can do is strive for an alternative source of energy and change our lifestyle expectations to have less adverse impacts on the earth.

3.2 Guided Discussion

Dr. Pralad Yonzon and Dr. M. H. Glantz – *Social Dimensions of Climate or Climate Dimensions of Social Change?*

Discussion in this session focused on the question of whether we should be looking at the social dimensions of climate change or the climate dimensions of social change. Would approaching a study of climate-society interplay provide a different answer if attacked from the differing perspectives intimated by these phrases? Though they seem to be the same, would these phrases yield the same insights?

Dr. Yonzon started the discussion with the statement that climate change is bigger than ecology. He put forward two ways to look at climate change: On one hand, climate change has changed land, water, and air, and therefore, it has impacted human beings. On the other hand, however, human societies have used land, water, and air, and that's why they have responsibility for current changes to the climate system. Two notions are appropriate: approximate causes and



ultimate causes. An *approximate* reason is the direct cause of change, whereas an *ultimate* reason connotes a first cause. Today, we know that resources on land, in air, and in water are finite, but many of us have an assumption that when we look quantitatively at issues we find information and develop policies and rules that are based on what we think “ought to be” even though this is not the case (it is not “what is” the case). Our decisions have gone haywire because of our untenable assumptions. The discussion generated several contemporary examples such as tiger conservation in all thirteen countries of the world where they live and only partial solutions. We need accuracy and precision and that accuracy changes with time and in space because we are living in a changing world.

Professor Glantz noted that it is difficult to acquire funds to look at climate variability or seasonality. He proposed that these issues must be linked to concerns about climate change, migration, or other issues that are of interest to climate change audiences, including funding agents. Using an example from the development of Shanghai Harbor, he continued by illustrating how societies are modernizing, globalizing, and moving on with new technologies despite the climate situation, that is, as if climate change consequences did not matter.

The climate is changing rapidly and now scientists have proposed that it is changing even faster than was expected just a few years ago. But it is relatively slow in terms of the physical processes. Differences must be made explicit about the actual changes in environment and in society and their interactions. One can look at the interaction from the perspective that the global climate changes and humans passively get used to coping with those changes or, that societies change and there are climatic consequences that result from those changes. Hence, Glantz proposed the question: What are the climate aspects of social change? He suggested that the answer to this would not be that same if one were to ask about the social dimension of climate change. If that is so, then solutions to the same interaction from these different perspectives (phrases) would yield different answers and societal responses

Glantz then questioned the theme of the Millennium Ecosystem Assessment: “Ecosystems Goods and Services for Human Well Being.” He proposed that the terms change position to reflect better the

reality of life which is that societies need the ecosystems on which they depend and that the ecosystems do not need societies. In other words, we destroy ecosystems at our own peril. The concept should read as “Human Goods and Services for Ecosystem Well Being.” Societies must protect the ecosystems on which their survival depends. We have to start putting the earth first.

Glantz provided an example from Greenland. The local people were very happy because a few years ago farmers could grow their first crops of broccoli and cauliflower because of global warming. But looking at it from a different perspective, Greenland’s snow and ice cover are melting and the country is getting smaller because the ice is melting and parts of the ice cover is falling into the ocean. This is why psychologists need to look at some of these climate-related societal issues. This raises a concern about how a human-environment interaction has been framed: the social dimension of climate change or the climate dimension of social change.

3.3 Panel Discussion Robbing Nature Bank: Intergenerational Debate or Discussion?

Chaired by **Professor Suresh Raj Chalise** and co-chaired by **Professor Michael H Glantz**.

Panelists representing different generation:

Karuna Paudel, youngest female participant

Jonathan Fanning, youngest male participant

Khem Raj Dahal, middle-aged participant

Prof. Chalise and Prof. Glantz, the oldest participants at the conference

Dr. Glantz’s opening remarks

He emphasized that we need nature but nature does not need us. A person goes into a bank, borrows money, and knows that he or she will have to then return it so that others can go to the bank to borrow as well. By analogy, rich countries have borrowed resources from the earth like ores such as aluminum, gold, silver, iron, etc. They have borrowed those things from nature to get rich. They have not only borrowed the natural resources from the earth but they have also borrowed from the planet’s quality by dirtying water, depleting soil, deforesting and desertifying the land surface. In the process of developing their countries, industrialized nations have borrowed quality as well as quantity of planet resources. Isn’t it time for them to pay back nature’s bank from which they borrowed? Doing so would enable other developing countries to borrow from nature’s quality and quantity as well without increasing the air, water, and soil pollution; however, developed countries do not see their responsibility to pay back nature’s bank so that others can borrow from the bank. This applies to greenhouse gas emissions, which are heating up the planet. The rich countries have a responsibility to reduce emissions first. Dr. Glantz also mentioned a science report from 1971 that discussed the possibility of global warming. Participants at the 1971 meeting remarked that “the rich countries are contributing to global warming and it is inconceivable that rich country leaders will continue to do so even if it led to the destruction of human civilization.”

Professor Suresh Raj Chalise

Professor Chalise shared views about the accelerating global division. He said in the past that everything was essentially isolated and people were not thinking globally. They used to think about global resources only in terms of their own development and were not really concerned about the development in other parts of the world, so each country was developing in its own way and after the

Industrial Revolution particularly in the West, development accelerated without anyone knowing the consequences about what they were doing. Suddenly, when the entire world became aware of what had happened then it was already too late. He said that even in developing countries exploitation of resources by the rich is comparable to what is seen between the developed and developing countries. In turn, an unequal world has been created even in terms of the natural world; it creates an imbalance in the climate between developed and developing countries. There are also physiological differences, one being materialistic and another being spiritual. Rich countries are the cause of climate change, while poor countries bears the impact of climate change. Developed countries are advancing at a fast rate, but developing countries are moving forward, though they cannot move as fast as developed countries. There is an accelerating global division or gap. When the populations of developing countries are factored in, a sort of Malthusian collapse seems to be approaching fast.

Jonathan Fanning

Mr. Fanning says that when he hears phrases like *save the planet* or *save nature*, he thinks of it as a misnomer, an incorrect statement, because nature will be fine. He illustrated his point with the biodiversity presentation from the second day of the conference: if extinction, he said, is a natural process then why we are worrying about the loss of biodiversity on the planet? Life will continue once we (human species) are gone and even after the sixth extinction; however, the sixth mass extinction is the first in the planet's history that will have been caused by an organism on the planet. Most of these organisms are cognitively aware that they are causing the mass extinction. There will not be biodiversity for future generations but simply for us at the present. It is wrong for us to destroy other species. It's our responsibility to protect them. He argued that if we are showing global concern about climate change, then it is not necessary to separate into generational interests, regardless of generation, because everyone should act on and inform people about climate change. It is a humanitarian responsibility to understand the past and to plan for the present and future.

Dr. Gordon Young

Dr. Young said that traditionally in general there had been an attitude in the Western countries that humans are apart from nature, not a part of nature. Many religions like Hinduism think humans are a part of nature. We must act as if we are the part of nature and take responsibility. He disagreed with Dr. Glantz's view and at the same time agreed with Professor Chalise's view about the gap between more developed and less developed countries. He gave an example of the intellectual capacity in countries like China, India, and Brazil to devise new technologies. There is more disparity, both within countries as well as between countries, and there is a contrast between "haves" and "have-nots", the rich and the poor, the intellectually rich and intellectually poor within China, within India, within Brazil, and so on. It is far greater than the difference between countries, whether from North or South.

Following Dr. Young's comments, **Dr. Glantz** challenged Dr. Young's view. He said that, "we feel we dominate nature, but there are different cultures that feel either in harmony with nature, subordinate to nature, or dominant over nature; we have to become eco-partners with nature.

Regarding Dr. Young's view, **Mr. S Arun** refuted it noting that when disaster strikes it is not the intellectual capital but the financial resources that are of greatest help. He agreed that disparity exists and that the disparity of the financial resources counts a lot when it comes to addressing climate change.

Another participant from Bangladesh, **Mr. Shamimul Islam** said that no religion encourages destroying nature; even in Islam it is said that we cannot heavily step on the soil when we walk. Agreeing with Mr. Fanning, he insisted that there should not be an intergenerational debate about nature, as it is our common future. Continuing on the same point, **Mr. Fanning** opined that in terms of intellectual development both the developed and developing countries are equal but when development comes for economic development then the Western countries are more developed. He rejected the development process of developed nations and addressed the need of redevelopment of both the developing and developed nations in a way that is more environmentally friendly.

Agreeing with Professor Chalise's opinion, **Mr. Shaligram Neupane** said that developed countries have been emitting more GHG emissions than developing countries. He expressed his strict objections to the GHG emission of the developed countries and insisted on the urgent need for an international GHG policy that corrected this inequity.

After Mr. Neupane, **Mr. Khem Raj Dahal** spoke on borrowing resources from nature. He suggested that there are two basic drivers for the use of the natural environment: one is need and the other one is greed, and the borrowing from nature by greed has actually done irreversible damages. He reflected on the necessity of government concern and on the need for strict rules and laws to control the greedy, and on the need to improve awareness of alternative livelihood opportunities in order to supply needs. He exemplified leasehold forestry in Nepal as the most effective program in the needy community of people who need the forest products.

Lively discussions continued for more than two hours, with many participants offering their views, refuting the views of others, and on some points coming to the same conclusions.

3.4 Open Discussion

Teachable moments as an educational tool



Mr. Dhiraj Pradhananga began the discussion suggesting that any event can serve as a teachable moment, giving examples of extreme hydro-meteorological events. Teachable moments can be used as pathways to share lessons from recent history from any region of the globe. Recent events are more effective and acceptable to students today compared to past and historic events. In the context of his own experience with teachable moments, he shared how the recently completed celebration of coastal festivals in the mountainous country of Nepal, organized by The Small Earth Nepal (SEN),

proved an important event to make the students and people understand about the interrelationship between highlands and areas at sea level. He then passed the discussion forum to Dr. Glantz for his views on teachable moments, a concept that has been very popular in the USA and Europe in recent years.

Dr. Glantz noted that Hurricane Katrina served as a ready example of a teachable moment. Who was affected? Why did that societal disaster happen? At that time there had been a perfect forecast 60 hours in advance of possible landfall and impacts on society; however, it seems that all levels of government from federal to local did not act fast enough. This extreme event serves as a teachable moment for a wide range of issues such as about how government cope with natural hazards, how hazards can turn into disasters, how response and adaptation and reconstruction to the impacts of the extreme took place, and so forth. As is typical, a few years after Katrina passed, other emergencies and concerns arose and interest in Katrina and its lessons began to fade away. The lessons of Katrina are being forgotten, even though the next major hurricane will likely result in similar problems if people do not learn from such a teachable moment. But Katrina has been replaced by successive teachable moments, each one providing its own set of insights and generating new knowledge. In 2004, there were lots of concerns about a hurricane in New Orleans. Two hundred and fifty government and NGO groups gathered to discuss the impacts of a major event, modeling all the things that needed to be readied in preparation for the non-existing hurricane. This was a teachable moment. Truly, any event can be a teachable moment relating to impacts, responses, early warnings, etc.

Other contemporary examples of teachable moments include the earthquake in Haiti and the recent floods in Pakistan. For example, one might ask why the international community gave huge amounts of money to help Haiti but not to Pakistan. One might argue that in Haiti, the need was immediate, and donors saw that they could really affect the devastated situation, whereas in Pakistan the devastation was immense and many people thought that small amounts of money could not make any difference.

Following the above opening remarks, the floor was opened for discussion. **Mr. S.H.M Bapon Fakhruddin** remarked that in 2008, there was a food crisis that provided a lesson to the entire world. A huge increase in the price of rice led to different consequences. At that time, drought had occurred in Australia and reduced wheat production, and a major snow event in China reduced grain production. The major regional grain distributors like India and Vietnam stopped exporting rice from their countries to protect their own citizens, which created in turn an unprecedented regional food shortage and fear of hunger situation. More than ninety people were killed in Thailand in a strike because the government stopped supplying rice to prisoners. In 2009 in Bangladesh, there was bumper production of potatoes but farmers could not manage it, and as a result they could not boost the national economy. In Thailand, fruit production was so high that the government had to purchase much of it to balance the market. The sharp increase in global as well as regional food prices that led to food riots in many countries serves as yet another teachable moment.

Dr. Glantz again suggested that presenting hurricanes and other natural events from past decades in ways that can capture the interest of the public should enable them to learn the lessons of the past more readily. In this regard storytelling is very useful. One can collect such stories from different sectors from local to national levels and from different time periods. **Ms. Sameera Zaib** added that

policymakers must learn such lessons as well. She referred to her own country, Pakistan, indicating that disasters occur time and again but government seem to consistently fail to develop effective policies to save lives and property. Similarly, **Mr. Fakhruddin** shared didactic lessons from Pakistan where one major issue (e.g. a teachable moment) was the earthquake in 2005 and another disaster in 2010. In these events, the government had information prior to the hazards, but it did not learn from those lessons. Similar events continue to happen, but still they do not learn. He repeatedly insisted that the fundamental objective of policymakers is to learn lessons and take the initiative to be responsible to their citizens.

British Council Climate Champions

The British Council has operated the International Climate Champions program in Nepal since 2009 to build the capacity of young people regarding climate change. In the first year, ten champions were chosen and ten more champions were chosen each subsequent year, 2010 and 2011. The British Council, International Climate Champions Program operates in 60 countries. Mr. Sundar Layalu, International Climate Champion 2009, presented on behalf of the British Council Champions the project completed by him and his colleagues to create awareness on climate change.



The questions put forth to the British Council Champions by the council were as follows:

- Have you done research in your workshop or in your trainings about mitigation, adaptation, and other kinds of networking?
- What is your process to make national policy? Have you made any contributions nationally for making national policies from your organization?
- From your project, I want to know if there have been any fruitful outcomes.
- Our response to climate change is a great problem as we are not taking climate change seriously enough—how do you consider the issue?

In responses, the champions responded as follows:

Sundar Layalu: Regarding the creation of mass awareness, there are different kinds of media. We champions represent different sectors like lawyers, artists, religious leaders, and researchers. We are contributing a small amount but having a lot of impact. We have done a lot of research. My research was about measuring the carbon footprint of monasteries around Kathmandu. Basically, we believed that monks have lower carbon footprints but in fact that is not true. As a result of my research, I am trying to make a monastery carbon neutral.

Jony Mainaly: There are many sectoral laws but not climate specific laws. Nepal's NAPA has already drafted climate policy, and it has already been submitted. Developing the planning framework, the main strategies for adaptation have been determined in the NAPA document. We are the youth, and we were in the position to lead the nation. I have gone for policy dialogues to improve understandings about national and international policy and legal documents. Now, we have prepared ourselves for national and international forums and that is why I am trying to conduct a moot-court competition for pre-law students to prepare them for work on mitigation of greenhouse gas emissions. I will try to reform the different climate change strategies in the six different Bar Associations of the Kathmandu Valley. Now we are in the phase of making a new constitution so that we can create the change. I have started a small endeavor to mitigate climate change, and I believe I can create change.

Abhimanyu: I am a radio program producer, and I am going to prepare some radio programs about climate change mitigation and adaptation. There are many stations throughout Nepal. About 93% of Nepalese people listen to the radio, so the British Council chooses to use the radio media to broadcast messages. I think it will be effective in the near future.

Khasing Rai: My project is related to cycling, and I will be cycling the East-West highway that is more than 1100 km. I will be traveling on my mountain bike, and during this project I will be conducting awareness programs in different schools and organizing cycling rallies. Through this program, I will make people aware of climate change and encourage them to cycle wherever they go as much as possible.

Niraj Tamrakar: We can proudly say that we have tried to encourage change; we have tried to contact youth groups and individuals. We talk about GLOFs a lot but we hardly reach to the people who are suffering using the concept of Rural-Urban Connections, we have designed our whole system so as to interact with graduate students from rural areas. We will not deliver lectures but instead will try to share things that we have learned, conduct research, do community interactions, and develop small-scale concepts. Through these activities we will create another wave of activists for positive and environmentally friendly change.

Iris Cheng and Jonathan Fanning – Open Discussion on “Innovative ways to Engage the Public” Social Networking



The main task facing the government and people (and ecosystems) around the world is how to address climate change and to make fundamental changes to how our societies work. We must be the

change we want to see. All humankind and other living things in nature are facing climate change problems, but economists, lawyers, scientists, and activists must provide the pathways to effective solutions. Prevention is the only long-term solution. **Iris Cheng** highlighted the various social networks and online activism as a way to access and to share information and to connect people and ideas. She illustrated this point with the Greenpeace campaign against deforestation, the Nestle campaign against palm oil and deforestation, and the Beijing Olympics activism about Tibet. A key to coping with climate change is to make knowledge more widely available through presentations that clearly reflect the message. **Jonathan Fanning** then presented some concerns about the limitations of social networks such as some pitfalls in online social communication that is so fast nowadays. He provided an example from the United States about a false message that quickly became viral and spread among people quickly. Social Networks are a twenty-first century phenomenon that can be harnessed for knowledge generation as well as for activating people on issues central to their wellbeing.

They then presented some ideas for discussion:

1. Community resilience
2. Communicating our knowledge
3. Globalizing the key movements
4. Visions for lobbying
5. How conference participants might continue to network after the conference has ended.

To this end, nine discussion groups were formed, and each group talked about the ideas given in and following the presentation on social networking. After one hour a representative of each of the student groups made a presentation of their views on the ideas above.

Group 1 presented on developing alternative livelihood options for vulnerable communities in developing countries. People like farmers don't have alternative livelihood options or skills beyond their trades. The idea in the project was to help farmers build capacity and skills so that they have something to do if disaster strikes. First, targeted communities are selected and then secondary information of the proposed community, like how each community has been affected by variation in the climate and how it is affecting their occupation, are gathered. Participatory Rural Appraisal (PRA) and focus group discussion will be done to know the community resources, their problems, and their traditional alternative occupation methods. For example, some fishermen/farmers might be very good at things like basket weaving. Feasibility of such projects is judged using three parameters: resources of the community, willingness of community, and the practicality of the option that we are suggesting in the face of stress. Finally, workshops and training sessions are conducted.

Group 2 formulated the following ideas on social networks and social media:

1. Building wider networks through social media,
2. Contributing to policymaking including through amplification of indigenous voices,
3. Making online databanks and increasing awareness of marginalized people through film and videos, and
4. Integrating society, children, and local communities through an improved awareness and understanding of environment-related threats.

