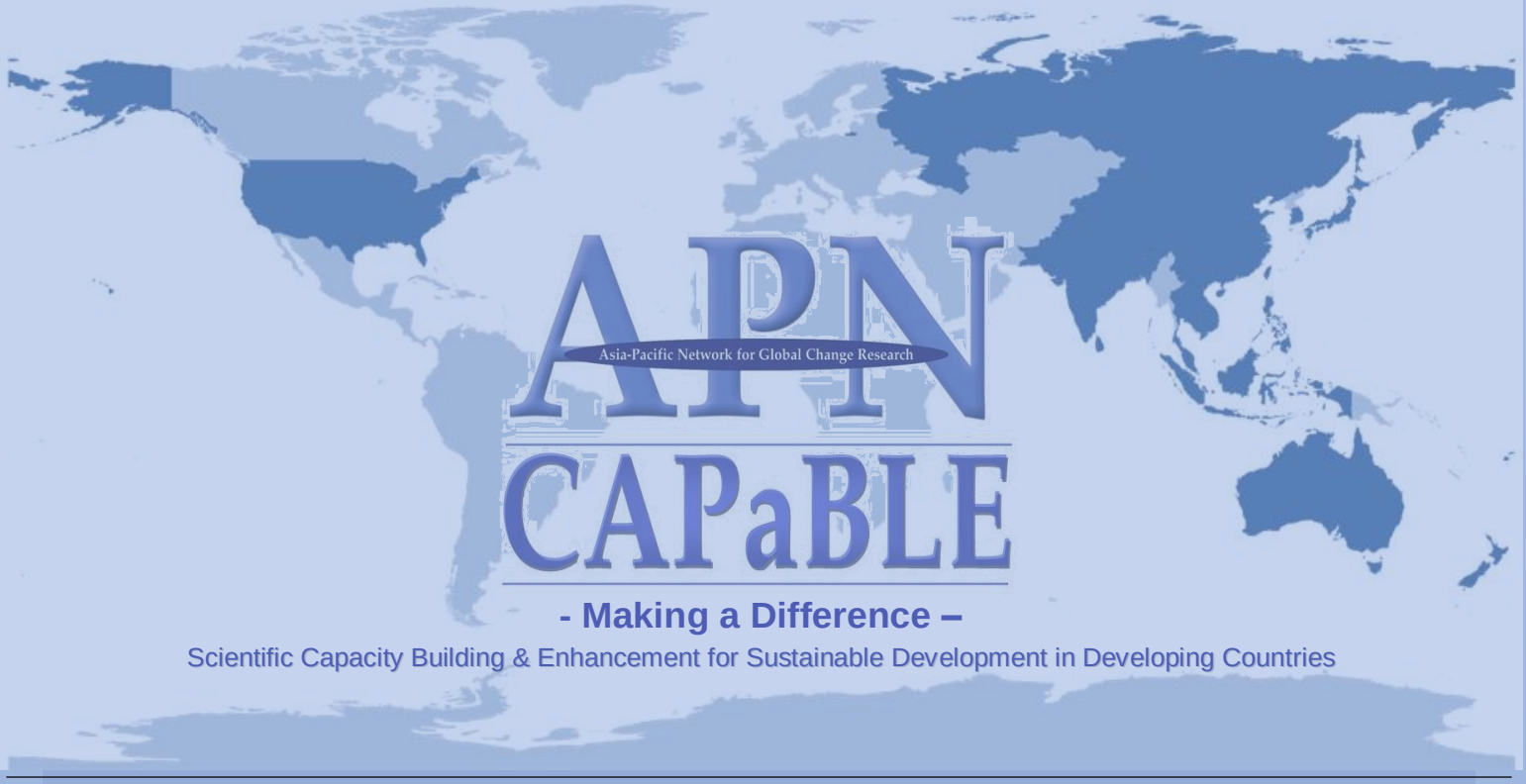
**FINAL REPORT for APN PROJECT**

**Project Reference Number: CBA2012-17NSY-Pradhananga**

# Preparation of Next Generation Leadership in Sustainability: An Approach in the Asia Pacific Region

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THE SMALL EARTH NEPAL-2001

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# Preparation of Next Generation Leadership in Sustainability: An Approach in the Asia Pacific Region

**Project Reference Number: CBA2012-17NSY-Pradhananga**
**Final Report submitted to APN**

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## OVERVIEW OF PROJECT WORK AND OUTCOMES

### Non-technical summary

Green economy results in "improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities" (UNEP 2010). In its simplest expression, green economy is a low-carbon, resource efficient and socially inclusive system. In a green economy, growth in income and employment is driven by public and private investments that reduce carbon emissions and pollution, enhance energy and resource efficiency, and prevent the loss of biodiversity and ecosystem services. The present scenario of disorganized developmental processes and unmanaged urbanization, especially in developing countries, has brought with it a transitional phase that needs to be addressed through various aspects of green growth worldwide.

Considering the significance of green economy within current global contexts, the Small Earth Nepal (SEN), in collaboration with the Consortium for Capacity Building (CCB) at the University of Colorado, Boulder and the International Centre for Integrated Mountain Development (ICIMOD), and with major funding support from the Asia Pacific Network for Global Change Research (APN) under its CAPaBLE programme, organized the Asia Pacific Graduates' Youth Forum on Green Economy from 25-29 September 2012 in Kathmandu, Nepal. A follow-up event, the National Graduates' Workshop on Green Economy was held on 28 July 2013. The two events, at regional and national levels, respectively, brought together 75 motivated young people (ages 18-30 years) from 14 countries across the Asia Pacific region, including the sub-regions of Greater South Asia, the Hindu Kush-Himalayas, East Asia and Central Asia. The Asia Pacific Graduates' Youth Forum on Green Economy was focused on building the capacity of the 40 youth leaders by facilitating knowledge exchange, enhancing collaborations and strengthening participation in decision making process on issues relevant to green economy and climate change adaptation. Before joining the forum, participants carried out an extensive review of literature in order to produce country reports on green economy, which was one of the capacity building aspects of this project. Peer-reviewed proceedings from the workshop also provided an opportunity for young Nepali scientists to publish manuscripts.

As an output of the scientific discussion in the forum, the participants produced the declaration on "Adaptation and Mitigation Strategies for Climate Change through Green Economy Initiatives" with the aim of influencing policy and decision making processes. The declaration was disseminated at COP-18 in Doha, Qatar in 2012. The National Graduates' Workshop on Green Economy enhanced the capacity of 35 youth from Nepal by exchanging their knowledge, experiences and activities carried out on different themes such as sustainable agriculture, renewable energy, eco-tourism, forestry and biodiversity conservation, and techniques for climate adaptation. Peer-reviewed proceedings from the workshop has been published which includes the extended abstracts of the research papers presented at the workshop.