Group 3 formulated a project on flood risk assessment in rural communities of Bangladesh. The objectives of the project were to assess the flood risk in rural communities and to disseminate the flood risk information to local people. They selected three very vulnerable areas in the country, Munsigang, Silajgang, and Tangal Districts. They would follow the PRM method, which deploys focus group discussions, flood hazard mapping, vulnerability mapping, social mapping, and research mapping to develop a holistic understanding of risk. One possible outcome would be to reduce the impact and destruction of floods by disseminating information to local people so that they can get to know how to reduce the risk and how to reduce the destruction and impact of floods. Pilot projects would be necessary.

Group 4 made a presentation on different projects they would have in different countries, reflecting the different countries represented in the group and the reality that each would require a different project emphasis. They emphasized projects that would communicate messages efficiently and effectively to policymakers, including media campaigns and public campaigns to promote renewable energy, enhance water sanitation and hygiene, and promote energy-efficient appliances. With regard to maintaining a network among the conference participants, the group's vision for such a network was to share knowledge and enhance capacity for climate change for a sustainable future. They proposed that to be in touch with the post-conference network they would use Google groups and Facebook pages [NB: This has been achieved on Facebook as a group, IGCCCP, with over 90 conference participants (including lecturers) participating].

Group 5 made a presentation on the concept of social mobilization from the local to the international level, realizing the necessity of networking for sharing information from grassroots movements to international forums. They proposed projects on multidisciplinary forums at very local levels which would include people from all walks of life, like farmers, media persons, health workers, health assistants, contractors, builders, and people from other occupations. This group would be an intergenerational group, including not only youth but also stakeholder groups. This group would conduct research on climate change adaptation and mitigation at very local levels and would complement an international level network, with resources being diverted from the international level to this group to provide technical and financial support. The funding would move directly to this level because it could build capacity with respect to human resources at the grassroots level. The experiences and research findings would be shared with the **Save the World Network** through the use of mass communication media like Internet, mobile phones, radio stations, social networks, and so forth.

Group 6 prepared four kinds of pilot projects. The first project was the development of a city-level waste management system in Patan, Nepal. The second project was raising the awareness of school students about biodiversity and community resilience in Nepal. The third project was control of greenhouse gas emissions that would be done at the youth level through the use of social networks. Youth can volunteer and collaborate with government and promote the use of hybrid cars and promote public transportation in urban areas. They would also promote it through online programs, blogs, groups on Facebook, etc. The fourth proposed program was for a farmer awareness campaign to adapt to the change, as they are considered the most vulnerable to climate change and food production and availability are hot issues in the country. Farmers would be made aware of changes in cropping patterns and adaptations to changing local climates in the area.

Group 7 made a presentation on climate change and connecting marginalized communities and individuals to the climate and water issues of concern. Few people have access to the Internet. People who don't have any Internet access may connect to social workers, community workers, etc. They have some linkages with institutions like governmental organizations and non-governmental organizations. These groups network in terms of sharing through links, blogs, discussions, and e-sites. Individuals can become connected to family, friends, villages, and schools for awareness and discussion of climate change issues and how it can affect them.

Group 8 presented on projects to build awareness in local schools. Awareness would be developed on how to take part in climate activities as well as about practical issues such as providing awareness about pure drinking water in local schools where there is no access to pure drinking water. One day cycling will be arranged. Smoking in vehicles will be discouraged. The coastal area will be cleaned up, as they are full of manmade hazards. Another proposed activity was a conservation management project to assess the impacts of climate change on the fisheries resources and livelihoods of people. In northeastern Bangladesh, most of the rivers are dried out after passing through India so the group also presented the project in collaboration with Indian friends. For the development of a fish sanctuary, a survey on the present status of livelihood of people was put forward.

Group 9 developed online projects to create blogs and Google groups to analyze the trends among youth on climate change awareness and perception in their own countries. They will create the network of scientists, teachers, and students; also, the experience of scientists will be disseminated to students. Eco-generation Google groups will be formed where interested individuals can easily access knowledge and information from scientists, and scientist can also interact with students in an easy way that is free of cost as well. [NB: The Eco-generation refers to people born around 1985 who have, throughout their lives, heard that the environment of the planet is in trouble as a result of human activities. In other words, it is the first generation to be totally immersed in concern about the fate of the planet; hence, the label of 'eco-generation'.

3.5 Student Presentation

Trishna Jaishi – *Is there value in a Happiness Index? The case of Bhutan*

The ultimate aim of development is the index of happiness in every sphere of human life and livelihood, and it is the shared desire of everyone. It is a common endeavor. Happiness is a public good, even if it is thought of as subjective. People often change life skills as well as livelihood skills just to gain happiness. According to the fourth King of Bhutan, HM Jigme Singye Wangchuck, Gross National Happiness (GNH) consists of four important Pillars, nine Domains, and seventy-two Variables. Therefore, Gross Domestic Product (GDP) or Gross National Product (GNP) should be viewed as a secondary goal to the necessary variable of happiness in life. Gross National Happiness (GNH) is development with this value as primary. The GNH index is the combination of indicators that



captures the general wellbeing and aspirations of the individual citizen, attempting to follow the Buddhist principles of the middle path and seeking to balance socio-economic growth with the conservation of the environment. In Bhutan, GNP indicators are being used to guide plans and policies through the grassroots level, to provide adequate attention to areas that are in need of immediate attention, and to be used as a basis for resource allocation.

To provide the happiness index with this development ideology, the Centre for Bhutan Studies (CBS) conducts a survey every two years. The domains of GNH are good governance, health, education, living standards, ecology, psychological wellbeing, time use, culture, and community vitality. GDP (HDI) is a materialistic indicator and does not serve as an indicator of general wellbeing. The Happiness Planet Index (HPI) measures human wellbeing and development but it does not scale to individual happiness. It merely compares the happiest country on the planet or the best place to live and the most environment friendly.

Bhutan's constitution says that the government shall ensure that in order to conserve the country's natural resources and to preserve the ecosystem, a minimum of 60% of Bhutan's total land shall be maintained under forest cover for all time. The environment is one of the four pillars with its five ecological variables like perception of pollution in rivers, soil erosion, and methods of waste disposal, name and species of flora and fauna, and tree plantation, which are used to evaluate ecological happiness. In one research community, a survey was implemented regarding air pollution, soil erosion, waste disposal, deforestation, global warming, ecological footprint, natural resources, and human health to identify perceptions of ecological happiness. Each screening question was documented through a 4-point scale, with 1 denoting a negative score, 2 being uncertain, 3 being a neutral score and 4 denoting a positive score. The screening tools for the Happiness Index on Ecological Diversity evaluate the perception of people toward air pollution, soil pollution, water pollution, soil erosion, recycling, deforestation, global warming, climate change, effect on flora and fauna, natural resources, ecological footprints, human health, and productivity. The final score of the project was 30 out of potential 60, which was below the minimum passing score of 45 so this program had to be reviewed. Mitigation measures are also taken into consideration.

At 72% coverage, Bhutan's forest record remains above the constitutional mandate. Despite its eco-friendly activities, however, Bhutan is experiencing a disease burden from climate-sensitive disease as well as an increasing risk of GLOF, landslides, flooding, vector-borne diseases like malaria, dengue, encephalitis, and so forth. Climate change is not a new topic in Bhutan. It has also affected the available water resources in the country, and many rivers have dried. It is time to design projects at national, regional, and global levels to sustain the existence and to make present as well as future generations happier.

Student Presentations on COP 16 Statements

In the second half of the third day of the conference students were divided into nine diverse groups. Each group prepared their own group statement for policymakers attending COP16 in Cancun, Mexico. On the final day of the conference, before the certificate distribution ceremony, each group made a short presentation of their statement for COP16. These were compiled and provided the foundation for the final Conference Declaration that was distributed by delegates from the conference who attended COP16.

Mr. Achut Parajuli presented on behalf of group 1 on **biodiversity and climate change**. Starting with the definition of biodiversity, the group focused on the importance of economic, emotional, ethical, ecological, and environmental benefits of biodiversity. Achut then emphasized climate change contributions to the loss of biodiversity and concluded that urgent action is needed to cope with biodiversity loss. The statement of this group for COP 16 was **to be unified to take action and conserve biodiversity**.

Mr. Anshu Kumar presented on behalf of **group 2** on environmental ethics and equity. The statement of this group for COP16 was that **decision makers must ensure equitable distribution of funds upholding ethics to bridge the gaps between “haves” and “have-nots.”**

Mr. Dilli Ram Bhattarai, who presented on behalf of **group 3**, stated both fear and hope; the fear of repeating the failure of COP15 and the hope for progress at Cop16. The group was concerned about the work that had to be done by the leaders, political leaders, national leaders, and international leaders regarding the changing climate and disaster management. It emphasized upgrading the livelihoods of people and controlling population growth to adapt to climate change issues. Climate change issues should be incorporated into politics. There should be a concrete agenda regarding climate change issues with a focus on regional unity for common problems. The group had greater focus on **regional unity for common concern**.



Mr. Sujan Timilsana and his group 4 prepared the presentation related to the impact of climate change on various resources like water, agriculture, industries, people, and forests. The group highlighted the need to protect local lands and local genetics profiles with the use of indigenous knowledge. Forest areas should be increased by mandating forest policy constitutionally like in Bhutan. The group encouraged eco-friendly technology as well as intergenerational activities involvement of youths fighting against global warming and climate change. This presentation concluded with the message to policy makers: **To cope with climate change is a must, so let's unite against climate change**.

Ms. Achala Gupta presented on behalf of group 5 on the topic “Indigenous knowledge for climate change”. They noted the urgency to incorporate indigenous people into climate change discussions. Indigenous knowledge is important in the mitigation of climate change because it is much more applicable, practical, and communicable. There is need to approach a community in terms of disseminating knowledge. When dealing with the community one has to look at the structures and system of that community. When indigenous knowledge comes from the community, it is much more practical than pursuing a top- down approach. There have been different cultures, societies,



norms, and types of indigenous knowledge that need to be standardized and made applicable worldwide. For this, research is required in the field of indigenous knowledge. **The group also focused on the necessity of leaders to bear the responsibilities of the society and hear the voices of unheard people.**

Mr. Najmul Arifin presented on behalf of group 6 on the topic “Gender and Climate Change”. Women are unequally affected by natural disasters and the problems caused by climate change, but their voices are seldom heard in international discussions and talks. They were more affected than men because they take care of their family but there is no provision separately addressing the problems of women’s rights, especially in relation to climate change. There is a need for activities where women can be involved in growing their economic status and those activities should be in harmony with nature.

Ms. Aashma Vaidya presented on behalf of group 7. In her presentation, she spoke about the role of international leaders to redefine economic development as ecological development. This is needed to establish an ecological status of a country as a major component of development. Extension of the Kyoto Protocol is needed to address carbon emission reductions and the importance of sustainable development. She then focussed on the role at the national level to address climate change issues, including adaptation, prevention, mitigation, and policy formation to align with international standardized policy. At regional levels, she focussed on its role as the mediator between local, national, and international levels. At local levels, she emphasized that equitable resource information and sharing are needed, while adaptation and implementation of the policies formulated at the national and international level in terms of sustainable development should be supported.

Mr. Shaligram Neupane presented on behalf of group 8 on the topic of **Climate induced flood and recommendations to policymakers**. The group chose to point out the following recommendations to the COP16 negotiators and policy makers:

- Cooperation and mutual understanding among countries intra-regionally
- Climate-induced natural hazards mitigation and adaptation strategies.
- Establishing and ensuring the proper use of a regional climate fund.
- Equitable distribution of funds among vulnerable communities.
- Integration of environmental experts in policymaking.
- Inclusion of indigenous and local voices.

Mr. Shamimul Islam presented on behalf of group 9 on sustainable economic development and climate change. The group pointed out global concerns about sustainable economic development to minimize the impacts of climate change on natural resources and to improve collaboration between developed and developing countries regarding economic cooperation. The group argued that to cope with climate change, economic development should be carried out through a green perspective that encourages the practice of green lifestyles that avoid carbon-emitting products. The group also emphasized the development of two funds – an adaptation fund and a mitigation fund for climate change.

3.6 Daily E-Newsletter

An electronic newsletter, *The Eco-Generation*, was published each day and was a key attraction for participants. The newsletter was also widely circulated both nationally and internationally to interested individuals through email groups.

3.7 Eco-Generation Network and Conference Declaration

At the end of the conference, the *Eco-Generation Network* was initiated by participants to be in contact and provide a venue to share information regarding research findings related to climate change and society. The conference concluded with the drafting of a collaborative declaration from the student attendees. The declaration calls on world leaders attending the sixteenth meeting Conference of Parties (COP16) of the UNFCCC to make hear the voices of the Eco-Generation, the generation of present student-scientists and future policymakers. The declaration is divided into seven Themes of Action—Listen, Understand, Act, Engage, Empower, Embrace, and Impart. It demands that policymakers *listen* to the voices of youth, to stakeholders at all scales, and to vulnerable and marginalized communities; to *understand* the urgent action needed to create preventative and mitigation policy; to *act* to develop and promote programs that encourage more sustainable development; to *engage* with local communities to better address local needs; to *empower* marginalized communities and indigenous knowledge systems to help cope with growing change; to *embrace* intergenerational representation; and finally to *impart* knowledge to the global community through both informal and formal communication channels.

The declaration was distributed widely during COP 16 in Cancun, Mexico in December 2010. In Nepal, the declaration was handed over to government representatives at a program for the Global Day of Climate Action on 4 December. The declaration was also distributed to concerned ministries in the government of Nepal.

4.0 CONCLUSIONS

The International graduate conference on climate change and People proved to be a graduate's capacity building success. Each participant walked out of the conference empowered with a greater capacity to cultivate new environmental awareness that they could apply to themselves in their day-to-day lives, in addressing current social issues, and in cultivating their careers. The conference was concluded with a statement of unity expressing that we must come together instead of blaming each other if we are to successfully mitigate climate change impacts. We must continue to work together through the *Eco-Generation Network*. *The Small Earth Network* was designed to be a youth "think tank" forum on climate change and its dimensions, rooted in the connections made at the conference.

As a post-activity of the conference and one of the activities of the *Eco-Generation Network*, a Virtual Cop16 was conducted from 29 November to 11 December 2010 among the network members with the intention of informing students about COP16 through online discussions and a Media Camera. There were altogether 122 participants for the Virtual COP 16. All major concerns were found to be based on a "blame game" between developed and developing nations. A forgotten group of "Twenty-something" were proposed and discussed. Though this Virtual COP16 does not have a visible impact, it was a very successful forum to broach the issues of Young People.

5.0 ANNEXES

Annex 1: LIST OF PARTICIPANTS

International Graduate Conference on Climate Change and People

15-19 November 2010, Kathmandu, Nepal

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Annex 2: EVENT CALENDAR

Monday 15	Tuesday 16	Wednesday 17	Thursday 18	Friday 19
<p>8:00am-9:00am Registration, National Trust for Nature Conservation (NTNC)</p> <p>9:00am-10:15am Opening Ceremony:</p> <ul style="list-style-type: none"> • Conference Desired Outcomes • Sponsors' Welcome to Participants • Conference Photo <p>10:15am-11:00am 1st Networking Break</p> <p>11:00am-11:30am "Climate and Water Affairs: Multidisciplinary Research Application in the Service of Society" Prof. M. H. Glantz (CCB, University of Colorado)</p> <p>11:30am-12:15pm "Is Our Climate Changing: A Physical Science Perspective" Dr. M.L. Shrestha (NAST) and Prof. J. Arratia (MIE, Universidad Metropolitana, Puerto Rico)</p> <p>12:15pm-2:00pm Lunch Students begin to chat about Eco-Generation Day, Wednesday</p> <p>2:00pm-3:00pm Chair: L. Zubair (IRI, USA)</p> <ul style="list-style-type: none"> • Are Regional Ecosystems Changing? • Rates of Environmental Change: Can Societies Cope? <p>3:00pm-3:30pm "Social Dimension of Climate Change or Climate Dimension of Social Change?" Do you get the same Answer? A Guided Discussion led by Dr. Pralad Yonzon (Resources Himalaya) & M.H. Glantz</p> <p>3:30pm-4:00pm 2nd Networking Break</p> <p>4:00pm-4:45pm Chair: Dr. Sangam Shrestha (AIT) "An Overview of Modeling the Hydrologic Cycle I: An Example of Usable Science" Dr. G.H.A.C. Silva (University of Yamanashi)</p> <p>6:00pm-8:00pm ICIMOD & CREW Reception</p>	<p>9:00am-9:45am Reports Card For Climate Change: Stockholm Conference on Human Environment (1972) to the IPCC Prof. M. H. Glantz</p> <p>9:45am-10:45am "Greater South Asia's Regional Impacts of Climate Variability, Change and Extremes I": Chair: Prof. Khairulmaini Osman Salleh (University of Malaya, KL) Glantz: IDEA: H₂O INITIATIVE</p> <p>10:45am-11:15am 3rd Networking Break</p> <p>11:15am-12:00pm "Greater South Asia's Regional Impacts of Climate Variability, Change and Extremes II": Chair: A. Mohanty (HUC, HIC, ICIMOD)</p> <p>12:00pm-12:30pm KEYNOTE: Dr. Gordon Young (IAHS) "The Challenges of Global Water Management in 2020: Focus on the Himalayan Region"</p> <p>12:30pm-2:00pm Lunch</p> <p>2:00pm-3:00pm "Biodiversity Services and Threats from Climate Change" Chair: Dr. D. R. Bhuju (NAST)</p> <p>3:00pm-3:30pm 4th Networking Break</p> <p>3:30pm-4:15pm Introduction to "Teachable Moments as an educational tool" Panel Discussion Chair: Dhiraj Pradhananga</p> <p>4:15pm-5:30pm OPTIONAL: Practicum on "Science Modeling the Hydrologic Cycle II" Dr. G.H.A.C. Silva</p>	<p>8:30am-9:30am "Indigenous Knowledge" Chair: Mr. G. Pierce (Center for Collaborative Conservation, Colorado State University)</p> <p>9:30am-10:45am "Changing Regional Hazards" Chair: Prof. Murataly Duishtonakunov (Kyrgyz National University)</p> <p>10:45am-11:00am 5th Networking Break</p> <p>11:00am-12:00pm "Disaster management & Early Warning Systems" Mr. S.H.M. Fakhruddin (RIMES) & Mr. R. Shrestha (Real Time Solutions)</p> <p>12:00pm-1:30pm Lunch & Lunchtime Presentation: Mr. Tek Jung Mahat (APMN, ICIMOD) "Youth and Mountain Climate Change"</p> <p>1:30pm-5:00pm Eco-Generation Day Organized by Students Presentation:</p> <p>1:30pm-2:00pm British Council Climate Champions</p> <p>2:00pm-5:00pm <i>Plotting to Save the Planet:</i> Students' Regional Concerns from the "Roof of Planet Earth" for COP 16 (Mexico 2010) and for COP 17 (South Africa 2011)</p>	<p>8:30am-10:00am Open Discussion: "Innovative Ways to Engage the Public": Social Networking (e.g. Facebook, Twitter, Hi5), STU, etc. Chair: G. Pierce, J. Fanning (CCC Intern) & Iris Cheng (Greenpeace, Hong Kong)</p> <p>10:00am-10:30am 6th Networking Break</p> <p>10:30am-11:30am "Climate Risk Management: Coping with Uncertainty" Chair: Mr. Fakhruddin</p> <p>11:30am-12:15pm Organized by Students "Ethics, Equity and Coping with a Changing Climate:"</p> <p>12:15pm-1:45pm Lunch</p> <p>1:45pm-3:00pm PANEL "Robbing Nature's Bank: Intergenerational Debate or Discussion?" Chair: Prof. Suresh Raj Chalise (IAHS-Nepal)</p> <p>3:00pm FREE TIME</p>	<p>9:00am-9:45am "Is There Value to a Happiness Index? The Case of Bhutan" Chair: Ms. Trishna Jaishi, Royal Thimphu College, Bhutan</p> <p>9:45am-10:15am "Geo-Engineering the Earth to Meet Our Needs and Wants" M.H. Glantz</p> <p>10:15am-10:45am 7th Networking Break</p> <p>10:45am-11:30am Students Prepare COP 16 Statement (Groups) Presentations of Groups on COP 16</p> <p>11:30am-1:30pm Certificate Presentations Awards: Dhiraj Pradhananga</p> <p>Lunch Closing & Farewell</p> <p>Adjourn 1:30pm</p> <p>1:30pm-6:00pm (OPTIONAL: Tour)</p>

Annex 3: PROGRAM SCHEDULE
International Graduate Conference on Climate Change and People

Opening Session

15 November 2010, Monday

Time : 0900-1015 hrs

Venue : National Trust for Nature Conservation (NTNC), Khumaltar, NEPAL

Chief Guest: **Dr. Jagadish C. Pokharel**, Vice-Chairman, National Planning Commission (NPC), Government of Nepal

Chairperson: **Dr. Michael H. Glantz**, Director, Consortium for Capacity Building (CCB), University of Colorado, Boulder, USA

Time (hrs)	Agenda	Remarks
0800-0900	Arrival and registration of participants	
0900-0905	Arrival of Guests, Guests of Honor and The Chief Guest	
0905-0910	Dignitaries on the dais	
	Dr. Michael H. Glantz , Director, CCB, University of Colorado, Boulder, USA	Chairperson
	Dr. Jagadish Chandra Pokharel , Vice-Chairman, NPC, Government of Nepal	Chief Guest
	Prof. Dr. Surendra Raj Kaphle , Vice-Chancellor, Nepal Academy of Science and Technology (NAST)	Guest of Honor
	Mr. Uma Kanta Jha , Secretary, Ministry of Irrigation, Government of Nepal	Guest of Honor
	Prof. Gordon Young , President, International Association of Hydrological Sciences (IAHS)	Representative from co-sponsor
	Dr. Madhav B. Karki , Deputy Director General, International Center for Integrated Mountain Development (ICIMOD)	Representative from co-sponsor
	Dr. Robert Monro , Country Director, The British Council Nepal	Representative from co-sponsor
	Prof. Futaba Kazama , ICRE, University of Yamanashi, Japan	Representative from co-organizer
	Mr. Dhiraj Pradhananga , President, The Small Earth Nepal (SEN)	Chief conference organizer
0910-0920	Welcome Remarks from Mr. Dhiraj Pradhananga	On behalf of organizer
0920-0930	Remarks from Prof. Futaba Kazama	On behalf of co-organizer
0930-0935	Remarks from Dr. Robert Monro	On behalf of co-sponsor
0935-0940	Remarks from Dr. Madhav B. Karki	On behalf of co-sponsor
0940-0945	Remarks from Prof. Gordon Young	On behalf of co-sponsor
0945-0950	Remarks from Mr. Uma Kanta Jha	Guest of Honor Remarks
0950-0955	Remarks from Prof. Dr. Surendra Raj Kaphle	Guest of Honor Remarks
0955-1000	Remarks from Dr. Jagadish C. Pokharel	Chief Guest Remarks
1000-1005	Vote of thanks by Mr. Sundar Layalu, SEN	On behalf of organizer
1005-1015	Closing remarks	Chairperson
1015-1100	Refreshments	

The Eco Generation

Newsletters

Annex 4: THE ECO GENERATION NEWSLETTERS



The Newsletters were published throughout the conference periods i.e. from 15th November to 19th November which gave rise to the Eco generation Network.



The Eco Generation

Newsletter

International Graduate Conference on Climate Change and People, 15-19 November 2010, Kathmandu, Nepal



Inside the issue

- 2 Use of ICT for the adaptation of Climate Change the conference
- 3 Attending the conference
- 3 Participant' Voice: What is the expectation from the conference
- 4 A Rendezvous with Dhiraj Pradhananga, president The Small Earth Nepal and the chair of the conference

Highlights

- 0900-1015**
Opening ceremony
- 1100-1130**
Climate and Water Affairs: by Prof. M. H. Glantz
- 1400-1500**
Are Regional Ecosystems Changing? Can Societies Cope? Chaired by L. Zubair
- 1400-1500**
A Guided Discussion led by Dr. Pralad Yonzon & M.H. Glantz on social dimension of climate change

Cartoon of the day



150 grads in Kathmandu for Climate Action

With the objectives of multidisciplinary capacity building of graduate, undergraduate students and experts of different disciplines in climate affairs, the International Graduate Conference on Climate Change and People organized from 15-19 November 2010 in Nepal has been an awaited event for the Small Earth Nepal and the Consortium for Capacity Building (University of Colorado) along with other collaborators and sponsors. The conference aims to build scientific capacity of young students fostering fine networking processes and raising awareness for sustainable development options in the region that motivates them work in close network in the days to come to fight adverses of climate change in the region and also in global arena.

Moreover, it tends to equip students with knowledge of climate change that demands multidisciplinary activities regardless of their academic discipline. Participatory methodology of conducting conference with students' direct participation through interaction, panel discussions and students' presentation, the conference aims to build students with proactive and meaningful sharing of knowledge and experiences among students and experts that capacitates and ensures sustainable networking around the region. The conference sessions ranging from physical science, policy implications, economics, ethics to equity incorporate the overall dimensions of climate change where climate science are equally highlighted with its policy implications too.

The Conference kicks-off

November 15, 2010, The much anticipated Graduate Conference on Climate Change and People kicks-off from today at the National Trust for Nature Conservation, Kathmandu, Nepal. The graduate conference shall embark with opening ceremony decorated by presence of chief guest Dr. Jagadish Chandra Pokharel, Vice-Chairman, National Planning Commission, Nepal and Dr. Michael Glantz, Director, Consortium for Capacity Building, University of Colorado, Boulder, as the Chairperson. With a long list of high profile guests and attendants from diverse fields, the conference is expected to be a highlight across the greater south Asia.



The conference is going to be a colorful umbrella of more than 150 participants from 20 different countries. Prime Minister of Nepal Madhav Kumar Nepal has addressed the conference as a positive step towards climate action and congratulated the organizers for hosting such program in Nepal. With assistance of a dozen co-sponsors and co-organizers, fluent logistics and some exhibition stalls the program is expected to be fun and a memorable for the participants. Today's program shall officially begin from 9 am and shall feature presentations from Prof. M. H. Glantz, Dr. G.H.A.C Silva, Dr. Prahlad Yonzan, Prof.J. Arratia and Dr.M.L. Shrestha.

Announcements

Participants are requested to wear their respective identity cards and for foreigner carry their passports for security reasons & if any problem occurs during the program please contact 9801040010; 9801040012

Regarding Reception Dinner
One side shuttle service shall be provided to all participants to the C.W restaurant, reception dinner venue. However, participants other than those accommodated at hotel Clarion and Goodwill are requested to arrange their own transportation while returning from the dinner.

I want to testify today about what I believe is a planetary emergency - a crisis that threatens the survival of our civilization and the habitability of the Earth. ||

----Al Gore

The Ball is Rolling, can not wait anymore for the Conference

Jeeban Panthi, The Small Earth Nepal

“Please, be at the office tomorrow from early morning for the concluding preparations of the conference.” These were the motivational words of Ms. Sangita Maharjan, the Human Resource Officer at The Small Earth Nepal (SEN). Twenty plus staff members at SEN have been actively involved since September in the logistic management of holding the conference and half a dozen other people have been involved since June to manage software. “All logistics for the conference is okay,” said Piyush Dahal, Communications Officer at SEN. He seems very busy and happy with added pressure as he has not shaved his beard for more than two weeks. “Though I have not taken my lunch for three days, I am enjoying the work,” he adds, a smile spreading on his stubby face. The conference aims to accommodate more than one hundred and fifty national and international graduate students as well as experts from various and diverse field who will travel to Kathmandu from twenty countries.

The conference venue at the National Trust for Nature Conservation (NTNC) has already been prepared and decorated. “The hall has been designed to accommodate 150 participants comfortably and all the preparations including stall construction has been finished,” Niranjan Bista, Outreach Expert at SEN, says. “Two hotels near the conference venue and one in Thamel have been reserved for international guests and participants,” says Ms. Kelli Lopez from co-

been maintaining the database of and corresponding with participants from the US for months, arrived in Kathmandu just three days ago.

The Vice-Chairman of the National Planning Commission (NPC), Nepal Dr. Jagadish Chandra Pokharel has kindly accepted the invitation as the chief guest for the inauguration ceremony of the conference and the Vice Chancellors of the Nepal Academy of Science and Technology (NAST) as well as the secretary of the Ministry of the Irrigation will also be addressing the conference for the inauguration ceremony. Moreover, the Prime Minister of Nepal, Madhav Kumar Nepal, taking time from his busy schedule, has sent a welcome message to the organizers and participants. We thank him for his interest in this crucial event.

Some 300 plus guests are expected for the inauguration ceremony. As Ankit Bilash Joshi, who is lead on the distribution of invitation cards, says, “Invitation cards for the inauguration and reception dinner were sent before Friday to the high profile dignitaries.” Climate change researchers, activists, academicians, journalists, lawyers, advocates, politicians, and practitioners have also been invited for the inauguration ceremony. Furthermore, the reception dinner has been organized on the same day in the evening at CW Restaurant in Kamaladi and 250 plus guests and participants have been invited for the dinner.

Dr. Michael H. Glantz from CCB at the

University of Colorado Boulder, arrived two days back. Gordon Young, President of the International Association of Hydrological Sciences (IAHS) and vice Principal of Asian Institute of Technology (AIT) are also now in Kathmandu and will deliver the Keynote address on Wednesday 17 November. “We are all prepared for the conference, and I am in this final stage along with the rest of my team, so we cannot wait any longer for the day to arrive,” said Dhiraj Pradhananga, President of SEN and chief of the organizing committee who has had several sleepless nights for the management of the conference. The inauguration session of the conference is open to everyone and the organizers welcome all guests interested in attending.

Use of ICT for adaptation to climate change

Towsif Mohammad, University of Dhaka, Bangladesh

Information and Communication Technologies (ICTs) have a critical role to play in combating climate change through the reduction of global green house gas (GHG) emissions. The increased use of ICTs contributes to global warming – millions of television sets and computers are never fully turned off at night in homes and offices. But ICTs can also be a key part of the solution, because of the role they play in monitoring, mitigating and adapting to climate change. The ICT sector itself (in this definition, telecommunications, computing and the internet, but excluding broadcasting) contributes around 2 to 2.5 percent of GHG, at just under one Giga-tonnes of CO₂ equivalent. The main constituent (40 percent) of this is the energy requirements of personal computers and data monitors, with data centers contributing a further 23 percent. Fixed and mobile telecommunications contribute an estimated 24 percent of the total. International Telecommunications Union (ITU) working in this area focuses on the use of ICTs (including weather satellites, radio and telecommunication technologies) in weather forecasting, climate monitoring and predicting, detecting and mitigating the effects of natural disasters.

Another important way in which ICTs can respond to climate change is in the area of disaster prevention and relief. In Bangladesh we can promote the use of telecommunications/ICT for disaster prevention and disaster relief. In many cases when disaster strikes, the 'wired' telecommunication infrastructure is significantly or completely destroyed and only radio communication services can be used for disaster relief operations – especially radio amateurs and satellite systems. We had tremendous experiences during Cyclone Sidr (November 15, 2007) that Radio and Cell phone were engaged in direct missions to help affected people. We can work in this field with standardization of call priority in emergency situations, for example Recommendation E.106 on the International Emergency Preference System for disaster relief. ITU-T has also assigned a special E.164 country code (888) to the United Nations Office for the Coordination of Humanitarian Affairs (OCHA) for the purpose of facilitating the provision of an international system of naming and addressing

Conference aims for nation building!!!

Pranav Pokhrel, The Small Earth Nepal

November 15, 2010, **International Graduate Conference on Climate Change and People**, already five conferences on environment been hosted in year 2010 in Nepal; can this conference be a stand-out in contributing to nation building? Definitely a five day event linked with nation building, a task grueling and demanding as the mighty Egyptian pyramid, suspicions are obvious.

Unlike prior conferences, the contrast is it spotlights on capacity development and network building rather than only achieving certain declarations with relatively slim chances of implementation. Since the bulk of youth population is shifting towards the greater Himalayas region and Nepal itself boast 53.7% of the most energetic and fertile youth population of the total population, nurturing potential leaders and adept manpower by youth motivation is the key for national progress.

Energetic multidisciplinary graduates and youths in one side and prolifically experienced wise scholars who are willing to guide this quantum in a proper direction on the other side, the conference blends both to highlight the diverse, contentious and grave multi-disciplinary issues of Climate Change. Through inter-generational multidimensional table meets, knowledge sharing and a network development, the conference should develop finesse among youth on Climate Change and form a sturdy group, energetic and smart enough to counter challenges from Climate Change.

Climate Change levies multidimensional effects on every aspect including all economy, society and environment and thereby impede any process of development. Living beneath the top of the world thus is not docile especially when the ceiling is tumbling down. Repetitively experiencing the bitter savory of failures, a mere per capita of \$470 and 115th-largest economy in the world does Nepal has any plans to safeguard the security of 28,676,547 people amidst the vulnerability of Climate woe? Certainly not. Like the story of survival for the fittest, Nepal and those who are not adept to out-smart the changing climate shall face the worst shocks of climate changes.

To avoid a situation where Climate Change bombs out of the blues like a *Fat Man in the Japanese sky*, every nation needs potential leaders and adept manpower for planning, advocating Climate Change and direct flux of development towards a sustained climate-resilient society. A capacity developing program as such should produce Climate Change heroes that can take responsibility to guide nation towards development.

Individual make society, societies make nation and brawny individuals are the fundamentals led to a strong nation. The conference is themed on the Climate Change on Greater Himalayas thereby accesses directly to the roots of Nepalese society and lifestyles. We do wish the conference to be success, when these participants emerge as planners, scientist researchers and stockholders in future, the contribution of the conference in the nation building should be obvious.

Participant's voice: "What are the Expectations From the Conference?"

Bibishan Rai

Nepal

The conference should not only broaden knowledge on climate change but also make youth realize their responsibility and since it focuses on multiple chapters it should provide youths with options to proceed with their future.

Kanchan Ojha

Nepal

I hope this conference is going to be a landmark and moreover it will be an important platform for young researchers. The variations in the topics is indeed an incredible step as it covers the relation of climate change to water, bio-diversity, society and all concerned. Being a research graduate and conducting research on climate change which will indeed be of great help to accomplish my project as well.

Trishna Jaisi,

Bhutan

I expect lots of discussions and youth participation in the conference and certain goals and commitments as outcomes of these discussions.

Karuna Paudel

Nepal

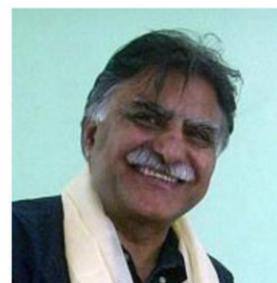
The conference is an interesting opportunity for young students like me to meet seniors scientists and researchers and graduates all across the world, I expect to increase my knowledge on Climate Change and develop a network through the conference.

Ganesh Bhattarai

Nepal

The conference would be to know and share the effect of climate change and its adaptation with various experts related to different sectors and secondly, I am excited to meet the delegates from various countries and to share their learning on the approaches for minimizing the risk of climate change.

Attending the conference...



Dr. Jagadish Chandra Pokharel is the Vice-Chairperson of National Planning Commission, Nepal and our honorable Chief-Guest for the program. He is a PhD on Regional Planning from Massachusetts Institute of Technology and has been one of the leading figures in inter-sectoral policy coordination, environment and sustainable development in Nepal. Dr. Pokharel can be reached at jcpokharel@npcnepal.gov.np

Professor Dr. Gordon Young is the president of the International Association of Hydrological Sciences (IAHS) and professor at the Wilfrid Laurier University, Waterloo, Canada. He achieved PhD in glaciology from McGill University Canada in 1971 and from 1991-1992 and served as coordinator of the International Conference on Water and the Environment, based in the World Meteorological Organization, Geneva. In 2000, he was appointed as coordinator, World Water Assessment Program the secretariat of which is attached within the Division of Water Sciences, UNESCO, Paris.



A Rendezvous...



Mr. Dhiraj Pradhananga is the President of The Small Earth Nepal and the chair of the conference. He is also lecturer at the Department of Meteorology, Tri Chandra Multiple Campus, Tribhuvan University, Nepal and general secretary of Society of Hydrology and Meteorology, Nepal (SOHAM). The Eco-Generation team had the opportunity to have a short talk with Mr. Pradhananga

Eco-generation: SEN and CCB are organizing the conference of the international level and gathering many experts and graduate students from different corners of the globe. Unlike other conferences, this conference will not focus on achieving a declaration but solely contribute towards capacity building. What inspired you to organize such a conference?