**Keywords**

***Green economy, Asia Pacific, graduate youth, capacity building, climate change adaptation***

## Objectives

The main objectives of the project were to:

1. Develop the capacity of graduates in the Asia Pacific Region on green economy, environmental governance and climate change adaptation through scientific workshops;
2. Provide an information and knowledge sharing platform with networking and advocacy channels through establishment of virtual as well as physical networks of dedicated youth; and
3. Improve and increase participation of regional youth in globally important negotiations like UNFCCC COP-18.

## Amount received and number of years supported

The Grant awarded to this project was: US$ 44,994 for 1 year (2012/1013)

## Activity undertaken

The project included three primary activities:

### 1. Asia Pacific Graduates' Youth Forum on Green Economy

Providing a knowledge sharing platform for young graduates in the region, the 'Asia Pacific Graduate's Youth Forum on Green Economy' was organized in Kathmandu, Nepal from 25 to 29 September 2012. Forty dedicated young people from 14 countries participated and shared their country's status in green economy. Keynote speeches, paper presentations, panel discussions, site visits, skills development workshops, and exercises for the drafting of the youth declaration were the major components of the forum.

### 2. Engagement at COP-18

Four young people were selected from the Youth Forum participants to deliver the forum message to the climate leaders at COP-18 in Doha. These individuals were asked to refine the declaration drafted by the forum participants. They also actively participated in the youth capacity building programs organized as side events during COP-18.

### 3. National Graduates' Workshop on Green Economy

As a national level follow-up program in Nepal, the National Graduates' Workshop on Green Economy was organized on 28 July 2013. At the program, 8 papers were selected and presented from more than 2 dozen applications. Panel discussions, keynote speeches and peer-reviewed proceedings were major components of the workshop. The workshop was attended by 35 young participants and a number of policymakers from the government of Nepal. Peer-reviewed proceedings that included keynotes, extended abstracts of research papers presented and a summary of panel discussions was an output of the workshop.

## Results

The activities carried out during the project enhanced the capacity of 75 youth, significantly increasing their knowledge of green economy. The forum produced the declaration which was

widely distributed via different media and by youth delegates to COP-18. The youth were also able to interact with policymakers and keep their voice for their involvement in policy- and decision-making processes, including in terms of youth engagement on green economy. They also were provided a platform where they could share their initiatives as well as some research on green economy, whereas some received opportunity to learn about such initiatives. After their involvement in the activities of this project they were more motivated to engage themselves in other programs regarding green solutions as well as different leadership programs.

***National level sharing workshop by the participants:*** After going home, the delegates organized national level sharing workshops in green economy in their home countries. Such workshops were organized in Bangladesh, Pakistan, Nepal, India, Bhutan etc. Moreover, participants published their papers in various newspapers in their home countries.

***Banners to Bags***: SEN is continuously handing over its program banners to the 'Banners to Bags' project, which produces bags by recycling used conference banners.

***Graduate Level Course on Climate and Society*****:** CCB and SEN have been jointly developing a regional level course on climate and society that links highlands to oceans (H2O). The new project was announced during the closing ceremony of the forum.

**Relevance to APN's Goals, Science Agenda and Policy Processes**

The project was organized and conducted in line with APN's science and policy agenda, fostering increased science-policy interactions by embracing the interdisciplinary approach to a green economy. The project also provided an opportunity to the participants from the APN member countries to interact with scientists and policymakers. The workshop also included the formulation of a declaration from the participants themselves that addressed the prime concerns for the development of youth. In these ways, the workshop achieved one of its primary aims of providing a platform to early career researchers to present their research under the theme of green economy and to expose their work to their seniors and peers who also work on such issues. It also provided opportunities for the participants to network with international as well as national policymakers and inform them of their research activities. In this way, young participants shared their ideas about green economy and provided opportunities for developing bridges between policy and science. In short, the event provided a platform for follow-up activities along with overall capacitation of the youth. It also helped garner the attention of scientists towards the capability of youth in science and in decision making. These workshops also helped to create a great opportunity for graduate students and young researchers to put forward their thoughts on the theme of green economy. In this way, the professional capacities of these researchers was expanded through knowledge sharing, networking, partnership building and advocacy processes. As such, this workshop is in line with the priority areas of APN on scientific capacity building and awareness raising on cross-cutting environmental issues for sustainable development.

**Self-evaluation**

***Asia Pacific Graduates Youth Forum in Green Economy*** was an another effective capacity building program, much as the 2010 ***International Graduates Conference on Climate Change and People*** also organized in collaboration between SEN and CCB with financial support from APN was. The 2012

program gave the remarkable output of enhancing the capacity of the youth participants, with a focus on both national and regional levels. In addition, it gave a unique opportunity for strengthening new networks among collaborators and supporting organizations. Though the number of participants was limited, through other media like the forum declaration, news coverage, updates via different social networks, and blogs by organizers and some enthusiastic participants, we were able to reach out to many who could not directly participate in the program. A dedicated website was also developed and updated especially for the youth forum (http://gradyouth.wordpress.com/). Evidence of this reach beyond the participants is that the forum's page on Facebook had, as of the 30th of December 2013, been joined by 993 people. Overall, the forum benefited a larger community including researchers, journalists, scientists, teachers, students, activists, government bodies, organizations, academicians and at least some policymakers.

**Potential for further work**

The project has brought new opportunities and ideas for youth to engage in further research and capacity building programs regarding ongoing issues related to global environmental crises. It has even motivated some participants to initiate some similar workshops at other national level as well as to establish linkages between themselves and decision makers. Through such strengthened networks, collaborations, linkages and interconnections between local and regional researchers, policymakers and experts provide further opportunities to give the more substantive aspects of green economy life beyond the idealistic discourse it first emerged as within this current transitional phase of global economic thought and systems. In the future, such programs will be essential if more than adequate action is to be taken on emerging issues having to do with, for example, the water crisis, food crisis, and youth engagement in agriculture, youth migration, and youth employment and entrepreneurship. There is much to be done, and APN has played a vital role by supporting such capacity building projects, bringing like-minded collaborators together at the effective and fast-growing regional level. This can be seen in the regionally-focused course on 'Climate and Society' addressing the technical and societal issues of climate change that was announced at the forum. The course will bridge highlands to oceans from science to policy in climate change and is now in the works.

**Publications (please write the complete citation)**

The workshop participants formulated a declaration: "Adaptation and Mitigation Strategies for Climate Change through Green Economy Initiatives."
http://smallearthnepal.files.wordpress.com/2012/12/declaration_adaptation-and-mitigation-strategies-for-climate-change-through-green-economy-initiative.pdf
Proceedings: Graduates' Workshop on Green Economy
http://www.smallearth.org.np/uploaded/File/ProceedingGWGE%28sm%29.pdf

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Sincere gratitude for the successful completion of the project goes to the organizers/collaborators: the Small Earth Nepal (SEN), the Consortium for Capacity Building (CCB) at the University of Colorado, Boulder (USA), and the International Center for Integrated Mountain Development (ICIMOD); the financial supporter: Asia Pacific Network for Global Change Research (APN); and the technical supporters: the Central Department of Environment Science (CDES), Tribhuvan University, and the Agriculture and Forest University (AFU). Sincere gratitude also goes to all the presenters and the participants for sharing their research findings. Participants who took notes during different sessions was very helpful in producing this report; they are highly appreciated. My primary collaborators—Mr. Jeeban Panthi from SEN, Prof. Michael H Glantz from CCB, Mr. Tek Jung Mahat from ICIMOD and Mr. Gregory Pierce, CCB—did a very excellent job during the implementation of this project. I heartily acknowledge the note takers of the forum and workshop: Ms. Kabita Gautam, Ms. Nicky Shree Shrestha, and Ms. Roshana Maharjan who worked very hard to prepare the first draft of this report. I am indebted to Dr. Madan Lall Shrestha, APN-SPG Co-Chair and Dr. Linda Anne Stevenson for their continuous guidance, motivation and support that made carrying out this project possible. I am also very much thankful to the steering committee team: Dr. David Molden, Director Generat of ICIMOD, Dr. Bhanu Neupane from UNESCO, Dr. Sangam Shrestha from Asian Institute of Technology (AIT), Prof. Ramakar Jha from National Institute of Technology (NIT) – Roorkie, India and Mr. G. Karma Chhopel from National Environment Commission (NEC), Bhutan. A few institutions like Clean Energy Nepal (CEN), Centre of Hydrology, University of Saskatoon, Canada, Regional Integrated Multi Hazard Early Warning System for Africa and Asia (RIMES), Small Earth Australia (SEA), Himalaya University Consortium (HUC), UNESCO, Center of Research for Environment Energy and Water (CREEW), USAID/Office Foreign Disaster Assistance (OFDA), Mountain Partnership and Institute of Development and Innovation (IDI-Nepal) provided in-kind support for the project. At last but not the least, I would like to acknowledge all my colleagues at SEN, CCB and ICIMOD for cooperating me throughout the project duration.

Dhiraj Pradhananga, 13 January 2014

# TECHNICAL REPORT

## Preface

This project aimed to provide a platform to graduates and early career researchers to present their research in the field of green economy and to expose their work to academicians and colleagues working on similar issues. Activities undertaken through this project created a great opportunity for graduate students and young researchers to put forward their thoughts on the theme of green economy. In this way, the professional capacities of these researchers were expanded through knowledge sharing, networking, partnership building and advocacy processes. As such, the primary activities of this project are in line with the priority area of APN on scientific capacity building and awareness raising on cross-cutting environmental issues for sustainable development.

SEN executed the entire project and performed overall communications and coordination among the primary team of CCB and ICIMOD. It also managed necessary logistical arrangements. The Central Department of Environmental Science, Tribhuvan University (CDES/TU) and Agriculture and Forestry University (AFU) provided technical support for organizing the workshop by selecting papers and chairing the sessions.

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# 1 Introduction

## 1.1 Project Background

Unsustainable human activities are causing serious threats to the entire living world, including to humans themselves. By depleting the world's stock of natural wealth, this pattern of development and growth has had detrimental impacts on the well-being of current generations and presents tremendous risks and challenges for future generations (UNEP, 2011). Climate change is perhaps at this point the best known example of such threats. The impacts of climate change are being felt on every part of the earth and are directly related to human interactions with the environment. Recent Intergovernmental Panel on Climate Change (IPCC) reports clearly indicate that the change in climate in recent decades in due to anthropogenic factors. Green economy is a framework that ensures genuine, long-term sustainability and happiness for all people everywhere, always within nature's carrying capacity. It is an inclusive approach that promotes fairness, equity, participation, freedom and democracy, with social and environmental justice at its core (Pradhananga et al., 2013). The green economy concept has increasingly gained importance and is on the agenda of various organizations and constituencies; however, the definition of the concept is generally restricted to energy efficiency, sustainable resource use, and minimizing environmental impacts (IHDP, 2011). It is widely recognized that the transition to a green economy is not only important from an environmental perspective but also promises important economic potentials. Not only can it help to address the challenge of rising resource prices, in other words, but it has also been identified as providing important market opportunities (Jacob, 2013).

The earth is yearly under mounting stress due to explosive growths in populations that are demanding more and more energy resources, engaging in ever more unsustainable production and consumption patterns, suffering the consequences of inequitable and non-uniform distributions of wealth and languishing within ineffective governance structures. Inequalities in gender and generational access as well as growing differences in terms of impacts and response capacities are only adding to the challenges faced by a global humanity that is increasingly divided along lines of have and have not. Only aggravating these problems, poverty has become a vicious reality for the majority of inhabitants of the Asia Pacific Region, where more than 80% of the world's poor live.

Rio+20, held in the summer of 2012 twenty years after the original Earth Summit, has provided a new platform for the global community to overcome current challenges and has recommended long-lasting solutions to sustainable development issues. Decisions made now will have direct implications for the next generation of policymakers, the youth of today who will in short years be the main actors in framing and implementing the policies of the future. As such, to secure a more livable, less tenuous tomorrow, youth empowerment today is essential.

The overall idea of this project emerged when youth was noted as being among the most vulnerable group in the face of changes happening worldwide and the fact that the majority of global youth reside in Asia. In this fast changing world, youth must be core actors in sustainable development projects, which should be their major focus as their future is really at stake. Due to the shift in research focus towards more practical methods and applied knowledge, capacity-building activities in inter- and multidisciplinary research has gained importance (IHDP, 2011). Realizing the need of

youth capacity building at national and regional levels, this project has been designed to carry out three major activities.

## 1.2 Objectives

The Small Earth Nepal (SEN), the Consortium for Capacity Building (CCB) and the International Center for Integrated Mountain Development (ICIMOD) then came up with the objectives listed as follows:

- To develop the capacity of selected Asia Pacific Youth on green economy, environmental governance and climate change adaptation;
- To facilitate information and knowledge sharing, networking and advocacy in the Asia Pacific Region through the establishment of virtual and physical networks of dedicated youth; and
- To improve participation of regional youth in the globally important meeting of UNFCCC COP-18.

## 1.3 Scope of the project

The project focused on the capacity building of youth from national (Nepal) to regional levels, including 14 countries from across the Asia Pacific region including the sub-regions of Greater South Asia, the Hindu Kush Himalayas, East Asia, Central Asia and others. The project included different thematic areas such as: Sustainable energy, green entrepreneurship, low carbon growth, climate change adaptation, collaboration and implementation in policy, youth empowerment and Inclusion, sustainable agriculture, renewable energy, eco-tourism, forestry and biodiversity conservation and the technologies of climate change adaptation.