Mr. Pradhananga: Since our education limits to text books and exams, students are required to be exposed to interactions and group discussions to get a complete update of what is happening across the globe. The Small Earth Nepal has always been keen on capacity building of young graduates and so is the Consortium for Capacity Building (CCB), USA. In fact, I am very much inspired with Dr. Michael H. Glantz, director of CCB. His commitment towards youth empowerment is very appreciable and inspiring. The first undergraduate conference on water, weather, climate and society in Shanghai in 2009, which was attended by two researchers from SEN and inspiration from Dr. Glantz was what it triggered me to organize such program in Nepal.

Eco-generation: Unlike other conferences there shall be no declarations on this one, what are the objectives you planned for the conference and does your approach towards such kind of the conference would contribute to control the Climate Change effects in the third pole and the greater Himalayas?

Mr. Pradhananga: The graduate students will be discussing among themselves and proposing their thoughts for Cop16 but the focus will remain in their Capacity Building. As Dr. Glantz said "focus is forward awakening graduate students", the attempts shall be making them capable to think about relation between climate change and bringing in a bigger network among graduates, "The Eco-Generation".

Eco-generation: Organizing a conference is definitely not an easy task; can you share some of the difficulties you encountered during the event organization?

Mr. Pradhananga: We had several difficulties, but we have a strong advising committee and capacity building committee who were always a supplementary for the organizing committee. More than twenty young energetic student affiliates in the SEN fully working with organizing committee and CCB are trying to make the conference as best as possible. Having a very experienced and well hearted Dr. Glantz who has over 5 decades working experience in Asia and dedication for his work was always the brighter part for organizing the conference.

We have a strong support for the renowned co-organizers and co-sponsored without whose support we could not have lifted the conference to this level.

Eco-generation: To some extent, Climate Change has been introduced by business and industrialization, how do you think the conference shall be responded by the corporate and stockholders and then by the government, graduates, general people and climate change aware societies?

Mr. Pradhananga: We have co-sponsors and participants who are business houses and entrepreneurs and are showing positive response towards the conference. The response from graduate students is over whelming. We are very sorry that we could not involve all of them. Definitely, the conference is well appreciated by government and general people. We are grateful to them.

Eco-generation: What are your expectations from the conference? What are your plans for the succession of the conference?

Mr. Pradhananga: We are very positive and committed towards our objectives. We would like to see the youth being well informed about climate and its relation to society. We will regularly clue-up with the networks that will be formed through this conference.

Eco-generation: So much spoken and debated over, definitely climate change is the hottest topic of 21st century. How would you define Climate Change in your own words?

Mr. Pradhananga: In my opinion the weather and climate has both direct and indirect influence on each and every aspects of all the living entities. The faster rates of changes introduced by our lifestyles are disrupting several natural phenomena including water availability and intensified the frequency of several natural disasters. The faster rate is beyond coping capacity of nature and human, either from poor or the rich countries.

Therefore, I would say climate change is a phenomenon of series of changes and impacts, which can be overcome with unified actions of people across the globe.

Eco-generation: A message to the participant

Mr. Pradhananga: First of all, a very warm welcome to the participant of the conference on behalf of the organizers. We hope that they will find the conference very useful and the conference shall motivate to make them committed towards climate change and society.

I believe that the inter-disciplinary participation will bring positive effects and intimacy among the participants. I cordially invite all of them for their active involvement in the overall program.

Eco Generation Quiz

Where is the secretariat office of UNFCCC?

Please send your answer at ecogenerationquiz@gmail.com by 10 pm today. Winner will be awarded with an attractive prize.

Media Team

Dhiraj Pradhananga

Pranav Pokhrel

Jeeban Panthi

Piyush Dahal

Sundar Layalu

Nammy Hang Kirat

Mohan Chand

Achut Parajuli

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The Eco Generation

Newsletter

International Graduate Conference on Climate Change and People, 15-19 November 2010, Kathmandu, Nepal



Inside the issue

- 2 Reception Dinner at CW
- 2 Climate, Water and Weather Affairs with Micky
- 3 Participant' Voice: "Aren't developing countries equally responsible for climate change along with developed nations? Why?"
- 4 A Rendezvous with Michael H. Glantz, the Director of the Consortium for Capacity Building (CCB)

Highlights

0900-0945

Reports Card for Climate Change: Glantz

1200-1230

Key Note Speech by Gordon Young

1400-1500

Biodiversity and Climate Change: D.R. Bhujju

1530-1615

Teachable moments: D. Pradhananga

Five days International Conference on full swing



The International Graduate Conference on Climate Change and People, second of its kind was inaugurated yesterday on 15 November, 2010 at the National Trust for Nature Conservation (NTNC) Auditorium, Khumaltar, Kathmandu, Nepal. The conference chaired by **Dr. Micheal Glantz, Director of Consortium Building University of Colorado, Boulder** was attended by more than hundred graduates from twenty different countries where senior scientists and professors gave on some comprehensive presentations on climate change and issues.

Mr. Dhiraj Pradhananga, President of The Small Earth Nepal, with his welcome remarks on behalf of the organizers, expressed his gratitude to all the guests and the participants. He highlighted on this conference being a learning bridge or rather a chance to unite the knowledge of two different generations. Mr. Pradhananga, with his motivational opening speech, illustrated the need of unified action to combat the global phenomenon of Climate Change. Furthermore he congratulated the participants for their footnote step against climate change. **Prof. Futaba Kazama, ICRE, University of Yamanashi, Japan**, applauded SEN and University of Colorado for organizing an international conference of this caliber. She explicated on the importance of this conference in exchanging views and knowledge among the students, researchers and professors to create a strong force of human intelligence for a better tomorrow. **Dr. Robert Monro**, the country director of the British Council Nepal on behalf of sponsor of the conference, expressed his honor to be a part of the program. Opinionating climate change as a complex reality, **Dr. Madhav Bahadur Karki**, Deputy Director General of ICIMOD, suggested the University of Nepal adopt the climate and environment related curriculum. Similarly, **Prof. Dr. Gordan Young**, the president of the International Association of hydrological science (IAHS), mentioned his keen interest on conference due to the reasons Nepal, being his area of study and again since the conference was focusing on graduates from as many as diverse backgrounds.



Dr. Young expressed his excitement in the conference being held in Nepal and also noted that the excitement was double when he knew graduates shall be featured in the conference. **Mr. Uma Kanta Jha**, Secretary of Ministry of Irrigation, Government of Nepal, explained why Nepal is most vulnerable to climate change. In the same way, **Prof. DR. Surendra Raj Kafle**, Vice Chancellor at Nepal Academy of Science and Technology, Nepal, in his short speech encouraged youth for active participation at the conference. **Dr. Jagadish Chandra Pokharel**, Vice Chairman of the National Planning Commission, Nepal expressed his curiosity on how the graduates would take on the views and perspectives from the senior professors and scientists form a different generation than themselves.

Finally, **Mr. Sundar Layalu** from The Small Earth Nepal (SEN) gave vote of thanks on behalf of the organizers. **Dr. Michael H. Glantz** concluded the inauguration ceremony with his closing remarks whereupon he suggested on creating an intellect network for solving the problems of climate change.

"I am jovial to be here among the top scientists of the world and the excitement gets more when you get opportunity to make friends with graduates from different parts of the world" Miss Karuna Paudel, student of Environmental Science Kathmandu University expressed her joy and excitement on entering the program venue. She was just one representative among all those enthusiastic participants eager for the conference to start as it could be seen from others too.

Announcements

Do you have a story to tell? Or you just want to say how you feel every day? If yes, please send your materials to Ms Pragya Adhikari at

Benzene980@gmail.com

Please make sure your articles have your Name, Surname and Country and we will make sure to find space for them in The Eco Generation.

Climate, Water and Weather Affairs with Micky



With excitement and lots of facts to share Michael H. Glantz, popularly known as Micky, started his presentation displaying some magazine and publication from the US magazine and different publications entitled global warming and weather. The title of his presentation was Climate, Water and Weather Affairs: Science Serving Society He quoted that "Climate is main stream, only few people did not believe but almost all". He emphasized monsoon and it's affecting factors like El-Nino, ENSO which are devastating the climatic system. Water is the most important life supporting system and is being neglected by policy makers. In his words he explained that atmosphere is now the political issue. With reference to IPCC assessments that is 1st, 2nd, 3rd and 4th the first three assessment report are the backbone report to 4th assessment report which led the noble prize. The spot light has now shifted from Science to impact and policy. Micky was focused on communicating climate change as he quoted *Climate Knowledge is power, Sharing climatic knowledge is empower.*

Dr. Micky drew the concentration of the participants with differentiating weather and climate. He presented some perception on climate as hazard, resource and constraint but all the participants agreed in climate, water and weather as sources when used wisely. Climatic economics is more talked issue today and most of people focus on science, impacts on ecosystem, society, policy, law and politics, economics, ethics and equity. People only blame for harder and tough climate, extreme events, seasonality but neglect the bad decision that might be the cause of the changing environment. He defined the aspect of climate as variability, fluctuation, change, extreme event, seasonality with new global climate state. There are different scientists who have different view and most of climate scientist focuses on models and describe it. We have to understand climate science as component of society which impacts everything like ecosystem. South East Asia is the rooftop of the world as it has Himalaya and the countries like Maldives, Bangladesh, India, Pakistan and Nepal are mostly impacted with the changing climate. Climate change should be mitigated or adapted, a super law is needed otherwise it would be now or never, he emphasized. We all are loser in the issue of the climate. However, poor people are the most impacted with the changing climate.

Reception Dinner at CW Restaurant

"I am from Bangladesh, I am from Bhutan, me from Japan, hello I am from South Korea", introductions poured in to the floor as new friends were made on the reception dinner of the International Graduate Conference on Climate Change and People . After the tiring presentation sessions, the celebrations took- off in the first gear with the participants and graduates coming closer to each other and building a bond, Kudos to unified climate action and the juvenile friendship. The program was officially announced by Miss Pragya Adhikari, The Small Earth Nepal. Dr. Michael H. Glantz, CCB, University of Colorado, Dr. Madhav Bahadur Karki, ICIMOD and Sanjeev Kumar Dhungana, Center of Research for Environment Energy and Water addressed the program with welcome remarks. Though the buses were waiting outside, the cheerful environment glued participants to the party hall as everyone enjoyed the delighting savory of friendship with food and wine. It was hard for anyone to walk through the hall without being cheered and interrogated. The reception dinner was a happy ground for all participants to make new friends and a positive sign that the conference is proceeding in the right direction sending out *here we come all 150 united* message to the Climate Change.



Water for future??

Ashma Vaidya, Center for Rural Technology, Nepal

Increasing demand for water as follow-on to rapid population growth within last few decades has put a tremendous pressure on its resources all over the world. Haphazard exploitation and inability of concerned authority to address proper management and restoration of these resources are causing water bodies as springs, rivers, lakes and seas to dry out rapidly.

In many regions, with water drying out from its sources and inability of concerned authorities to supply water to people, digging wells has become a common practice. Moreover, over-pumping of shallow aquifers is causing them to dry out sooner so people are digging deeper down to extract water which is not replenishable. Especially in arid and semi arid regions lacking substantial monsoon, aquifers are far from the recharge point. A continuous water withdrawal from deep aquifers may lead to higher chances of permanent water loss from the region as a whole.

Accelerated climate change phenomena and ever so growing advertent effects of it on various natural processes as hydrological cycle and monsoonal pattern have been exacerbating the present condition of water accessibility even more, predominantly in developing nations. Although a number of news have emerged in past few years about glacier melting and sea level rise due to global warming, shortage of clean drinking water is yet a grave issue in as rich country in water resources as Nepal. Furthermore, the unpredictable monsoonal pattern due to climate change has been sabotaging the food economy in the developing countries particularly in Asian and African continents by causing a great impediment in agricultural practices.

Therefore, a sustainable way-out need to be carried before its too late and starts affecting other areas of the national economy. Concerned government and organizations need to formulate proper water policies and must adopt a reliable water management and recycling technologies to make the best use of what is available now. Most importantly, adaptive measures to combat water shortages resulting from climate change must be addressed and made to adopt right from the grass-root level.

Participant's voice: "Aren't developing countries equally responsible for climate change along with developed nations? Why?"

Subhasis Mohanty, India

Yes, developing nations contribute equally to global warming and climate change in respect to the developed nations. The subsequently growing industries, population explosions etc are leading to increased ecological footprints and uncontrolled deforestations are further making the matter worse with climate changing towards the threshold limit of species survival in the planet.

Kedar Rijal, Nepal

Yes they are, but with a different degree and approach. However, the consumption pattern and the behavior sure are leading towards the increasing emission of green house gasses, the global warming.

Pranab Kumar Halder, Bangladesh

No, we cannot say that the developing countries are contributing at the same level because if we compare the general emission rate between such countries, emissions from the developing nations is minimum. Though developing countries, too contribute to climate change, its developed nations who should take the major responsibility

Sujan Timilsina, Nepal

"Equally" may not be the correct word if we are to measure the responsibility. Yes, developing nations contribute to climate change to some extent but the GHG emissions is minimum in comparison to that of those developed nations and seems to be localized, i.e. within the local sphere.

Juan Arratia, Puerto Rico

No, I don't think so. Developing countries being less privileged to scientific advancements and food security have a less consumption pattern and green opportunity. Their ecological footprint is of lesser amount to that of developed nations.

Tran Van Gial, Vietnam

Yes, they are. Yes, every country is equally responsible for their GHG emission which is one of the major reasons for global warming and Climate change.



Interview with Michael H. Glantz



Dr. Michael H. Glantz is the Director of the Consortium for Capacity Building (CCB), at the University of Colorado, Boulder (CU). In 1974, he joined National Center for Atmospheric Research (NCAR) as a postdoctoral fellow, and in 1983 was listed as the first (and still the only) NCAR Senior Scientist. He has authored & edited several books research articles on climate, environment, and society. The Eco-Generation team had the opportunity to have a short talk with Mr. Glantz

EG: You have plenty experiences in your bag and have organized and participated in many such programs. What is the difference between your prior conferences and this one?

M. H. Glantz: This conference is focused on graduate students. They are the next wave of policy makers. The idea of the conference is to broaden the concept of graduates. The influence should start sooner, I expect the graduates to start acting effective right after two or three years of graduation waiting.

EG There are many countries as such as Nepal in the HKH region, what inspired you to organize this program in Nepal?

M. H. Glantz: The conference was basically an outcome of the Sanghai conference in 2010. The whole process embarked from Sanghai as Sundar Layalu I were introduced during the conference. Also, I have worked previously in central Asia but south Asia was a new experience for me, then I came in contact with Dhiraj, we send a proposal to the APN and the whole process started.

EG As a joint program of the conference, what was your and CCB's experience working with The Small Earth Nepal?

M. H. Glantz: It was a good. They are hardworking efficient and effective, we had to work in two different system for organizing the conference, Nepal and United states. Here in Nepal the administrative system is much hierarchical where as that of America much democratic so I had to be extra careful on this one. We were working with two different cultural systems. We worked together and came up with the solution and I think the outcome will be good. I am impressed by the lecture hall we have been provided too, its pretty good and should be effective for the conference.

EG: You have served in the field of environment for such a long time. Considering your dedication, the Eco-Generation team specially looks at you as an icon, a real hero in Climate Action. What has remained as your inspiration for such passion and commitment toward environment?

M. H. Glantz The passion is still strong. Ever since the 1970s I have analyzing the natural systems and what systems blame for disturbances in nature. A lot of policies have been putting peoples in dangerous places this realization has triggered me to continue with similar passion. There are groups of people who do not have rights so basically it's disappointments towards suffering of the people who has inspired me to work for them and environment.

Answer of Eco Generation Quiz 1

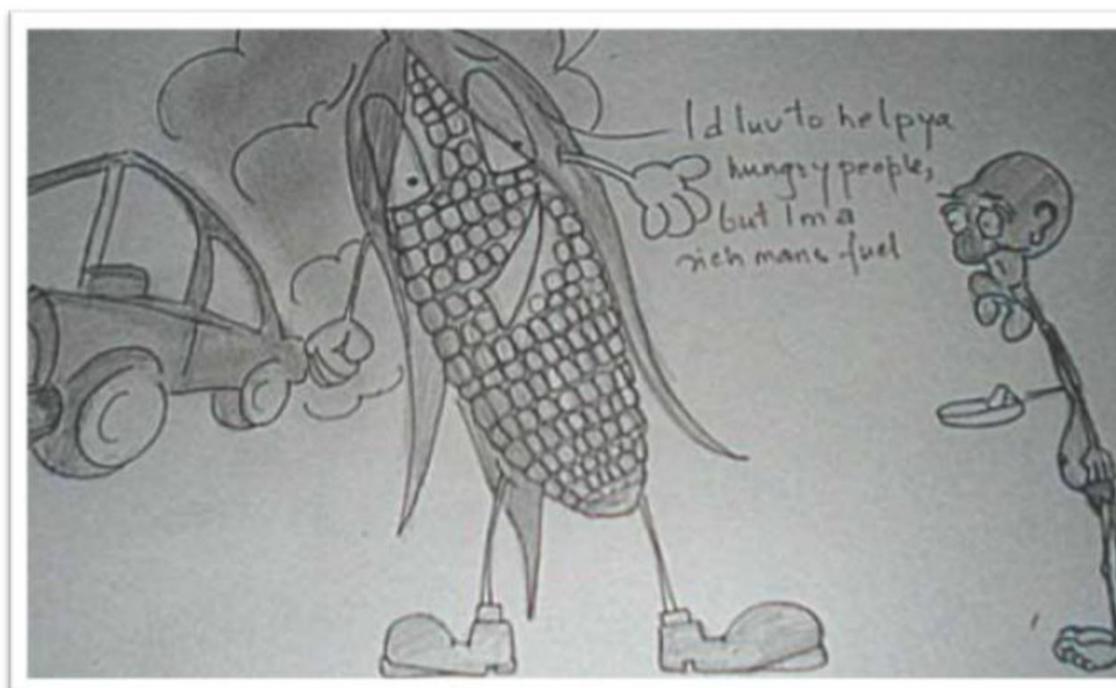
Bonn, Germany

Shrijana Manandhar from Nepal is the lucky winner for yesterday's quiz. Congratulation to the Winner and thanks to all participants.

Contact

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Cartoon of the day



Eco Generation Quiz 2

When and where was Keeling's curve first deployed?

Please send your answer at ecogenerationquiz@gmail.com by 10 pm today. Winner will be awarded with an attractive prize.