## 1.4 Collaboration and partnership

**The Small Earth Nepal (SEN)**

The Small Earth Nepal (SEN) is a non-governmental organization developing students-teachers-scientists (STS) networks to promote sustainable lifestyles through education and knowledge sharing. SEN supports activities that reduce adverse impact on the environment. In collaboration with various national and international institutions, SEN implements national and regional level climate adaptation projects focusing on water resources, agriculture and livestock.

**The Consortium for Capacity Building (CCB), University of Colorado, Boulder**

The Consortium for Capacity Building (CCB) is an education, outreach and networking organization housed at INSTAAR on the campus of the University of Colorado at Boulder, USA. It focuses on enhancing the value and use of climate, water and weather information for the betterment of societies and the wellbeing of individuals. CCB works in both developed and developing countries to help the most vulnerable societies and populations mitigate and adapt to the impacts of global change.

**Asia Pacific Mountain Network (APMN), ICIMOD**

The Asia Pacific Mountain Network (APMN) is a knowledge sharing platform connecting mountain regions and communities through dialogue and networking. Managed by the International Centre for Integrated Mountain Development (ICIMOD), APMN captures, enriches, and disseminates information on mountain development issues in and for the Asia Pacific region.

**Asia Pacific Network for Global Change Research (APN)**

The Asia Pacific Network for Global Change Research (APN) is a network of 22 member country governments that promotes global change research in the region, increases developing country involvement in that research, and strengthens interactions between the science community and policymakers.

## 2. Project Approach

There were three major activities carried out from the project: Asia Pacific Graduate's Youth Forum on Green Economy, Youth Participation to COP-18 and a follow up program in Nepal called 'National Graduates' Workshop on Green Economy'. The methodology used for each activity was as follows:

### 2.1 Call for application

The application call was announced through the websites of SEN and ICIMOD as well as through a dedicated blog (http://gradyouth.wordpress.com/) for the project and through a social media campaign that included Facebook, linked-in and Twitter. Announcements were circulated via different group emails. The call tried to reach out to the large number of young people as far as possible. Altogether 925 applications were received from the Asia Pacific region.

### 2.2 Formation of steering committee

The special steering committee was formed for the workshop including six experts from various organizations of different countries. The committee assisted in policy documents review, selection of the participants, and identification of the agendas for the workshop. It also recommended or designated participants for the workshop. The steering committee members were Mr. G. K. Chhopel, an environment officer of the National Environmental Council from the government of Bhutan; Dr. David James Molden, Director General of ICIMOD; Dr. Madan Lall Shrestha, Scientific Planning Group (SPG) – Vice Chair for APN from Nepal, Prof. Dr. Ramakar Jha from the National Institute of Technology (NIT), India; Dr. Bhanu R Neupane, Regional program specialist of UNESCO, and Dr. Sangam Shrestha, Assistant Professor at Asian Institute of Technology (AIT), Thailand.

### 2.3 Selection of the participants

Altogether 925 applications were received for the Graduates' Youth Forum on Green Economy. On the basis of the presented biography and the country reports, 40 participants were selected from 15 countries as participants in the workshop. There were around 100 applications received for the national-level Graduates' Workshop on Green Economy from which 35 participants were selected.

### 2.4 Green economy: country reports

The selected participants prepared green economy country reports before the Youth Forum. The reports are summarized below:

**BANGLADESH**

Bangladesh is a country of 160 million people where the four energy options – solar, photovoltaic electrification, biomass energy and wind energy are identified as viable alternatives. Among them solar energy is highly accepted as it has created the green jobs for approximately 60,000 people. Bangladesh Agriculture Research Council (BARC) has carried out a research for green economy and found that it is economically profitable and ecologically sound. Green concepts have been adopted in various areas like building technology, transportation sector (encouraging the public vehicles and taxing on the private vehicles), but comparatively less work has been done in the industry and manufacturing field. *Gramin Shakti* and *Waste Concern* are popular organizations in Bangladesh working in the green sector.

**BHUTAN**

Bhutan is one of the smallest and the least developed countries where the majority of people depend on subsistence farming and animal husbandry. The main attraction of this country is the traditional way of life for tourism. Existing problems are excess consumption of firewood, erosion of delicate vegetation, waste disposal issues, etc. The remedies taken by the country are training and educating local tour guides, standardizing local hotels, developing responsible tourism strategies, strictly monitoring visa issuance, developing eco-lodges and sustainable infrastructure, etc. The Tourism Council of Bhutan has initiated high-value, low-impact policies for green economy.

**INDIA**

India has introduced the Green Revolution in 1970s. Thereafter, with the involvement of central, state, local governments, private sectors, communities, NGOs, INGOs and individuals have taken many initiatives in the field of green economy. Some of them are Green India Mission, National Green Tribunal, Energy efficiency projects, green marketing, national action plan on climate change, REDD+ adaptation fund, clean technology transfer fund, inclusion of environmental rights within fundamental rights, introduction of green courses on school and college level etc. Similarly, the National Rural Employment Guarantee Act (2005), Bicycle policy for school children, environment act (1986), water and air less act (1977), The Economics of Ecosystems and Biodiversity (TEEB) are some policy-level initiatives. India is ranked third best investment destinies for renewable energy. Wind energy is in high demand and can create 15000 jobs approximately. A separate Ministry of Environment and Forestry has been established for the effective development and promotion of green economy.

**INDONESIA**

Indonesia is one of the largest greenhouse gas emitters in the world. There are many obstacles for green development in Indonesia as only a limited budget is allocated for renewable energy and there is also high rate of environmental degradation from the transport sector. Along with the government's commitment to plant million trees, car free days (started from Jakarta), bike to work communities and a plan to establish electric car and general electric charging stations are some of the substantive programs in the green sector. Indonesia has a high possibility for geothermal energy in the field of renewable energy.

**JAPAN**

The recent tsunami provoked the Japanese to generate promising ideas relevant to green economy. Cutting-back electrical power consumption, planned black outs and removing excess lights are some measures that have helped them recover from their energy crisis. Government and private companies are trying to construct a sustainable energy system. Though nuclear energy is clean energy, abolishment of it is being discussed in Japan for safety and security purposes. *Smart City Theme* is the popular program adopted in green economy in Japan.

**NEPAL**

Nepal is listed as the 4$^{th}$ most vulnerable country (out of 170 countries worldwide) by the Climate Change Risk Atlas, 2010. It has shown its commitment towards the green economy by becoming party to UNFCCC in 1994, participating in various conferences, establishing the climate change management division in under the Ministry of Science, Technology and Environment, and enacting the pesticide act, environment protection act, climate change policy. The past as well as ongoing

projects that contribute in green sector are Western Terai Landscape Complex Project (WTLCP) for landscape; REDD for forestry; Terai Arc Landscape (TAL) project; Sagarmatha community agroforestry project; Rural Energy Development Program (biogas, bio briquette, electric vehicles etc) including Improved Water Mill Support Program. But still there is lack of incentive mechanism, renewed political commitment, coherent strategy, modern technology, etc. It has promising potential in hydropower, sustainable agriculture, herbal farming, community forestry, ecosystem services and bio-trade.