Media Team

Dhiraj Pradhananga

Pranav Pokhrel

Jeeban Panthi

Piyush Dahal

Bibishan Rai

Sundar Layalu

Nammy Hang Kirat

Mohan Chand

Achut Parajuli

Rajan Subedi

Sarita Karki

The Eco Generation

Newsletter

International Graduate Conference on Climate Change and People, 15-19 November 2010, Kathmandu, Nepal



Inside the issue

- 2 *Changing Climate, Losing Species!*
- 2 *A Climate Change Hypocrisy*
- 3 *Attending the conference*
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- 4 *A Rendezvous with Dr. Dinesh Raj Bhujju*

Highlights

0930-1045

Changing Regional Hazards: Murataly Duishonakunov

1100-1200

Disaster Management and Early Warning Systems: S.H.M. Fakhrudin and R. Shrestha

1330-1700

Eco-generation Day presentation: Plotting to Save the Planet: Students' Regional Concerns from the "Roof of Planet Earth" for COP 16 (Mexico 2010) and for COP 17 (South Africa 2011)

As The Conference Frolics on Day 2

With a lot of excitement among participants, the second day started with a presentation from Dr. Michael H. Glantz. He shared his wealth of experiences from Rio Earth Summit to the Copenhagen and raised significant issues on the upcoming COP 16. He described that there were many constraints during his activist stage - the lone man to fight against the climate change while supporting his family. By his influencing words he revealed climate change facts and reasons for difficulty in coping with the changing climate. The day was focused on impacts of climate change on water resources and biodiversity. On this issue, Ashutosh Mohanty, from ICIMOD highlighted on regional impacts of extreme climate variability and change on Greater South Asia with support from a participating PhD student of Bangladesh and a lecturer from Afghanistan.

Prof. Dr. Gordon Young, senior scientist from the International Association of Hydrological Science, in his keynote speech, shared his experiences in the Himalayan region. He explained the need of global governance on water related issues as it is one of the most important components of life.

Similarly, Dr. Dinesh Raj Bhujju, senior scientist at NAST, highlighted the major impacts of climate change on biodiversity. Vegetation shifting in Himalayan region is the best example to prove the above statement. Later on, he opened the floor to discuss climate change and our attitudes to tackle the ongoing problems.

Dhiraj Pradhananga, President of The Small Earth Nepal, introduced the topic "Teachable moment as an educational tool". In his presentation he shared that people are always learning from actions of past activities and therefore teachable moments can also be used in climate change.



Dr. Gordon Young Speaks to the Youth

As the clock ticked 12:00 it was Prof. Dr. Gordon Young's turn to take the stage. Dr. Young is one of the leading scientists at the conference and every participant had a sense of excitement reflecting as he arrived. Dr. Young takes the stage in his ever comfortable and refined style and presented on the challenges of global water management in 2020 with focus on the Himalayan Region. "The major question is that who manages water, how effective is that management and are management styles changing?" he said. Further, he described the grave water management issues society faces and extended his points to the Millennium Development Goals. "There is need to develop river basin authorities and regional cooperation protocols to minimize potential conflicts" Dr. Young emphasized in his lecture. He also added "Countries shall soon start disputes with each other accusing another for over-mining the shared aquifers and water resources". With highlights on energy biased chasms between the rich and poor countries and issues of water pollution he finally concluded with an active discussion session on the biggest issues societies shall face in case of water woes induced by climate changes.



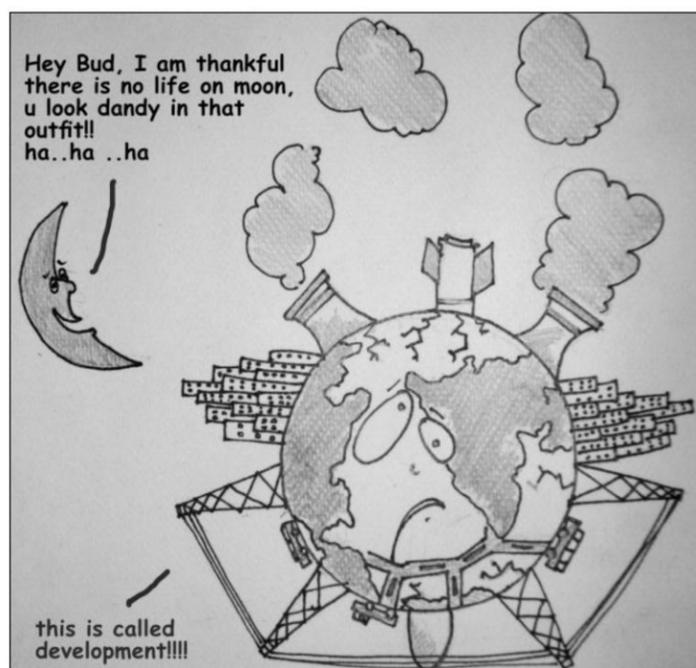
Professor Dr. Gordon Young is currently the president of the International Association of Hydrological Sciences (IAHS) and professor at the Wilfrid Laurier University, Waterloo, Canada. He achieved PhD in glaciology from McGill University Canada in 1971 and from 1991-1992 served as Coordinator of the International Conference on Water and the Environment, based in the World Meteorological Organization, Geneva. In 2000, he was appointed as Coordinator, World Water Assessment Program, the Secretariat of which is attached within the Division of Water Sciences, UNESCO, Paris.

Changing Climate, Losing Species!



Kathmandu, November 16th, 2010, "I myself cannot judge whether the attitudes of people can be changed or not", these were the final words of the presentation by Dr. Dinesh Raj Bhujju, a leading scientist from Nepal Academy of Science and Technology (NAST). He presented "Biodiversity services and threats from the climate change" in the conference. Dr. Bhujju embarked with a short historical description on Climate Change events. Two different types of hypothesis that proves the extinction of dinosaurs were put forward and one of which was related to climate change; different historical researches proved that the extinction of different species is related with climate change. Industrialization, sharp rise in the use of fossil fuels and deforestation are the main activities of human beings that have increased the total carbon dioxide production into the atmosphere at the global level. He opened the floor to discussion about the climate change and our attitudes to tackle the problems of climate change.

By Pranav Pokharel



Cartoon of the day

A Climate Change Hypocrisy

Pranav Pokharel, Nepal

"It is necessary to change the attitude of luxury seeking carbon emitters not the poor minimalists with ecological footprints smaller than their own foot prints", a participant expresses his opinion at the conference. As the conference is progressing, participants are more expressive and the lecture hall transfigures to a ring where different opinions on climate changes wrestle. When one is a victim of *the low emitters are greatest sufferers*, a trend of climate change, overwhelming feelings are obvious, but what my insanely fanatic thinking realizes is that the opinions drawn had a pre conceived prejudiced credo, "Developed countries caused Climate Change".

When cars were built, developing countries equally enjoyed the savory of these luxuries, the point is directly or indirectly the developing world has enjoyed every progress the developed made which contributed to carbon emission. Accusing the developed world for carbon emission is an act of hypocrisy, given opportunity and technologies the developing would have done the same, emit carbon and vandalize the natural system.

I for one find it cynical when the developing world screams at the top of their lungs and accuses developed for causing climate change and we have been doing this for almost 2 decades now, merely achieved anything. For instance if a country is suffering from water scarcity as a consequence of climate change and is experiencing population outburst on the other hand, the failure to adapt is not the lack of technology. The country should consult a family planning policy to reduce the population instead because provided the best technologies population boom is going to outsmart the technology and eventually in a year or two the adaptation plan will fail. Countries should focus more on ameliorating and exercising on internal facts which persuaded them to strand group of poor and under developed. Blaming the rich and developed is like a kid accusing his friend for cheating in tests when he scores an F and his friend A+.

Indeed the developed countries are the major contributors but these verbal abuses need to curb at some stage and focus should shift on other issues to solve climate change. Perhaps strengthening the government system and planning, reducing population could be the best available method to adapt with existing and available technologies, this makes management docile and efficient.

As the President of The Small Earth Nepal, Mr. Pradhananga stated in the inaugural ceremony, "Climate Change is a global phenomenon which requires unified action", the developing world should realize their internal defects and the developed should take responsibility of their actions. I hope as the conference proceeds, these matters will be discussed more openly among the participants.



Incentivizing Farmers for Climate-friendly Agricultural Practices

S. Arun, Indian Institute of Forest Management, Bhopal, India

Agricultural ecosystems offer the crucial service of mitigating climate change by sequestering carbon in biomass and soil. These ecosystems are also a source of greenhouse gases (GHG), primarily, methane and nitrous oxide. We have the responsibility of investing in protection and amelioration of the climate change mitigating service of agricultural landscapes. A practical way of doing this is through Payment for Ecosystem Services (PES), which is an economic tool for providing incentives to farmers, for agricultural management practices that can either sustain or augment this service. Incentivizing poor farmers to adopt environmentally friendly agricultural practices would result in both climate change mitigation and poverty reduction. Organic farming, conservation tillage, nutrient management, reduced burning and agro-forestry are some strategies for increasing the carbon sequestration potential and reducing GHG emissions from agriculture. However, there are several roadblocks to establishing an effective PES system among Indian farmers, which include small holding size, weak credit system, disintegrated farm holdings, high level of indebtedness, lack of title and erratic production patterns. PES models must include both market and non-market (public and private) mechanisms of incentivizing farmers so that the overall model is sustainable and achieves its environmental protection goals. Linking PES to Reduction of Emission from Deforestation and Degradation (REDD) or Clean Development Mechanism (CDM) is one way of ensuring a stream of incentives for farmers. Another challenge is to integrate global payments in such a model, as the ecosystem service generated has globally pertinent benefits, and avoiding this aspect would lead to global users free-riding on local resources. Evolving effective PES models can help in including farmers in fighting the impending disaster due to climate change.

Attending the conference...

Prof. Suresh Raj Chalise, Advisory board member of International Graduate Conference on Climate Change and People and Nepal representative at International Association of Hydrological Sciences (IAHS). He was former dean of Institute of Science and Technology, Tribhuvan University, Nepal and was the coordinator of Water Program at International Center for Integrated Mountain Development. His works and publications have been mainly in the areas of climate, hydrology and water resources, hazard management and environmental conservation in the HKH Himalayas.



Mr. Duishonakunov Muratally is a senior lecturer at the Kyrgyz National University, Department of Physical Geography on General Hydrology and Water Resources of Kyrgyzstan. Mr. Muratally completed his Post Graduate Diploma on Remote Sensing and Geographical Information System from Centre for Space Science and Technology Education in Asia and Pacific (CSSTEAP) in 2008.

Participant's voice: Is adaptation preferable to mitigation in case of melting of Himalayan Glacier by Climate Change? Why?

Mohammad Arifur Ratman, Bangladesh

Adaptation must be done as mitigation is a very costly process.

Shamimul Islam, Bangladesh

We should definitely go for adaptation, after being adapted to this natural phenomenon we should look towards mitigation.

Iris Cheng, China

Urgency is adaptation but the needs depend on the time and location.

Duong Ngugen Thug, Vietnam

We need to approach both aspects but mitigation is costly.

Anjan Neupane, Nepal

Mitigate direct effects such as glacier retreat and adapt towards indirect consequences such as less productions in agriculture.

Samia Shamin, Bangladesh

Both should be practiced. However, since population are being victimized by climate change, adaptation is needed or beneficial, while mitigation is costly.

Achala Gupta, India

Adaptation is the only one option.

Dr. G.H Amila C.Silva is a visiting researcher at the International Research Center for River Basin Environment, University of Yamanashi. Dr. Silva presented on modeling of the Hydrologic Cycle I and Science Modeling the Hydrological Cycle II on November 15 and 16, 2010 at the conference. He can be reached at amila@yamanashi.ac.jp.



A Rendezvous...



Dr. Dinesh Raj Bhujju, is a leading scientist of Nepal currently at the Nepal Academy of Science & Technology. His areas of expertise are ecology, forestry, nature conservation, biodiversity and region of work interest is the Asia-Pacific. The Eco-Generation team had an opportunity to talk with Dr. Bhujju and has compiled a short interview for our curious readers during the conference.

TEG: As a science practitioner, how do you appraise this conference?

DRB. Looking at the organization of the conference and its participants, personally I found myself much relieved, relieved in the sense that the young generation is taking up the issue (of climate change) so sincerely and with a great deal of dedication. It also demonstrates their ability of handling important events at a larger scale. The conference, no doubt, has impressed the scientific community of Nepal. I can only hope if these youths also focus on real science experiments in generating knowledge. Finally, it is the wisdom what we need to overcome this problem (of climate change).

TEG : How is climate change making impact on biodiversity?

DRB. In a wide perspective, species are the pug-marks of climate, while climate change adds on spectrum on them. The biological diversity we see today is, in fact, a product of climate change forcing adaptation or extinction. Had the Earth not witnessed the climatic roller coasters in its history, neither it would have been a livable place nor lead the evolutionary processes. Our concern today is the rapid deterioration of the environment (example global warming) due to our own misdeed, which is pushing many of the species to the brink of their existence. In brief, climate change is making negative impact on the biodiversity as majority of the species in the ecosystem are losers of the game.

TEG: Is climate change an opportunity or problem?

DRB. Often the problem and opportunity are said to be the two sides of a coin. The climate change is a problem because it is fast dismantling our set-up and development trend so helplessly. However, for an optimist, it is opportunity to discover new knowledge and *eureka* of new technologies. As science understands the reasons behind climate change, for those working with science, it is always an opportunity. Even in a philosophical sense, for some it gives a chance to *nirvana*, while leaving space for others.

TEG: How do you evaluate the climate change research in Nepal?

DRB. That is where I am unsatisfied. Much of the climate change works in Nepal are limited to seminar deliberation, report preparation, media highlights and to some extent awareness building. We lack empirical evidences as we have scarce scientific research conducted in climate change in our condition. We hear and also see a lot of funds being pumped in the name of climate change, but it lacks support to scientific research. The scientific community is bewildered how we are going to adapt and/or mitigate climate change impacts without doing any good science.

Answer of Eco Generation Quiz 2

Mauna Loa, Hawaii, USA and 1958

Congratulations to Mr. **Mohammed Iliwas**, Bangladesh, winner of the Eco Generation quiz 2 by lucky draw.
Thanks to all the participants!

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Eco Generation Quiz 3

How many countries attended the Stockholm Conference on 1972?

Please send your answer at ecogenerationquiz@gmail.com by 10 pm today. Winner will be awarded with an attractive prize.

Media Team

Dhiraj Pradhananga

Pranav Pokhrel

Jeeban Panthi

Piyush Dahal

Nammy Hang Kirat

Mohan Chand

Achut Parajuli

Rajan Subedi

Sarita Karki

Bibishan Rai

Jony Mainaly

The Eco Generation

Newsletter

International Graduate Conference on Climate Change and People, 15-19 November 2010, Kathmandu, Nepal



Inside the issue

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- 3 *Participant' Voice: "Will the Eco Generation Network to be formed at the end of the conference be sustainable?"*
- 3 *Attending the conference*
- 4 *A Rendezvous with Prof. Suresh Raj Chalise*

Highlights

- 1030-1130**
Climate Risk Management: Coping with Uncertainty, Mr. Fakhruddin
- 1430-1215**
Ethics, Equity and Coping with a Changing Climate, Organized by Students
- 1400-1500**
PANEL
Robbing Nature's Bank: Intergenerational Debate or Discussion?, Prof. Suresh Raj Chalise

Fruitful Third Day, a Synopsis

Mr. G. Pierce, researcher from Colorado State University, USA, started the third day's sessions of the conference with a presentation on "Indigenous Knowledge". He presented the comparison of western scientific knowledge with indigenous knowledge and clarified about the use of such knowledge globally. He pointed out that use of indigenous knowledge is being limited by appealing new technology. The delegates from different countries participated in an open discussion forum as he concluded the program with the audience pondering on how knowledge regarding future climate change issue and how it can be assimilated into decision making.

Mr. Murataly Duishonakunov, Kyrgyz National University, then presented on "Changing Regional Hazards" describing the phenomenon of Glacial Lakes in Kyrgyzstan due to the changing climate. "Glacial Lake outburst events are likely to hit Kyrgyzstan and causing devastating effect as most of the people live on fragile slopes of river banks," he explained. He also highlighted the drying of Lake Aral, and the trans-boundary water relationship between Kyrgyzstan and Uzbekistan along with contentious issues between the two governments on changing climate.

Further, Mr. S.H.M. Fakhruddin discussed disasters in the South Asian region such as the flood of Pakistan, during his presentation on "Disaster Management and Early Warning System". He also stressed the importance of early warning system to reduce the impact of devastating events. "Some countries including Nepal, Bangladesh, India and East African countries now have new meteorological network" he suggested as the conclusion of his presentation.

"Youth are defined and well accepted as an agent of change, but the youth agenda is not well penetrated into many systems" Mr. Tek Jung Mahat, Node Manager at APMN, ICIMOD shared his opinion in his presentation titled "Youths and Mountain Climate Change", adding more energy to the participating youths. He also asked the organizers and delegates to include the issue of youths on the conference declaration.



Eco-Generation on the Move

Some remained inside the hall and some outside, wherever they were, all were engaged in discussions regarding climate change. Some were busy presenting an argument; some were supporting the ideas while some were debating about the climate change mitigation versus adaptation. The intensity of discussions was as high as a miniature version of COP. Altogether the whole mass was divided into nine groups for the group discussion in various dynamics of climate change. "You have to choose only one issue among the given", these were the words of Sameera Jaib, a delegate from Pakistan who was facilitating the discussion session. The discussion was a component of the proposed Eco Generation Network which is going to be established at the end of the conference for communicating climate change worldwide.

The major issues under discussion were climate change in relation with biodiversity, disaster, economy, gender etc. Delegates were raising their country's common voice for addressing climate change. The following day, they will be justifying their selected issues and the climate message to their respective heads of state. Each group will be discussing the assigned issue and will be presenting among the participating delegates on Friday. As a result a common document shall be prepared which will then be sent to Mexico for COP 16.



Climate Injustice and a Way Forward COP16

Jeeban Panthi, The Small Earth Nepal

The effects of climate change are and will continue to be experienced unevenly around the globe. The Inter-governmental Panel on Climate Change (IPCC) declared that the warming of the climate system is unequivocal (IPCC, 2007a). Unfortunately, those that have contributed the least to the problem will be affected the most. Such type of unfairness gives rise to “climate injustice”. Injustice is in two forms: International and intra-national. The unequal impacts of climate change in between the countries is international whereas intra-national injustice is in various social disparities like caste, gender, geographical locations, age group within a country. For example, the problem faced by a child in Bangladesh may not be equal to the problem faced by a youth in South Africa. As scientists have already declared that the impacts of climate change will be more rapid in the future so younger generations will suffer more by no fault of their own. Even more, developing countries like Nepal emit very little but face the negative impacts first and the most. The developed countries have masses of money so they are earning more by operating their technology and plying vehicles thereby emitting more greenhouse gas. Is it, in actual sense, not injustice? Melting of glaciers, formation and expansion of glacial lakes, impacts on hydropower generation, down fall of agricultural productivity, loss of bio-diversity and changes in composition and shifting of forest are the exclusive impacts of climate change in developing countries like Nepal. Those impacts have been seen fewer in developed countries because they do not have such sectors to be impacted negatively or they have already been shifted to the another technology where climate change hits less like nuclear power plants for electricity. Further more, developed countries have more economic resources to adapt with the extreme impacts of climate change but a lacking fund aggravates problems making it more severe in developing countries. Scientists have established that the changes in global climate being experienced by the world today are in all likelihood due to over a century of indiscriminate pumping of carbon dioxide and other greenhouse gases into the atmosphere by developed countries in their pursuit of economic development. The global debate over who should take action to address climate change is extremely precarious, as diametrically opposed perceptions of climate justice threaten the prospects for any long-term agreement. Poor nations fear limits on their efforts to grow economically and to meet the needs of their own people, while powerful industrial nations refuse to curtail their own excesses unless developing countries make similar sacrifices. Meanwhile, although industrialized countries are responsible for 60 percent of the greenhouse gas emissions that contributes to climate change, developing countries suffer the “first and worst” effects of climate-related disasters, including droughts, floods, and storms, because of their geographical constraints. To address such disparities and form effective climate policy, after fifteen COPs the impact is almost ZERO. So, we should raise our voice for such injustice to have a better negotiation and formulation of policy through COP-16 to be held in Mexico after a few weeks.

Click of the Day



By Pranav Pokharel

CARTOON OF THE DAY

Monkey business and the planet..... after all ladies and gentlemen bear same ancestral instincts

Climate Change-A Global Problem and My Cogitation

Mohammed Iliya, University of Dhaka, Bangladesh

We all have been dreaming dreams of a world, full of peace, justice, equity and prosperity for a long time. But these dreams had been wrecked at initial stage. Still, people are used to dreaming their dreams, although there are lots of obstacles. Peace and prosperity is still a far cry in the world. We know global issues are problems without passports and climate change is the most discussed global issue that has ever existed and as it is the hottest topic throughout the world now, we are all now beginning to see and feel the effects of it. Climate change is the biggest threat to all our futures. It will affect every individual, every family, every community, every business and every country. It is a reality and is a subject of enormous complexity that links large numbers of physical, chemical and biological factors in a planet-wide system. It is a global problem and requires a global solution. Climate change mitigation is a global public good, and requires a global solution built on common but differentiated responsibility. Addressing climate change requires all nations, developed and developing, to work together toward a global solution.

Many major steps forward in society have been achieved through positive thoughts and determinations. We can't simply rely on others to solve climate change - it is time for us all to come forward and it is high time to get our hands dirty. We, young people around the world, have a strong understanding of the critical development issues facing by us, our peers and communities and are empowered with the knowledge and skills required to bring about positive change in own community and the world at large. Obviously, when young people come together to make a difference, the results are quite unique. I know this is the generation that has the most at stake when it comes to the impact of global warming. This generation, like us, never went through the doubts about global warming...I see it as an opportunity as a generation to take proactive steps to what I see as the definitive challenge of our time.

Attending the conference...



In November 2007, **Professor Juan Arratia** was awarded the Presidential Awards for Excellence in Science, Mathematics and Engineering Mentoring at a ceremony in the White House in Washington DC. He was awarded an MSc in Engineering from Louisiana Tech University, Ruston, Louisiana, in 1979 and a Ph.D. in Electrical Engineering from Washington University, St. Louis, Missouri in 1985. He is available at um_jarratia@suagm.edu.

Lareef Zubair is a M.S and a Ph.D. from Yale University, U.S.A. in 1989 and 1993 respectively. He is an associate Research Scientist of Climate Adaptation at IRI Prior to arriving at the IRI at the end of 1999; he was a Post-Doctoral Associate in Mathematics and Mechanical Engineering at Yale University and a Senior Lecturer in Environmental Engineering at the University of Peradeniya, Sri Lanka. He can be available at lareef@iri.columbia.edu.



Participant's voice: "Will the Eco Generation Network to be formed at the end of the conference be sustainable?"

Bapon Fahkrudin, Thailand

Yes, Block System, facebook can be used for that and if you have the interest and put a value on then it will sustain.

Govinda P. Lamichhane, Nepal

It depends on you and how relevant the issues are and of course on the mechanism and a good initiative as well.

Kelly Ann Lopez, USA

Depends on what people want, should sustain through internet and other means of communications.

Baikuntha Chalise, Nepal

Yes it should. Frequent communication is necessary and so are the news updates.

Md. Faisal Akber, Bangladesh

Completely depends on interest. Present is the age of communication, so if all initiate and contribute it should sustain.



A Rendezvous...



Prof. Suresh Raj Chalise, Advisory Committee member of the International Graduate Conference on Climate Change and People, is the Nepal representative at International Association of Hydrological Sciences (IAHS). He was former Dean of Institute of Science and Technology, Tribhuvan University, Nepal and was the coordinator of Water Program at International Center for Integrated Mountain Development. The Eco-generation team talked with Prof. Chalise for our curious readers:

TEG: You have been present for almost all the sessions of the conference until now. What feature of the conference attracted a prolific person of your caliber most?

Prof. Chalise: Mixture of several disciplines was an interesting part for me. Normally we have researchers at a conference and it is much of a professional capacity development but in this conference we had presence of students, multiple disciplines including political science, sociology etc. Interacting to learn their prospective in Climate change and Global Warming with them was really refreshing.

TEG: You have been in the advisory committee of the conference too. Has the conference matched your expectations?

Prof. Chalise: I am extremely happy the way the conference is proceeding and the organization itself is progressing in a very smooth manner. The participants are engaging more in the activities and the organizers are taking care of the participants well.

TEG: Do you think the graduates participating in the conference be focused on personal capacity building or contribute towards nation and societal building?

Prof. Chalise: Well, you see we have to realistic, I think it is both. The motto of the conference is to motivate the students to work in collaboration with students of different region moreover in a global scale but when they arrived here the interest must be increasing personal prowess. However, as the conference concludes, I am very hopeful they will work in a network.

TEG: Despite your age you still contribute as a motivated young man in early 20's. What has been your inspiration to contribute with such passion towards environment and its conservation?

Prof. Chalise: Frankly speaking, it has been the interaction with the student. When you interact with young people, sometimes you get carried away by their vigor and forget your own age. Each time I meet a young batch of student I feel like getting younger by two years or three years and this is how I have been motivated and tried to contribute with similar passion. The other thing is the concern and the interest in my own subject which I started 37 years ago since a time climate change was not mentioned at all.

Answer of Eco Generation Quiz 3

133 Countries

Congratulations to **Md Faisal Akber**, Bangladesh, winner of the Eco Generation quiz 3 by lucky draw.
Thanks to all the participants!

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Eco Generation Quiz 4

When did the cabinet meet of government of Nepal hold at Kalapaththar, the Mt. Everest to highlight the issue of climate change?

Please send your answer at ecogenerationquiz@gmail.com by 10 pm today. Winner will be awarded with an attractive prize.

Media Team

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Jeeban Panthi

Piyush Dahal

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Rajan Subedi

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Kanchan Shrestha

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The Eco Generation

Newsletter

International Graduate Conference on Climate Change and People, 15-19 November 2010, Kathmandu, Nepal



Inside the issue

- 2 *Climate Risk Management – Coping with Uncertainty*
- 3 *Participant' Voice: "Was COP 15 a Success? What you expect from the COP16?"*
- 3 *Attending the conference*
- 4 *A Rendezvous with Prof. Gordon Young*

Highlights

0900-0945

"Is There Value to a Happiness Index? The Case of Bhutan" by Trishna Jaishi

0945-1015

"Geo-Engineering the Earth to Meet Our Needs and Wants" M.H. Glantz

1045-1130

Students Prepare COP 16 Statement (Groups) Presentations of Groups on COP 16

Panel discussion as a miniature of COP

A panel of five from a diverse background forming an intergenerational group and an eager mass of 150 participants were ready to pounce on the microphone as soon as J. Fanning finished addressing the need of global concepts to protect the biodiversity of the world.

Previously in the session, Dr. M.Glatnz discussed on how the people torment the nature. "We need nature but nature doesn't need us" he said and emphasized on good conducts for the best preservation of nature with youths' given a role to play in nature conservation. Also in his session, Dr. Glantz generalized the dark side and bright side of the climate with developing and developed countries experiencing the categories respectively.

"The problem of climate change is due to biasness of the developed countries towards the developing countries", quoted Prof. Suresh Raj Chalise during the program as he accused the developing countries for being eco-centered and imbibing the natural resources for industrialization. During the session he also admitted the chasm between the developed and developing world and suggested for a network at local, national, regional and global for a sustained, concentrated and coordinated actions based on scientific facts and figures.

The discussion session was one of the most contradictory yet brisk sessions of the conference with the graduates and panelist both refuting and agreeing on different facts and ideas. Dr. G. Young who enjoyed the discussion as a participant gave different and diverse examples from nature to religion to refute the claims by Dr. Glantz and so did Dr. Glantz tried to defend his words, soon the graduates joined the debate till the program concluded at 3:00 pm with a common consensus that discussions are ideas, logics and fun.



Social Network Mobilization Drill

The conference is almost at its end, "Fixed time is not necessary for the education" explains Gregory Pierce, a young researcher, "People do not have access to education due to constraints like physical infrastructures and educational materials. Thus, to provide the education for all, the SpareTime University concept was originated".

The SpareTime University is not bound with any rules and regulations. The concept can cover the large number of people of the world who are deprived of the present education. The education mainly focuses to teach them practically by using 5 A's as Anything, Anyone, Anyway, Anywhere, Anytime. "There is no use of 3R principle of reading", he adds.

To continue with the discussion, J. Fanning and Iris Cheng entered the stage and introduced ways in which people can communicate through social networking sites like facebook, twitters etc. As soon as J. Fanning and Iris Cheng completed their presentation, the participants were divided into different groups and were asked to come up with innovative ways to use these social networking to mobilize against climate change. This drill was purely capacity building and the motto of the program was to help participants come forward with ideas to connect sufferers of Climate Changes in their community and across the globe.



Climate Risk Management –Coping with Uncertainty

S.H.M. Fakhruddin, a Hydrologist at RIMES in his presentation focused on climate and societal interaction, dealing with uncertainty and enlisted the steps involved in designing a Climate Risk Management program. The coping mechanism may be agricultural adjustments, non agricultural adjustments at household and community level and support from the local government, NGOs etc while in beyond the community level. National government, foreign aid can play important role. He gave examples of drought in India and policy responses. Similarly flood impact and institutional response in Bangladesh was discussed by the Mr. Fakhruddin. He further added the impact of El-Niño in Philippines and Indonesia in rice production. Developing countries are hitting hardest as population of these countries is also growing very fast. 31.6 % of urban people are live in slum.

For the better understanding Climate Variability and Change it is necessary for Advancement in Prediction and Monitoring Science through generation of skill-full, reliable and location specific seasonal climate forecasts through statistical and dynamical schemes, Development of real-time monitoring systems to track the nature of causes and impacts (eg. Satellite meteorology and remote sensing techniques) and development of climate change scenarios through Global Circulation Models (GCMs).

Advancement in Risk Management Technologies can be done through new generation system analysis tools for climate risk analysis; impact assessment and tailoring alternate management/adaptation practices (eg. models for crops and eco-system dynamics), economic models and decision analysis tools to guide in managing risks (eg. models for resource optimization), development of communication and extension technologies (eg. communicating probabilistic climate information).

Although there is Climate Risk Management- Challenges like Risk Communication should be easy access to everyone. Systematic process should be followed by the every process in the field of the risk and hazard related with different issues. According to Mr. Fakhruddin the systematic process may be the site selection, analysis of climate related risk, assessment, site profiling, institutional engagement and capacity development, generation and delivery of tailored information products, climate risk management school, sustaining activities etc.

CARTOON OF THE DAY



Click of the Day



PUBLIC TRANSPORTATION A Mean to Curb the Unfavourable Climate Change

Achala Gupta, Tata Institute of Social Sciences, Mumbai, India

The ever growing world of future betterment is facing the crisis of the time in terms of inequity, poverty and the growing unfavourable climate change. All of these factors doubt on the so called secured future of growth and development and compel us to revisit our plans and ways of achieving progress. Amongst so many available choices we also had the choice to change, and this talk to change needs to be deliberated and made into action rather than talking idealistically and putting back without any appropriate and necessary action in this regard.

Intergovernmental Panel on Climate Change (IPCC 2007)'s Assessment Report states that "warming of climate change is now unequivocal as is now evident observations of increases in global average air and ocean temperatures, widespread melting of snow and ice and rising global average sea levels. It is extremely unlikely that global climate change over the past 50 years can be explained without external forces." It further entails that transportation fuel contributes to the 14 % In terms of annual Green house gas emission, which amongst the total carbon dioxide emission contributes to the 19.2 % alone.

Observing the Indian development, the popularization of public transportation in terms of increasing its usage is a biggest challenge of the current time. In fact private mediums of transportation have not replaced the public but merely shown its dominance over the latter. Investments in public infrastructure (building roads and flyovers) swarmed up the number of private vehicles, which resulted into downturn of road speed, increased pollution and congestion.

There is the strong need of revitalization of public transportation via giving it the new buses, reforming the profitability and management, overhaul private bus transportation system by procuring modern and convenient buses. We must get the change before it cost us Earth.

Attending the conference...

Mr. S.H.M Fakhruddin is a hydrologist with specialization in water resources management, climate change risk management, and disaster management. His recent work involves providing technical expertise for generation and application of long lead flood forecasting techniques for the Region, development of end-to-end early warning system for RIMES member countries and is a certified Instructor of ICS from United States Forest Service (USFS).



Dr. Sangam Shrestha is an Assistant Professor of Water Engineering and Management at the Asian Institute of Technology (AIT). He holds a PhD in Integrated River Basin Management (IRBM), University of Yamanashi, Japan (2007) and has bulk of publication and researches. Dr. Shrestha can be available at sangam@ait.ac.th.

Participant's voice: "Was COP 15 a Success? What you expect from the COP16?"

Krishna Dev Hengaju, Nepal

Not successful. More Specialists, researchers should be participated in COP-16 who has the real idea rather than the politicians.

Ankit Joshi, Nepal

Not successful. Youth, researcher and specialist from climate change background should participate in the COP-16 to make it successful.

Dilli Ram Bhattarai, Nepal

Yes, it was successful as developing countries received the message to unite for their common goal. COP-16 will be successful if they unite for their common agenda.

Subash Duwadi, Nepal

Not Successful. Developed countries like USA, Canada must pay tax or provide donations for their emissions to the developing countries that are vulnerable due to climate change. Developed countries must be bound to pay for its success.

Sujit Kumar Jha, Nepal

COP-15 hadn't given any outcomes; During the COP-16 developing countries must be able to convince the government of the countries like USA, India, and China to control the global warming..



A Rendezvous...



Professor Gordon Young is currently the president of the International Association of Hydrological Sciences (IAHS) and professor at the Wilfrid Laurier University, Waterloo, Canada. In 2000, he was appointed as Coordinator, World Water Assessment Program, the Secretariat of which is attached within the Division of Water Sciences, UNESCO. The Eco-Generation team has compiled a short interview with Prof. Young for our curious readers

EGT: What attracted you towards this conference?

Prof. Young: The thing that attracted me to the conference is it was a graduate conference, focusing young people. Though older people have a little more experience to tell, it is youth who shall be leaders in a period of 10-20 years. Many conferences I have attended have major participations of experts and professionals, where as this here is a conference for young people, which seems quite refreshing.

EGT: What are your experiences from graduates at the conference? A problem with graduates in this part is once they get involved in western countries for education they get settled there and the nation loses its adept manpower, what is your view on this issue because this has been a type of youth culture, at least in Nepal?

Prof. Young: I expect the graduate students to be very inquisitive and giving innovative suggestions to the societies as they shall be running the tomorrow. As you mentioned, yes most of the graduates do go abroad for higher studies and but I have seen many of them comeback after staying for few years and contribute in their home regions.

EGT: Does IAHS have any plans in this region of the globe?

Prof. Young: As you may know the IAHS has nine separate commissions and one of them is on snow and ice hydrology and it is that particular organization which is probably most interested in Himalayan region. The commission is particularly interested in catastrophe from melting of ice and has many programs regarding the region, for e.g., I myself have convened a conference in Kathmandu in 1994 and produced a book that helped to guide a debate on snow and ice of the region. Another commission on the subject is surface water commission which works on rivers, lakes, dams which indeed is interested in development activities in this region. Yes, we definitely have numerous programs continuing in this region.

EGT: Your motivation to continue working even at such age?

Prof. Young: I sure did had few experience which was worth sharing to younger generations and if you have accomplished a certain amount in science and publishing, then I think you have some responsibility to the society to try to give going as long as possible, even if you retire. I think it is essential for younger generation to draw some conclusion from older generation for a conclusion and I think it's our responsibility too to carry on as long as possible.

EGT: So much been heard and talked about Climate Change. Nonetheless it is true Climate Change is a multidimensional effect. In your personal views how have you taken climate change?

Prof. Young: My interest in Climate Change effects is especially on water resources so I look for hydrological issues. I am interested in particular questions like, is the total supply of water sources melting from the Himalayas changing because of Climate Change, is there seasonal variations in the mountains that are causing such changes and does that change the time when snow and ice melt which affects the flow of water. Does the flow variation of water changes with time and affect farmers downstream or are the really floods from mountains triggered by Climate

Answer of Eco Generation Quiz 4

4th December 2010.

The winner is **Achala Gupta** from India. Congratulation to the winner and thank you all the participants!

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The Eco Generation

Newsletter

International Graduate Conference on Climate Change and People, 15-19 November 2010, Kathmandu, Nepal



Inside the issue

- 2 *Climate Change: Why Are We So Vulnerable??*
- 3 *Environmental Education: A Need of 21st Century*
- 3 *Participant's voice: "What is the key learning from the conference?"*
- 4 *A Rendezvous with Iris Cheng*

Conference Gives Rise to Eco Generation Network

Dilli Ram Bhattarai, The Small Earth Nepal

International Graduate Conference on Climate Change and People has been concluded on 19th November with the message of going together for climate action instead of blaming each other. The role of academicians and especially graduate youths has been highlighted the most by the conference. Finally, a network, Eco Generation, to communicate climate change, has been started among the delegates.