**PAKISTAN**

Pakistan is highly dependent on the natural fuels. The government of Pakistan has formed the Alternative Energy Development Board (AEDB). The first hydropower project started in 1925 followed by the first solar project in 1960s and first wind project in 1970s. Wind power plants and solar plants are being installed in various parts of country with the help of donor agencies. Bio-diesel projects and the biogas projects are also running. Implementing crop maximization programs and the livestock development program are two initiatives that have been taken by the government. The parties that are providing green jobs are the Pakistan Renewable Energy Society, Winrock International, AEDB and private companies. The Pakistan Agriculture Research Council (PARC) has brought various reclamation projects like olive plantation, mangrove plantation etc. Still there is lack of appropriate policies for the development of green sectors in Pakistan.

**PHILIPPINES**

Philippines is the second largest archipelago country with highly exploited fishing grounds. The three months ban on sardine fishing on certain coastal areas and the three months closure on tuna fishing using fish aggregating devices are some measures that have been taken by the Western and Central Pacific Fisheries Commission to Philippines to save the fish population in coastal areas. Fewer than 50% of the people in Manila have access to potable water. Thus, they are making rainwater catchment basins, reusing the water for irrigation purposes, and piping the spring boxes for the sustainable water use. Various awareness campaigns, surveys and studies are being done. Also individual groups are lobbying alternative laws and campaigning with conviction protection of the environment for the sake of green development.

**SRI LANKA**

Sri Lanka is a tropical island in the Indian Ocean. Agro-tourism and eco-tourism are providing effective economic incentives for conserving and enhancing bio-cultural diversity in Sri-Lanka. Environmental friendly activities are being incorporated into various social enterprises like accommodation, retailing services, recreation activities etc. The government is concerned mainly with modern building, the transport sector and usage of recyclable products. The Green Village Program and the Vehicular Emission Testing Program are two large-scale and popular programs in the green sector. The country is facing the problem of deforestation, erosion, pollution, reservoir siltation and unplanned urbanization.

**THAILAND**

Thailand is the number one rice exporting country in the world. Various works are being done for the improvement of the agricultural sector like artificial rain project, Good Agricultural Practice (GAP), Doi Kham agriculture project (introduced cash crops), organic agriculture, etc. Similarly, eco-shop 2012, a plastic ban in Villa Market, green living camps, greener business area project in Phuket, and

energy awards are some works in green development with the Energy Conservation Promotion Act 1992, Adoption of 11th plan of National Economic and Social Development Board. Wongpanich Recycling Company, Green Leaf Initiative, Green Net or Progressive Farmer Associations are some organizations working in green sectors. Green job programs are lacking as it is still a new concept in Thailand.

**VIETNAM**

Vietnam is the first developing country to formulate its own green growth strategy, which included reducing greenhouse emissions, usage of environment-friendly equipment and adopting the green lifestyle. It has adopted the power master plan seven for energy security and has operated a successful biogas project. In the agriculture sector, innovative farming techniques and water saving irrigation in rice production is being carried out but there is nothing in the organic farming sector as it is still the new concept in Vietnam.

### 2.5 Activities of Asia Pacific Graduates' Youth Forum on Green Economy

Asia Pacific Graduates Youth Forum on Green Economy was conducted from 25 to 29 September, 2012 in Kathmandu, Nepal. Forty young people from 14 countries in the Asia Pacific region came together to deliberate on green economy. A gender balance was maintained with the number of female participants' equaling 23. The five-day long program contained capacity building and knowledge exchange sessions, leadership exercises and excursions to nearby environmental projects.

#### 2.5.1 Opening Ceremony

The opening ceremony started with the welcome remarks followed by the presentations of various resource personalities as follows:

Mr. Dhiraj Pradhananga, SEN: Welcome and opening remarks

Mr. Dhiraj Pradhananga, President of SEN, welcomed all the participants of the forum and highlighted the importance of such workshops for youth capacity building. According to him, graduates must take on the role of turning the society towards a 'green economy' by serving their local communities in creating, testing and disseminating knowledge. He also emphasized that youth are not only the future leaders but also the leaders of the present. The participants in the forum were chosen from a diverse range of disciplines in order to enhance their knowledge and capacity building on green economy with a hope that much expertise would be developed in future. He said that it was just an initiation and there is still a long way to go. Key message*: Youth are not only the future leaders but also are the leaders of today.*

Tek Jung Mahat, ICIMOD: Context, objectives, structure and expectations from the workshop

Mr. Tek Jung Mahat from Asia Pacific Mountain Network/Himalayan University Consortium, ICIMOD presented about the context, objectives, structure and expectation of the workshop. In his presentation, entitled '*Introducing new advocates of Mountain Agenda'*, he shared how an e-discussion can create awareness for youth with simple writings of youth. He also discussed about a series of publications on youth and a publication solely made by children on 'International Mountain Day 2011-conserve, construct and celebrate'. ICIMOD had always encouraged building capacity of the youth and for this a series of events has been held, including Creating a Sustainable Network of Climate Change Champions, South Asian Youth Summit on Climate change, Café Climate, Youth

Forum, empowering youth with earth observation, information for climate action, youth engagement on climate change and Rio+20. Key message*: Even one individual youth can make a huge difference in the way s/he acts or thinks.*

Dr. David J. Molden, ICIMOD: Keynotes: Rio +20 deliberation, mountains and youth

Dr. David J. Molden, Director General of ICIMOD, highlighted the key concerns of Rio+20. He explained that it's time to act to make the world better place for the next generation. Decisions made by youths will dramatically affect their individual welfare, their future families and their communities as they have the potential to change the world. The Earth Summit took place in 1992 in Rio de Janeiro, Brazil to discuss solutions for global problems such as poverty, war and the growing gap between industrialized and developing countries. There was also the question of how to relieve the global environmental system through the introduction to the paradigm of sustainable development. It emphasizesd that economic and social progress depends critically on the preservation of the natural resource base with effective measures to prevent environmental degradation. What happens before Rio does matter a lot, more so even than after Rio. The Rio+20 document was not as expected rather it has been a stepping stone than a turning point. Hence, youth need to act and translate words into actions. Key message*: What happens before an event like COP or Rio can matter a lot more than what happens after the event, so it's better to act before it's too late.*

Mr. Gregory Pierce, CCB: Message from partners: Consortium for Capacity Building

Mr. Gregory Pierce, Senior Associate Scientist, Consortium for Capacity Building (CCB) gave a brief synopsis of the work of the consortium. It is a network of professionals that works on research and training agendas. CCB works with developed and developing countries in climate change adaptation programs. CCB has collaborated with SEN on past programs, including for the International Graduate Conference on Climate Change and People (2010) and is happy to be a part of this project as well.