The Eco Generation Network is envisioned as a network comprised of students, teachers, and scientists and launched as a product of the International Graduate Conference on Climate Change and People, held from November 15-19, 2010 in Kathmandu, Nepal.

Climate change and its impacts have far-reaching consequences for ecosystems and societies. Reports of severe and prolonged droughts, untimely flash floods, receding glaciers, extended heat waves, and other climate-related impacts are becoming more common around the globe; unfortunately, these reports typically also coincide with varying degrees of death, morbidity, and destruction of property in affected areas, regardless of their wealth or capacity. As such, issues related to climate change have increasingly captured the attention of governments worldwide; indeed, governments have just begun to respond to the threats of changing climates and too often are hindered in their responses by much internal wrangling. The duty to act decisively to this greatest of threats, therefore, will most likely fall on the up-and-coming generation of decision makers, many of whom are today's graduate and undergraduate students. These students represent the core of the "Eco Generation".

To further the advancement of this core, however, its members require a common platform through which they might learn from and share information both amongst themselves and with other researchers and practitioners. The Eco-Generation Network is intended to serve as a platform to encourage, empower and foster the development of its members, who are expected to join from a range of climate-, water- and weather-sensitive fields, including agriculture, water, energy, disaster preparedness and response, human and ecosystem health, social resilience, policy and economic applied sciences. It will enable the more effective cultivation of actionable research and practical results to meet the challenges of climate change as these challenges will likely increase in the future.

The main objective of the Eco-Generation Network is to provide a common platform to develop unified strategies to effectively address climate and environmental issues. Other objectives include identifying critical environmental issues on the local and regional level on the basis of importance and observed or projected impacts and highlighting environment- and climate-related technical, political, cultural and social issues in order to raise awareness about those issues.

The Eco-Generation Network shall undertake numerous activities that can grow in number and scope over time. Main objectives of the network are to provide students, teachers and scientists with a common platform to share information and new research findings on environmental issues and maintain a database of institutions and research related to the environmental and climate issues. The network shall be seeking to encourage and increasing its membership and organize online discussions on various environmental issues and subjects.

Delegates capacitated in the International Graduate Conference on Climate Change and People will be the members of the network. Interested graduate students will be invited to become members of the network. Similarly, interested environmentalists and environmental activists, graduates from various disciplines, professional and youth organizations, and academic institutes can join the network to make it wider and more interactive.



Dear valued readers; it is our last issue of the newsletter from the conference. We are now in the process of forming a network among like minded people throughout the world to establish climate resilient society promoting sustainable lifestyles. Let us know if you have any idea for sustaining the network.

Write us at

info@smallearth.org.np



Climate Change: Why Are We So Vulnerable??

Mohan Chand and Rajan Subedi, Nepal

Mankind is confronted with a twofold challenge: The global energy demand has to be met, while at the same time preventing climate change, before it becomes uncontrollable. The main cause behind climate change is combustion of fossil fuels to yield energy. With the rapid industrialization powered by fossil fuels, developed countries are the ones mainly responsible for global warming. Although developing countries have a less direct impact on global warming, in the last few decades, climate change has tremendously impacted the glacier retreat. Continued climate change will cause major changes in freshwater flows with dramatic and adverse impacts on biodiversity, people, and livelihoods. For developing countries like Bangladesh, Nepal, Philippines, Afghanistan, Burma, Cambodia, Pakistan etc, climate change is not just an environmental phenomenon but also an economic, social and political issue. These are the most vulnerable countries on the Earth with regard to climate change, yet the level of understanding and awareness on the issue is very limited.

COP-15 was held on December in Denmark nearly a year ago. It must be able to develop a new and concrete project to identify specific threats posed by rapidly retreating glaciers to vulnerable communities, ecosystems, and economic sectors. It must also initiate a community driven management response. With this in mind, least developing countries must be able to bring realities of climate change impacts closer to the public, policy makers and supporters. LDCs like Nepal must be able to raise voice to tackle future risks. LDCs contribute least to green house gas emission, but they are among those at the highest risk from its impact.

The United Nation Environmental program (UNEP), International Centre for Integrated Mountain and Development (ICMOID) say more than 20 Himalayan glacier lakes are at the risk of bursting because of rapidly melting glaciers in Nepal. This will lead to major changes in freshwater flow with a dramatic impact on biodiversity, people, and livelihoods. Floods, droughts, and lack of safe drinking water are all going to be affected. Most of these countries wealth in biodiversity earned its recognition as a natural showroom and Natural Biological Laboratory by the world. Climate largely determines the distribution of species, ecosystems, and flora. Any climatic change will shift these distributions, which will be hampered by extinction for some species and ecosystems. Decrease in forest cover lead to increase in the amount of carbon dioxide and its will be more difficult to balance GHGs in the atmosphere and minimize the impact of climate change. Similarly, forests are unable to adopt the rapidly changing conditions caused by climate change, making trees more vulnerable and fragmentation. Thus, we are among those at the highest risk from its negative impact. Unless the country leaves to adopt then people will suffer greatly. Government must think about the local programs to tackle the serious impact of climate change. It is necessary to teach people to grow new crops, introducing drip irrigation, and water storage schemes, trying to minimize deforestation and renewable energy programs. Government only should not aspect help from the donor as it should have new ideas or programs to lead in COP-16, which were addressed in COP-15 from LDCs side. It should not be like beggars but should have the local programs suitable to all and easily practicable. Different LDCs are exposing their impacts through cabinet meeting in different manner like cabinet meeting inside water in Maldives and cabinet meeting at the base camp of Mt. Everest in Nepal. This may be the interesting side to expose their vulnerable impacts of climate change to the world but this type of meeting were not able to formulate sustainable type of programs for LDCs. Now it's urgent to formulate the ideas to convince developed countries in controlling the GHGs emissions.

Different personals from different countries, participating in International Graduate Conference on Climate Change and People in Kathmandu, Nepal, urged for the formulation of the environmental policy to tackle the present impacts of climate change in the developing countries. If we save our earth for us and our future generation we may have better life condition. Different participants formulated different ideas that will be implemented in their native nations. This conference focused on the action rather than the formation of policies. The knowledge shared during the conference may be successful if the participant's became able to show their capability as per their documentation during the conference. The way of sharing knowledge will be successful as the graduates are the young leaders who will be leading the nation nearby the future. **“One cannot get success if you are not united”** the message that we (LDCs) must learn from the Cop-15 and we should be able to raise the common voice for the common problem in the upcoming Cop-16.

Clicks of the Day



Environmental Education: A Need of 21st Century

Arup Ratan Dash, Bangladesh

The term environmental education (EE) is now-a-days in regular use all over the world. To make the planet earth sustainable for living, there is an urgent need to understand all the issues of environment and their inter relationships. EE can help make people understand these developments and their causes as a prelude to taking appropriate forms of action. In Tbilisi Declaration, it is said that, "Environmental education is a learning process that increases people's knowledge and awareness about the environment and associated challenges, develops the necessary skills and expertise to address the challenges and fosters attitude, motivation, commitments to make inform decisions and take responsible action."

EE is a tool to create a greener world. It refers to organized efforts to teach about how natural environment functions and, particularly, how human beings can manage their behavior and ecosystems in order to live sustainably. The term is often used to imply education within the school system, from primary to post-secondary. However, it is sometimes used more broadly to include all efforts to educate the public and other audiences, including print materials, websites, media campaigns, etc.

In recent year EE has begun to draw attention in most of the countries of the world to ways by which human activities should be monitored and adjusted in order to make life on this earth sustainable. And important developments have been taken place in promoting it informal, formal and non-formal educational contexts.

Today's students are tomorrow's leaders and decision-makers. They need to learn and practice the skills necessary to protect, preserve and restore the environment quality. EE is also needed for all citizens of the country for a sustainable development. And EE will lead to the acquisition of knowledge, the development of analytical skills, the beginning of environmentally conscious attitudes and ultimately, a responsible behavior.

Participants' voice: "What is the key learning from the conference?"

Md. Jahirul Islam, Bangladesh

Networking the people worldwide for communicating climate change which is really motivates me to combat climate change.

Md. Iliyas, Bangladesh

The conference itself is an outstanding one, perfect time management. I learnt a lot with this conference which will reinforce my future work. It is time to work together.

Nisha Amatya, Nepal

The conference is great and I am so grateful to participate in such a conference. I could get a lot of message to the society and feeling that I do have more responsibility towards the society to take lead for combat against climate change. We people are facing its impacts thus; we should come up with the united voice instead blaming each other.

Abdul Almamun, Bangladesh

In the conference, more sessions were technical so please make them more social in the future so that a lay man like me can understand the climate science easily.

Niranjan Bista, Nepal

Interaction with researchers, professors and networking among this intellectual group is the main learning from the conference. Climate change is not only the environmental problem; it touches every dimensions of national and international level.

Climate Change: Challenge to Agriculture

Sujan Timilsina, Nepal

Agriculture is undoubtedly the heart of human civilization since its beginning. Through mechanization and commercialization in agriculture; it is feeding the increasing world population. Recent studies has concluded that increased frequency of heat stress, droughts, floods, etc. negatively affect the crop yields and livestock. Climate and agriculture are directly connected through temperature, precipitation, CO₂ concentration, pollution and change in climatic variability. Since few years back in Nepal, statistics have shown increase in production of low land rice in the hilly region due to increased mean temperature. It's not time to be happy but it's a warning for the upcoming ecological catastrophe we will face by heating our environment. Changes in climate can have initial increase in productivity of some crops by increasing the mean seasonal temperature, increased amount of CO₂ up to a certain level, etc. but will lead to increased evapotranspiration, long drought periods, and suffocation from carbon dioxide and so on. The main effect of climate change can be seen on the winter season crops which are going to get less growing period as they will reach the climatic threshold.

The consequences include melting glaciers, more precipitation, more and more extreme weather events, and shifting seasons. The accelerating pace of climate change, combined with global population and income growth, threatens food security. Higher temperatures reduce yields of desirable crops while encouraging weed and pest proliferation. Changes in precipitation patterns increase the probability of short-run crop failures and long-run production declines. There will be gains in some crops in some regions of the world; the overall impacts of climate change on agriculture are expected to be negative, threatening global food security. Especially the winter crops will be threatened.

Developing countries won't be able to cope with these changes in climate. These countries are compelled to bear disaster without any significant share in present climate change. Climate change will result in food crisis, insecurity, increase in price of food, malnutrition, increased mortality and will prove itself as the biggest threat to the human race.



A Rendezvous...



Ms. Iris Cheng from Hong Kong is presently working at the Green Peace International and is one of the green icons and had presented a paper at the conference. The Eco-Generation team has compiled a short interview with Ms Cheng for our curious readers:

TEG: You probably attended the other conferences also, so did you find any different atmosphere of this conference as compared to others?

Iris Cheng: This conference is the integration of the professional knowledge sharing with experts from different sectors like hydrology, ecology, science and technology, social aspects as well. Knowledge from this conference may helpful to students particularly from science background.

TEG: What is the difference between scientists (environmentalist) and activists?

Iris Cheng: Activists and scientists are the both required for any field for integrated development. They are like two parts of a coin. Dr. Mickey Glantz showed us well that both are necessary for application of existing and discovered knowledge. Science should be changed into activists. Knowledge is power and it helps to analyze the existing situation to conclude the alarming condition of the climate change. Activism without solute evidence and scientific knowledge cannot be possible and knowledge without application and sharing and understanding of the world without action is useless.

TEG: What is your organization's priority and action plan for this south Asian region? Do you have any prioritized sectors and action plan?

Iris Cheng: In south Asian region, we only work in India at the moment and our main action plan is prevention of the climate change. We work on try to transition to India towards the energy efficient, decentralization of the industries, which currently are using coal and nuclear power. So we try to give emphasis on energy efficient technologies lowering the production of the greenhouse gas emission.

TEG: Every person from every sector have own definition of the climate change, what is your perception about definition of the climate change?

Iris Cheng: Climate change is a crisis that develops through the development activities that is completely depend on the fossil fuels. Mostly during the 1850s, most plants were fired by coal and caused the pollution, but now we have different technologies and different option, so we can choose the better technology and can minimize changing climate.



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Annex 5: CONFERENCE DECLARATION

International Graduate Conference on Climate Change and People

15–19 November 2010, Kathmandu, Nepal



“Declaration to COP 16 Policymakers” from University Youth on the “Roof of the Planet”

As we watch the present ruling generation grapple with policy responses to a human-induced warming of the planet’s atmosphere, we are deeply concerned that the voice of our generation, the Eco-Generation, is not being considered. Yet it is our common future with which today’s policymakers are playing. Our generation, born in the 1980s, has been totally immersed in bad news about the environmental wellbeing of the earth’s natural condition. We have equally been awash in platitudes about poverty reduction, sustainable development, renewable energy desires and prospects, and the urgency to reduce carbon emissions. What we have seen, however, is much talk, little action, and fewer successes. We urge that you, who are charged with the responsibility of making policies today, listen to us, involve us, hear us, and treat us, who will suffer the consequences of your decisions long after you are gone, as equal partners as we head together into the second decade of the twenty-first century. We have leaders; we need guidance and mentoring. Give us our rightful place at the negotiating table.

The following statements are taken from deliberations among more than one hundred and thirty students from seventeen countries in Greater South Asia and beyond who participated in the “First International Graduate Conference on Climate Change and People” held in Kathmandu, Nepal in mid-November 2010*.

LISTEN

1. **Governments must stop blaming each other** about various aspects of climate change and act positively to reduce collectively their carbon emissions.
2. **Stakeholders are not political pawns. They not only have voices but also have things to say** about their experiences with change —locally, regionally, and globally.
3. **Foresee and—in the near term—prepare strategies & tactics to ensure that viable livelihood options** are available to vulnerable communities.
4. **Pay attention to locally-defined community needs, respecting “bottom up” inputs and outlooks.**

UNDERSTAND

5. **Reducing uncertainty in regional climate change science is urgent and is dependent on intensive moral and financial research support.**
6. **Awareness-raising, though necessary and urgent, will by itself prove insufficient** for human communities to cope with the impacts of changing climates.
7. **Indecision is not a strategy;** coping effectively with the foreseeable causes and consequences of global warming demands more than the status quo of ‘muddling through’.
8. **Decision-making processes must be accelerated to match rates of change,** as rates of change can often be as important to societies as magnitudes of change.
9. **Women, children, and marginalized people are the earth’s most vulnerable groups** and special provisions and mechanisms must be developed for them.

ACT

10. **Prevent the development of new GHG-emitting activities;** otherwise, steps to mitigate and adapt to climate-, water- and weather-impacts will prove insufficient.

11. **Promote the sustainable development and use of eco-friendly ways of living as well as technologies that support those ways.**

12. **Develop mechanisms to better manage voluntary as well as hazards-related forced internal migrations** that result, whether directly or indirectly, from environmental changes, regardless of their causes.

ENGAGE

13. **Building individual and institutional capacity empowers localities and regions** to develop community-level strategies to adjust to changing climates.

14. **Incorporating indigenous ways of knowing and understanding the world into the decision-making process** clarifies local-level consequences of climate-related impacts, making those impacts foreseeable and therefore preventable.

15. **Indigenous ways of knowing and understanding the world provide insights into how local-level strategies have been developed to cope with past climate changes**, especially over the last 40 years.

16. **Invention, as well as transfer, of innovative technologies expands the tools** available to societies to cope with climate change's impacts.

EMPOWER

17. **Expand beyond narrow economic indicators to include the numerous social and cultural factors that influence quality of life and standard of living.**

18. **Train and educate vulnerable and marginalized populations**, in both rural and urban areas.

19. **Connect youth to both local and global knowledge systems**, thereby endowing them with a range of wisdom from which to draw and develop their generations' coping strategies well into the future.

EMBRACE

20. **Recognize the sharp increase in interest and involvement of younger generations through social networks; include youth as partners** in the climate change decision-making process.

21. **Present and future environmental issues demand intergenerational representation** for effective negotiation and implementation.

IMPART

22. **Share knowledge of climate adaptation, mitigation, and prevention across borders.**

23. **Enhance the use of a wide range of informal as well as formal channels of communication for both rich and poor populations.**

24. **Encourage the media to pledge to assist in socially responsible free training and education of the public.**

25. **Provide economic incentives to climate-related refugees** in the form of a Climate Change Adaptation Fund. Such a fund must be distributed in a fair and equitable manner according to severity, regardless of population size.

The *First International Graduate Conference on Climate Change and People* was organized in Nepal, the roof of the planet, from 15 to 19 November 2010. The conference was attended by one hundred and thirty graduate students **from seventeen countries** from Greater South Asia and beyond and focused on multidisciplinary capacity building on climate change and people. Students participated in lecture sessions, interacted with experts, held group and panel discussions, and formed an Internet-based social network for communicating climate change ideas, insights, and information between themselves and their peers. The conference was jointly organized by The Small Earth Nepal (SEN) and the Consortium for Capacity Building (CCB), University of Colorado, Boulder (USA) with base funding from the Asia Pacific Network for Global Change Research (APN). More than a dozen national and international organizations were supporters. The statements above resulted from the deliberations of student participants.

For more information please contact The Small Earth Nepal (SEN) at smallearth@wlink.com.np (www.smallearth.org.np) or the Consortium for Capacity Building (CCB), University of Colorado at michael.glantz@colorado.edu (ccb.colorado.edu)

Disclaimer: The views expressed herein are those of the conference participants and do not necessarily represent those of the APN or other supporting organizations.

Annex 6: PRESS RELEASE

International Graduate Conference on Climate Change and People

15–19 November 2010, Kathmandu, Nepal

Press Release

The Small Earth Nepal (SEN), in collaboration with the Consortium for Capacity Building (CCB) at the University of Colorado, Boulder (USA), kindly invite the public to its program for the annual Global Day of Action this Saturday, December 4th at the Nepal Tourism Board's Conference Hall. The program is meant to encourage people to take action in regard to climate change issues as world leaders meet in Cancun, Mexico for COP 16, the annual United Nations Climate Change Conference. At this Saturday's program, SEN will be presenting a declaration drafted by student participants from the recently held **International Graduate Conference on Climate Change and People** (Kathmandu, 15-19 November, NTNC Conference Hall).