Dr. Eklabya Sharma, ICIMOD: Green economy: sustainable mountain development and youth

Dr. Eklabya Sharma, Director of Program Operations, ICIMOD presented on the topic, 'Green Economy: Sustainable Mountain Development and Youth'. He emphasized that the Hindu Kush Himalayan (HKH) region is facing vulnerability and risk due to climate change, increasing population and degraded environments. It needs to be conserved and managed sustainably as these unique landscapes provide valuable ecosystem goods and services to support the livelihoods of more than 1.3 billion people. The mountains of the HKH region are abundant in natural resources. The greater Himalayas, also called the water tower of Asia, are the source of ten major river systems that support water supply, food production, biodiversity, and energy generation in the region. Economic security and human wellbeing are fundamentally dependent on ecosystem goods and services, which could be addressed through green economy in the mountains. He also shared the importance of inclusion of mountains on green economy, its contributions, opportunities and challenges. Mountains are green and now it's becoming difficult to maintain their greenery. Youth need to be empowered for utilization of the opportunity that green economy creates. The mountains are also now equipped with new communication tools and services that can be used to create awareness and build the capacity of youth in the mountains so that they are able to sustainably manage the mountains as well as gain benefit from them. *Key message: For sustainable development of mountain regions, the way must be found to equip local youth with information, knowledge and*

*capacity building so that they can contribute for the development of mountains in a sustainable manner.*

Prof. Suresh Raj Chalise, SEN: Remarks from Chair

Speaking from the chair, Prof. Suresh Raj Chalise, advisor of SEN, congratulated the youth participants of the forum for being selected to the program from among nearly 1000 applicants. He expressed his view towards youth that even well-equipped youth with education, facility, finance and knowledge are not being included in the country's decision making process. This neglect is really pitiful for youth and for the country, too. Some people don't want to change: they'll lead the nations as it is now but youth can bring a complete change in this system if they are guided properly. Key message*: Youth need to be involved in country's decision making process.*

### 2.5.2 Technical sessions

Dr. Gulam Rasul, ICIMOD: Green Economy: challenges and opportunities – Mountains perspectives

Dr. Gulam Rasul started the session raising some fundamental questions while talking about the green economy, challenges and opportunities. According to him green economy enhances human well-being, social equity and reduces environmental risk and ecological imbalances. Green economy is a vehicle for sustainable development. He gave certain principles of green economy like:

- It recognizes the role of nature and its limit for sustainable eco-growth,
- It manages and safeguards environmental assets,
- It increases resource use efficiency and reduce waste,
- Polluter should not be let free,
- Policy should be developed.

Similarly, he talked about the importance of mountains in green economy as they provide water resources, hydropower, groundwater, sea water, etc. Illustrating about biodiversity, he expressed the significance of mountains in the world's growth. Furthermore, he talked about challenges of mountains like inadequate recognition of mountain ecosystem in national, regional and international policies. Other challenges of mountains ecosystem are that they are fragile, persistent, poor and marginalized. But there are various opportunities, too, such as:

- Green economy recognizes and realizes the value of ecosystem and their services
- Growing market for mountains niche products
- New investment and employment in green economy

He said that the role of youth in promoting green economy is of paramount importance. Youth are the stakeholders and strategic planners, so there is need for a national strategy for youth development and engagement in green economy sectors. They have the role of promoting green economy with concentrated efforts. There is high potential of generating income and employment opportunities. Therefore, mountains are global natural capital supporting about half of the humanity. Thus economy and sustainable development are important for reducing poverty.

Dr. Bhaskar Singh Karky, ICIMOD: REDD+ and Forest Carbon: linking Green Economy

Dr. Bhaskar Singh Karky from ICIMOD stated that REDD+ (Reducing Deforestation, Degradation, Conservation, and Sustainable Forest Management) is an incentive based mechanism agreed at the global level. Biodiversity conservation and improved livelihoods are jointly benefitted. He showed

the indicative photographs for the drivers of deforestation and policy failures and said that the *Namdu* forest in Nepal as one of the successful community forestry programs under favorable policy environment. Similarly he talked about the ongoing projects of ICIMOD in carbon sequestration. According to him, REDD+ payment is based on 60% for social safeguards and 40% for carbon stock and increment. REDD+ money have been used mainly for livelihood improvement activities in *Dolakha, Gorkha* and *Chitwan* in Nepal. It was also used in capacity building, forest carbon monitoring and others works. He also talked about the trust fund mechanism and linking payments to co-enhancement. He discussed the benefits of forests at household levels and for ecosystem services and concluded with the remark that the community forestry should be undertaken with a sustainable livelihoods approach that focuses on the strengthening of adaptive capacity.

Dr. MSR Murthy, ICIMOD: Application of Geographic Information Systems, Earth Observation in Climate Change Adaptation towards a Green Economy

Dr. MRS Murthy from ICIMOD told that development of technology and Innovation on the Geographical Information Systems has led to opportunities like remote sensing, cloud computing, 3D visualization and other systems providing a better option for a green economy. The geospatial system in the application of Geographic Information Systems (GIS) has made easier identification of local issues and assessment of them. For example, GIS enables a better understanding of how much carbon is emitted. This knowledge can be linked to a wider range of information that helps manage and monitor reports. Although human perception regarding the remote sensing is found to be different than what it is in actual, remote sensing with multi-resolution/higher resolution images can help us know the number of trees in a certain area, which also helps identify the boundaries of villages. Furthermore, with application of GIS we can know total crop areas and types of crops planted in certain area, total amounts of rainfall in certain seasons, etc. Furthermore, with application of 3D visualization, messages about the water wasted or similar problems can be presented to villagers or residents of problem areas, which could help them to understand those problems more easily. Similarly, observing and comparing the reports from two different time frames using remote sensing devices enables a researcher to know the actual damage or improvement seen in the related area. It helps to track landslides, effects of earthquake, drought and other similar problems, too. With the above stated features, application of GIS helps feasibility studies to be easier. The number of cell phones in use in the Asia Pacific Region is around 3 million and is increasing rapidly. With the increase in the number of people joining social networking, shared information over social media reaches many people virtually through these networks. In this way, crowdsourcing can be another major aspect for the movement of information, especially in providing information/data retrieved from the remote sensing and GIS devices. The Application of GIS has a possible increment in green opportunities. Along with the opportunities of GIS and its adaptation for a green economy there are major challenges for implementation and cost like on the use of wind power, manufacture of solar technology and solid waste recycling.