The declaration is a collaborative statement from the students who attended the conference and calls on world leaders attending COP 16 to hear the voices of the Eco-Generation, which is the younger generation of concerned student-scientists and future policymakers. The declaration is divided into seven Themes of Action—Listen, Understand, Act, Engage, Empower, Embrace, and Impart. It demands that policymakers *listen* to the voices of youth, to stakeholders at all scales, and to vulnerable and marginalized communities; to *understand* the urgent action needed to create preventative and mitigation policy; to *act* to develop and promote programs that encourage more sustainable development; to *engage* with local communities to better address local needs; to *empower* marginalized communities and indigenous knowledge systems to help cope with growing change; to *embrace* intergenerational representation; and finally to *impart* knowledge to the global community through both informal and formal communication channels.

The conference declaration will be followed by a presentation by Mr. Gregory Pierce, a Research Fellow at the Center for Collaborative Conservation at Colorado State University, who will talk about his recently completed field project in Western Nepal, *The Vitality of Ice and Bone: A Cultural Model of Climate Changes and Livelihood Transformation in Dolpo, Nepal*. The project explored how ethnically Tibetan agro-pastoralists in Dolpo cognitively model the interconnections between their livelihoods and the high mountain ecosystems upon which they depend, and whether or not those models are being transformed in response to both climate and livelihood changes in the area. Preliminary analyses of data confirm that the Dolpo-pa have witnessed significant changes to their local environments in the past few years. Importantly, the causes of these changes remain inexplicable to inhabitants in the area as they do not fit well into how they see environmental processes, which are scaled to local times and spaces and, therefore, do not provide a framework through which such global changes can be explained.

The event is expected to be attended by several high-level dignitaries. It will be held at the Nepal Tourism Board's Conference Hall. Registration begins at 9:30am, and the program is expected to last until 11:30am. It is open to the public.

Annex 7: MEDIA COVERAGE

**जलवायु परिवर्तनबारे
छलफल**

गोरखापत्र समाचारदाता

काठमाडौं कात्तिक २९ गते ।
जलवायु परिवर्तन र मानव विषयक
पौचदिने अन्तर्राष्ट्रिय यूवाजुवट सम्मेलन
सोमबारदेखि काठमाडौंमा सुरु भएको
छ । एसियाली मुलुकमा जलवायु
परिवर्तनले पारेको असरका बारेमा
छलफल गर्ने र एसिया र विश्वका
युवाको सहभागितामा माफा मञ्च
स्थापना गर्ने उद्देश्यका साथ सम्मेलनको
आयोजना गरिएको हो ।

जलवायु परिवर्तनका असरहरूलाई
कम र नीति निर्माण तहमा गर्नुभन्ने
सुधारका विषयमा समेत गहन छलफल
गरिने सम्मेलनको उद्घाटन समारोहमा
दिइयो । द स्मल अर्थ नेपाल र
संयुक्त राज्य अमेरिकाको कोलोराडो
विश्वविद्यालयले संयुक्तरूपमा
कार्यक्रमको आयोजना गरेका हुन् ।

सम्मेलनमा दक्षिण एसिया र त्यस
वाहेकका २० देशका १५० यूवाजुवट
विद्यार्थी सहभागी भएका छन् ।
सहभागीहरूले विज्ञानसँग जलवायु
विज्ञान, यसका असरहरू, नीति,
आर्थिक पक्ष तथा आचारमिता र
समताका विषयमा जानकारी लिनुका
साथ अनुभवको आदान प्रदान गरिने
आयोजनाकले बताएका छन् ।

Tuesday, November 16, 2010

अन्नपूर्ण पोस्ट, सोमबार ३० कात्तिक २०६७ ५

अन्तर्राष्ट्रिय ग्रयाजुवट सम्मेलन सुरु

अन्नपूर्ण समाचारदाता

काठमाडौं, २९ कात्तिक : जलवायु
परिवर्तन तथा मानवहितका विषयमा
छलफल गर्न सोमबार अन्तर्राष्ट्रिय
ग्रयाजुवट सम्मेलन सुरु भएको छ ।
संयुक्त राज्य अमेरिकाको कोलोराडो
विश्वविद्यालयको सहयोगमा द स्मल
अर्थ नेपालले सम्मेलन आयोजना
गरेको हो । सम्मेलनमा २० वटा
मुलुकका एक सय ५० जना विद्यार्थी
तथा विज्ञ सहभागी छन् । सम्मेलनमा
जलवायु परिवर्तनका कारण लामो
खडेरी, बेमौसमी बाढी, हिमतालको
विस्तारलगायतका समस्याबारे
छलफल गरी साझा सञ्जाल निर्माण
गर्ने कार्यक्रम छ ।

सम्मेलन उद्घाटन गर्दै राष्ट्रिय
योजना आयोगका उपाध्यक्ष डा.
जगदीशचन्द्र पोखरेलले विकसित
मुलुकले उत्सर्जन गरेको कार्बनका
कारण नेपाल जलवायु परिवर्तनको
जोखिममा परेको औल्याए । 'जलवायु
परिवर्तनको जोखिममा परेका क्षेत्रलाई
विशेष प्राथमिकतामा राखी सरकारले
कार्यक्रम तयार गरेको छ', उनले भने ।

जलवायु परिवर्तनको असर कम गर्न
नेपालले राष्ट्रिय अनुकूलन कार्यक्रम
(नापा) तयार गरेको जानकारी डा.
पोखरेलले दिए । नापाको सहयोगमा
कृषि, जैविक विविधता,
स्वास्थ्यलगायतका क्षेत्रमा अनुकूलन
कार्यक्रम सञ्चालन गरिने उनले
बताए । सम्मेलनमा सहभागी
जापानस्थित यामानासी
विश्वविद्यालयको प्राध्यापक फुटाबा
कजामाले जलवायु परिवर्तनबाट
उत्पन्न असर विश्व समुदायको टाउको
दुखाइको विषय बनेको बताइन् । उनले
जलवायु परिवर्तनको विषय
विद्यार्थीका लागि नौलो भएकाले
उनीहरूलाई नेपालमा बोलाएर
जानकारी गराउने उद्देश्यले सम्मेलन
आयोजना गरिएको जानकारी दिइन् ।

अन्तर्राष्ट्रिय जलविज्ञान संस्थाका
अध्यक्ष प्राध्यापक गोर्डन यडले
जलवायु परिवर्तनको असरले हिमाली
राष्ट्र बढी जोखिममा परेको औल्याए ।
सम्मेलनमा जलवायुसँग सम्बन्धित
जलवायु विज्ञान, यसका असरविषयमा
छलफल हुने द स्मल अर्थ नेपालका
अध्यक्ष धिरज प्रधानगले बताए ।

Meet to address climate change woes

POST REPORT
KATHMANDU, NOV.14

With a view to providing a common platform for youths to delve into serious climate change issues, a five-day international conference is being held in the Capital from Monday.

Some 150 graduate students from 20 countries are taking part in the 'International Graduate Conference on Climate Change and People' organised by Small Earth Nepal (SEN), a non-governmental organisation and Consortium for Capacity Building of University of Colorado, USA.

SEN President Dhiraj Pradhananga said it is high time youths acted decisively to mitigate the impacts of climate change, which



has drawn attention of the governments worldwide.

"Youths have enthusiasm and energy to undertake action and act as effective communicators in the local communities as well as to engage in

global forums," he said.

Of the total 2.2 billion global population under the age of 18, 85 percent is living in the developing countries. Nepal, along with other South Asian countries like Bangladesh, Bhutan and the Maldives, is more vulnerable to climate change impacts.

"We want to develop a synergy among youths worldwide to help fight climate change," Pradhananga said.

The conference is organised jointly by the Department of Hydrology and Meteorology, Nepal, Centre for Research for Environment Energy and Water (Nepal), Asian Institute of Technology (Thailand) and International Research Centre for River Basin Environment, University of Yamanashi (Japan).

जलवायु परिवर्तनबारे ग्याजुएट सम्मेलन सुरु

ललितपुर (कास)- जलवायु परिवर्तनसम्बन्धी पाँच दिने अन्तर्राष्ट्रिय सम्मेलन सोमवारदेखि राजधानीमा सुरु भएको छ। सम्मेलनमा २० देशका १ सय ५० ग्याजुएट विद्यार्थी सहभागी छन्।

सम्मेलनको उद्घाटन गर्दै योजना आयोगका उपाध्यक्ष जलवायु परिवर्तनसम्बन्धी अहिलेसम्म भएका काम कागजीरूपमा मात्रै रहेको उल्लेख गर्दै त्यसको कार्यान्वयनमा जोड दिए।

नेपाल विज्ञान प्रविधि प्रतिष्ठानको उपकुलपति सुरेन्द्रराज काफ्ले, सिंचाइ मन्त्रालयका सचिव उमाकोन्त भन्ना लगायतले जलवायु परिवर्तनको प्रभाव बढी हुने नेपालजस्ता हिमाली मुलुकहरूमा जलवायु परिवर्तनको सुट्टामा बढी सचेत हुनुपर्ने बताए।

आयोजक स्मल अर्थ नेपालका अध्यक्ष सुन्दर लयालले विभिन्न देशमा परेको जलवायु परिवर्तनको असर र त्यसको न्यूनीकरणको उपाय सुझाउन सम्मेलन आयोजना गरिएको बताए।

Tuesday, November 16, 2010

मंगलबार, ३० कात्तिक २०६७

नागरिक

जलवायु सम्मेलन सुरु

ललितपुर, कात्तिक २९ (रासस)- अमेरिकाको कोलोराडो विश्वविद्यालयको सहयोगमा राजधानीमा पाँचदिने जलवायु परिवर्तन तथा मानव विषयक अन्तर्राष्ट्रिय सम्मेलन सुरु गरेको छ।

सम्मेलनमा दक्षिण एसियासहित २० मुलुकका एक सय ५० स्नातक विद्यार्थी र विज्ञ सहभागी छन्। जलवायु परिवर्तनका कारण लामो खडेरी, बेमौसमी बाढी, हिमतालको विस्तारलगायत विषयमा सहभागीहरूले छलफल गरी साभ्ना सञ्जाल निर्माण गर्ने सम्मेलनले लक्ष्य लिएको छ।

THE KATHMANDU POST | TUESDAY, NOVEMBER 16, 2010

Climate change fight chorus resounds

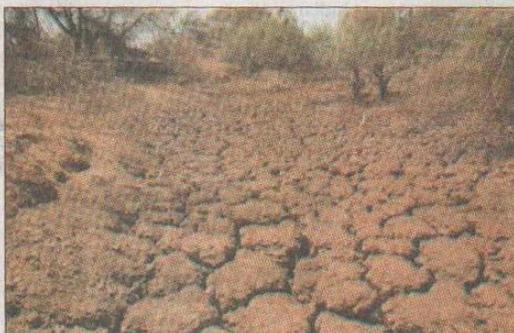
POST REPORT

KATHMANDU, NOV.15

Nepal has made climate change its national agenda and is making efforts to effectively implement plans and strategies to tackle the impacts, said an official on Monday.

Speaking in the inaugural session of 'International Graduate Conference on Climate Change and People' in the Capital on Monday, National Planning Commission (NPC) Vice Chairman Jagdish Chandra Pokhrel said that the government has endorsed the National Adaptation Programmes of Action (NAPA) to identify strategies needed to combat the immediate effects of climate change in the country.

"Change is always happening and it brings difficulties most of the times. It is the time for youth to act



proactively to tackle the impacts of climate change in their local environment," he said.

Nepal is said to be a laboratory for researchers in all aspects of nature including climate change. "There are potential areas for young researchers to work on issues like Glacial Lake Outbursts Flood (GLOF)," Pokharel added.

At the conference being

attended by over 120 graduate students from 20 countries, experts at the national and international level stressed on the need for active role of youth to tackle climate change in their respective countries.

Michael H. Glantz of the Consortium for Capacity Building (CCB) of the University of Colorado in the USA said this international platform is a great

opportunity to discuss problems and find solutions on how to get out of the mess created by climate change. "It the time for youths to think about how to protect the future of this planet and cope with changes," he said. There is a need for solving the problems experienced globally due to climate change along with adaptation and mitigation strategies, he added.

Madhav Karki, deputy director general of International Centre for Integrated Mountain Development (ICIMOD), said, "South Asia is facing multiple vulnerabilities due to climate change particularly in the Hind-Kush region, including Nepal. Climate change is a complex issue. So, there is a need for enhancing the scientific understanding among countries in this region to help tackle the problem."

RepubliCà | Tuesday, November 16, 2010 4

150 students congregate at graduate climate conference

REPUBLICA
KATHMANDU, Nov 15

A five-day conference entitled 'International Graduate Conference on Climate Change and People' kicked off Monday. The conference, organized jointly by Small Earth Nepal (SEN) and the Consortium for Capacity Building (CCB)/University of Colorado, USA, with a base funding from Asia Pacific Network for Global Change Research (APN), is scheduled to continue until November 19.

The conference was inaugurated by Jagadish Chandra Pokharel, vice-chairman of National Planning Commission (NPC), chief guest, on Sunday at National Trust for Nature Conservation (NTNC), Khumaltar, Lalitpur.

Speaking on the occasion, Jeevan Panthi, program officer of SEN said, "The conference has provided a good platform for youth and experts from all over the world to discuss issues on

climate change. On today's inauguration program, we had technical session where the experts presented their views on climate change and issues related to society." Leading scientist Dr Gordon Young, president, International Association of Hydrological Sciences (IAHS) and Dr Michael H Glantz, director of CCB, also attended the event.

The five-day-long conference will delve into many cross-cutting issues ranging from climate-related science, impact, policy and economics to ethics and equity. The event is focused on capacity building of more than 150 graduate students of various disciplines representing 20 different countries in greater South Asia and beyond.

The conference attended by many young and dynamic people will be held in different modalities that include group discussions and interactions with experts and participants, followed by lectures and presentations.

Climate change conference kicks off

Himalayan News Service
Kathmandu, November 15

A five-day international Graduate Conference on Climate Change kicked off today in the Capital where over 150 youth from 20 different countries have gathered to discuss the role of youth and changing climate.

At the programme, Vice Chairman of National Planning Commission Dr Jagadish Chandra Pokharel said, "As the youth today are policy-makers for tomorrow, they should act to conserve environment in order to save the lives of creatures."

Experts participating in the programme underscored the active role of the youth in tackling climate change effectively.

"This gathering will provide us with ample opportunities to share the global context of changing climate and will be helpful for the youth to mull over how to move forward," said Michael H Glantz of the University of Colorado, USA.

Experts said the impact of climate change on some poor countries and South Asian countries that bear the Himalayan range would be bad.

The rapid ice melting on the Himalayas is a hot topic of discussion around the world. Global warming has been attributed for this change.

"Climate change is a complex issue. There is need to enhance scientific understanding among countries in this region to help tackle the problem," said Madhav Karki, deputy director general of International Centre for Integrated Mountain Development.

The conference was organised by The Small Earth Nepal, in coordination with the Consortium for Capacity Building, University of Colorado and some national and international organisations.

RAJDHANI
Tuesday, 16 November 2010

जलवायुसम्बन्धी पाँचदिने अन्तर्राष्ट्रिय सम्मेलन सुरु

राजधानी समाचारवाता
काठमाडौं, २९ कार्तिक

अमेरिकाको कोलोराडो विश्वविद्यालय र द स्मल अर्थ नेपालको संयुक्त आयोजनामा सोमबारदेखि राजधानीमा जलवायु परिवर्तनसम्बन्धी पाँचदिने अन्तर्राष्ट्रिय गृहजुएट सम्मेलन सुरु भएको छ।

सम्मेलनमा दक्षिण एसिया र त्यसबाहेक २० देशका भन्डै डेढ सय गृहजुएट विद्यार्थी सहभागी छन्। सम्मेलन उद्घाटन गर्दै राष्ट्रिय योजना आयोगका उपाध्यक्ष डा. जगदीशचन्द्र पोखरेलले जलवायु परिवर्तन र यसले पारेको असर कम गर्न युवापुस्ता अप्रसर, भाएर, लानुभुने, खतुपुने, कालोराडो, युनिभर्सिटीका निर्देशक माइकल एन्ड्रु जेल्सले अन्तर्राष्ट्रिय सम्मेलन 'जलवायु परिवर्तनले सिर्जना गरेका वाधा-व्यवधान कसरी निदान गर्न सकिन्छ?' भनेर छलफल गर्ने उपयुक्त मञ्च बनेको उल्लेख गरे।

'अब युवाले वातावरणीय परिवर्तनबाट आफ्नो पृथ्वी कसरी जोगाउने भनेर

सोच्नुपर्ने बेला आएको छ,' उनको जोड थियो, 'त्यसमा पनि दक्षिण एसियाली राष्ट्र जलवायु परिवर्तनबाट सबैभन्दा जोखिममा परेकाले युवाका साफा सञ्जाल विकास गरेर अधि बढ्नुपर्छ।'

सम्मेलनमा दक्षिण एसिया र त्यसबाहेक २० देशका भन्डै डेढ सय गृहजुएट विद्यार्थी सहभागी छन्।

सम्मेलनमा इन्सिमोडका उप-कार्यकारी निर्देशक माधवबहादुर कार्कीले हिन्दूकुश हिमालय क्षेत्रसहित पूरै दक्षिण एसियाले जलवायु परिवर्तनका कारण विभिन्न असर भागिरहेको बताए।

उनले जलवायु परिवर्तन प्राविधिक र असाधारण विषय भएकाले यसबाट जोगिन सबै मुलुकमा बैज्ञानिक परिभाषा फैलाउन आवश्यक रहेको बताए।

कार्कीले करोडौं मानिसको खानेपानीको भण्डार हिन्दूकुश हिमालय क्षेत्रमा जलवायु परिवर्तनको असर परेर तीब्र हिमगलन हुँदा अबका केही वर्षमा पानीको हाहाकार हुन सक्ने खतरा पनि औल्याए।

३ मंसिरसम्म चल्ने सम्मेलनमा विभिन्न विषयमा गृहजुएट विद्यार्थी र विज्ञवीच ज्ञान तथा अनुभव आदान-प्रदानका माध्यमबाट जलवायुसँग सम्बन्धित जलवायु विज्ञान, यसका असर, नीति तथा आर्थिक पक्षदेखि आचारसंहिताबारे जानकारी आदान-प्रदान हुनेछ।

'जलवायु परिवर्तन र मानव' नाम दिइएको सम्मेलन सञ्चालनका लागि एसिया प्यासिफिक नेटवर्क फर ग्लोबल चेन्ज रिसेर्च (एपीएन) र विभिन्न स्वदेशी-विदेशी संघ/संस्थाले समेत सहयोग गरेका छन्।



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