Mr. Dipesh Chapagain and Mr. Manjeet Dhakal, CEN: Introductory session on UNFCCC COP 18 processes at Doha session

Mr. Dipesh Chapagain and Mr. Manjeet Dhakal from Clean Energy Nepal (CEN) made presentations on 'Introductory Session on United Nations Framework Convention for Climate Change (UNFCCC) Conference of Parties (COP-18) processes at Doha'. The presentation was divided into two parts. Mr. Chapagain made the first presentation which covered the overall issues of the UNFCCC that focused

on how the UNFCCC is taking the issues of climate change and negotiating at COP-18. He informed the forum that at the COP meetings, the negotiation is a complex format but yet not so complicated process of negotiations amongst the countries. He gave examples on the negotiation process that was compared to three-year university experience–a fast-track life where a student experiences a different mindset in the years from being a tourist or explorer to learning issues and then focusing on specific issues by the third year. He said that the negotiation process would go through a series of procedures from submissions to technical workshops to reports to decisions where different negotiation groups are involved from regional groups such as Asian States, Eastern European States, African States and more to negotiating groups such as G-77 and China, EU, LDC and more. The purpose of reduction of GHG emission is that the current state where global total GHG emissions are much higher than the level they had strived for in the year 2020 leaving a huge emission gap. At the COP-18 several high level representatives will be present from the UNFCCC secretariat and heads of state will also take part. One of the important issues that will be discussed in great length will be to ratify the commitment period.

Mr. Dhakal made the second part of the presentation, which focused on the role of youth in climate change negotiations. He said that according to Agenda 21: Program of Action from Rio 1992, "youth from all parts of the world participate actively in all relevant levels of decision-making processes" and "each country should, in consultation with its youth communities, establish a process to promote dialogue between the youth community and government." Fulfilling this mandate, youth representatives at COP-18 in Doha will embody the YOUNGO slogan: "we will not die quietly," which advocates for fighting for rights to take part in the decision-making process. Mr. Dhakal also informed the forum that youth are currently getting involved with groups such as YOUNGO of UNFCCC and Major Groups of Children and Youth (MGCY) of UNCSD. These groups intend to be heard and promote the slogan "no decision about us without us." Participation by such active youth advocates in making a difference in the world clearly shows how the world of adults are opening up to new and improved ways of making decision for global betterment.

Mr. Utsav Maden, ICIMOD: Social Media for Youth Advocacy

Mr. Utsav Maden from ICIMOD gave the presentation on 'Social Media for Youth Advocacy'. He started with an activity for participants to identify the various tools in current social media. They were then asked to define each tool in social media. Mr. Maden also shared the ways and means by which social media can be used to contribute to green economy. He believes that youth today can tweet, blog and network through social media and hence make an impact on the society for green economy and other environmental issues.

Dr. Madan Lall Shrestha, APN: Low Carbon Growth: State in Asia Pacific Region

Dr. Madan Lall Shrestha, SPG member for APN from Nepal, started his presentation with the statement of Copenhagen Accord—'For sustainable development, a low emission development strategy is essential.' According to him, social and economic development and poverty eradication are the major priorities in case of developing countries. Green growth is a part of economic growth, using natural resources in a sustainable manner. In this way, green growth strategies can help economies and societies become more resilient. This term is used to describe national and international strategies. International communities are there to help the national level. It can be said to be a strategy for achieving sustainable development. There are three strategies and ten policy

directions such as, effective greenhouse gas reduction, energy independence, strengthened adaptation capacity, promotion of green technology, etc. Another example from South Korea is carbon labeling, the process by which labels that show the amount of $CO_2$ involved in production are affixed to products. In Japan, Prime Minister Yukio Hatoyama at the United Nations Summit on Climate Change (New York, 22 September 2009) said that Japan aims to reduce its emissions by 25% by 2020. In environmental and energy sectors, Japan targets greenhouse gas emission reductions by 1.3 billion using various technologies. He presented an image that showed medium and long term greenhouse gas reduction processes. The opening of new frontiers are necessary for achieving these goals. Different platforms must also be explored to support green growth. These include technology, science, employment, human resources, etc. Japan has a framework law and a new growth strategy that provide a map forward to 2020/2050. In addition to global climate change, urbanization is also increasing. Dr. Shrestha also showed maps indicating land cover change in Mae Nam Ping basin around Chiang Mai, stating that urbanization is growing all around the world making the city areas more crowded. He also talked about Green Economy Advisory Services which consists of policy advice, technical assistance and capacity building. The advisory services include fostering multi-stakeholder dialogue and consultation on green economy, supporting the Centre of Excellence, enhancing local knowledge and building capacity, and forging partnerships and alliances with national, regional and global institutions, etc. Policymakers make policy, but people will not adopt policies because they are green unless they are interested in it. In the end, he talked about APN (Asia Pacific Network for global change research), an inter-governmental network that fosters global change research in the Asia Pacific. It consists of 22 member countries and its major activities include funding research and capacity building projects and science-policy linkages. APN is sponsored by the governments of Japan, New Zealand, Republic of Korea and United States of America.

Dr. Sangam Shrestha, AIT: Quantification of Water, Energy and Carbon Nexus

Dr. Sangam Shrestha from Asian Institute of Technology (AIT) presented on the quantification of water, energy, carbon nexus that basically focused on the relationship between water resource, energy resource and their inter-linkages. The session included a presentation and a group exercise. The objectives, keynotes of presentation, brief on exercise, conclusion of session and views and comments of participants were as follow:

Objectives

- To understand linkage between water, energy and carbon emission;
- To estimate the energy use for water services and water use for energy production and carbon emissions; and
- To present and discuss about the water, energy and carbon nexus by considering hypothetical examples.

Key notes of the session

- Energy and water do have a symbiotic relationship: Extraction, production, distribution and consumption of water require energy and similarly energy production also requires substantial amount of water in both consumptive and non-consumptive use;
- Water requirement for energy production: Water is used at various stages of power generation including for fuel extraction (mining and refining, oil, gas, uranium and coal processing, coal and

gas liquefaction and gasification, carbon sequestration) and generation (coal, gas, oil, nuclear and biomass power plants);
- Energy requirement for water services: Energy is required to lift water from depth in an aquifer, pump water in pipes, treat waste water and desalinate brackish or sea water;
- Energy associated with water also contributes to greenhouse gas emissions as use of various energy sources during water production and consumption releases greenhouse gases; and
- It is important to understand the water, energy and carbon nexus because this nexus has cyclical effect.

Increase in urban population increases water demand, which in turn increases energy consumption as well as energy demand, which again increases the use of the fossil fuel as fossil fuels are the major energy sources in the present context. Increased use of fossil fuels increases GHG emissions which directly contribute to global warming and climate change. These global problems then bring other problems like drought and more demand of water due to global rise in temperature. Such shortages increase the need of finding the water alternatives like groundwater extraction and sea water desalinization which need more energy and eventually more water. This cycle goes on unless we understand the relationship between water, energy and carbon and find the ways to optimize use of both water and energy resource.

Dr. Rhiddi Bir Singh, RECAST: Rural Energy Technology: a concept of Green Economy

Dr. Rhiddi Bir Singh from the Research Centre for Applied Science and Technology (RECAST), Tribhuvan University gave a descriptive presentation on 'Renewable Energy Resources and Technology', focusing mainly on Nepal. He started off the presentation by saying that renewable energy resources are not well-defined and that they are especially yet to be defined in terms of bio-mass energy technology. He then illustrated the current energy scenario and the total energy generated from the renewable and nonrenewable resources in Nepal with different numerical examples. After this brief introduction, Dr. Singh highlighted the main energy issues in Nepal—the consumption of biomass fuels versus the consumption of all other forms of fuel. He started by quoting different numerical examples of the contribution of biomass based fuels in Nepal, highlighting the energy consumption in residential areas during the period 2008-2009. He did this by referencing various data such as the energy consumed in traditional, commercial and renewable sectors. Dr. Singh then talked about the energy system in Nepal, distinguishing between the urban and the rural energy system. He classified national energy consumption in Nepal into five sectors: Residential, Transportation, Industrial, Commercial and Agricultural. A national energy database under the rural/urban energy system is still to be worked out. Energy resources that can be harnessed, developed and utilized in Nepal are biomass and traditional fuels such as wood, cattle dung and agricultural residue as well as commercial fuels such as petroleum products, coal and electricity. Currently, renewable fuels such as biogas, micro-hydro and solar photo voltaic are emerging in the Nepalese energy sector; however, there are still resources such as wind power, geothermal power, liquid bio-fuels and other non-dung based biogas which still need to be developed and utilized in Nepal. Dr. Singh highlighted the renewable energy technologies and their linkages to poverty alleviation in Nepal. He also suggested ways to mitigate the negative economic, health and environmental impacts in the use of fossil fuels in Nepal through the mobilization of the appropriate renewable energy technology, noting that rural employment can also be increased with their implementation.

Mr. Vivek Dhar Sharma, UNDP/GEF/SGP: Green Entrepreneurship

Mr. Vivek Dhar Sharma from the Small Grants Program (SGP) of Global Environment Facility (GEF) under the United Nations Development Program (UNDP) presented the 'Value Addition of Medicinal and Aromatic Plants: A Green Enterprise, A Case Study from Dolakha, Nepal.' The concept of green enterprise comprises using renewable raw materials that follow sustainable harvesting principles and the efficient use of stainless distillation units with boiler and spent up grass as fuel. Certification costs for such alternatives is still high, however, with annual certification being around NR300,000 and organic certification being around NR150,000. Before the realization of the project, preliminary research lasted for one year. Challenges like local markets, research costs and financial and marketing plans were collected by the team. The entire group collaborated well to make sure the enrollment of the project on medicinal and aromatic plants. Some of the other challenges faced were lack of active young collectors of the plants even if the pay for collection was raised. Young people have migrated to foreign lands. He concluded stating that the development of financial aid on green entrepreneurship is very important but it is difficult to get through the bank.

**Prof. Michael H Glantz, CCB-Sustainability session**

Prof Glantz, Director of the Consortium for Capacity Building (CCB) at the University of Colorado, Boulder (USA), introduced the H2O (Highlands to Ocean) concept. The flow of water from the highland starts with glacial melt in mountains. People all along the water's courses as it wends its way through lower elevations toward the open sea or toward inland depressions rely on that water for food production and water resources. In light of this truism, mountains are in need of 'social invention'. As an initiative, H2O makes explicit the concrete linkages needed between highlands and lowlands governments and people so that both can thrive through peace and cooperation. It highlights as well as strengthens the view that the mountains are the planet's Water Towers (not just its reservoirs) and that mountain people are the guardians of those water towers. It also reinforces the need for generating awareness and interest in as well as support for the sustainable development activities that take place upstream. For its part those upstream must be aware of the dependence of downstream populations on the reliability of receiving their water resources that are needed to sustain their livelihoods. Under the so-called "normal" climate conditions of the past, relations between highlands and lowlands were a mix of competition and cooperation. Scientists now agree that for the past few decades global warming as a result of the burning of fossil fuels and tropical deforestation has been underway, and that warming continues. The H2O Initiative can lead to mutual support between highland and lowland governments and people as they search for ways to cope with a changing climate and its impacts on societies and ecosystems. Those impacts which have already been seen include floods & flash floods, changes in temperature, changes in seasonality, droughts, landslides, fires, changes in monsoonal regimes, increasing rates of snowmelt, increasing number and risk of glacial lake outburst floods (GLOF), migrations, changes in agricultural and grazing lands, vector borne diseases, conflicts, etc. Prof Glantz emphasized the benefit of sharing mountain resources with the upstream people as well.

Mr. Gregory Pierce, CCB: Green Economy at the Scale of 1:1—The Shape of Spatial Moments at a Rounded Market in a Town Square

Mr. Gregory Pierce, Senior Associate Scientist at CCB, started the session with a brief exercise. He asked the audience members to trace their one of their hands on a piece of paper. He explained that the traced hand on the paper is at a 1:1 scale to each person's actual hand but it is merely a representation of the real hand. The drawings represent the flattened shape of each hand. Sustainable development is also a concept generated by the scientists that doesn't actually exist in the real world; it, too, is only a representation. Physical scale is expressed by the ratio 1:1 which can also be shown as n:n, which is just a calculation that enables us to carry out mathematical operations. Mr. Pierce explained that measurement is one kind of social construction used in many cases, and one can see diverse measurement units as when place varies then units also varies. Quantitative measurement is valid only in some social spaces not in all cases or all places. In fact, measurement misses the reality of the 1:1 scale; it misses that the representation is merely an abstraction of reality and not reality. The idea of measurement lies on how one chooses one's focus. The world depicted by science is not reality. It presents conceptual understanding—a representations—of things around the world, trying to prove things using many comparative tools. Science deals with measurements that only represent the world as "flat" and not in three dimensions. This is the limitation of traditional system. Finally, Mr. Pierce discussed markets from rounded and reality perspective. Rounded means existing in the real world (as compared to flat representations). The logic of green economy can only be efficacious if it is taken in terms of the reality of the people at real markets in real places and not in market theories of economics where youth can bring a big difference. He also explained why youth are unique and what the strength among them is. Only the youth can bring big change in the society as well as in national and international level.

Dr. Bhanu R. Neupane, UNESCO: ICT and Climate Change: Quo Vadis?

Dr. Bhanu R. Neupane from UNESCO shared that marginalized people are most exploited, humiliated, corrupted, powerless and dependent on natural resources. Thus, strategies must build grassroots capacity and support the social movements, innovation and leadership. He added that environmental degradation increases vulnerability, pollution increases morbidity and mortality, and deforestation increases the cost of basic goods. He stated that only poor are not the source for resource degradation. They can adopt win-win technologies like eco-agriculture and ecotourism. They can be environmental activist like *Chipko* movement in India. Then he talked about global change drivers, some of which are population growth, political changes, trade and subsidies, technological changes, climate change, etc. The four noteworthy trends he stated were the continued rise of human populations, rise of demand, increasing climate change and environmental impacts, and the rise of machines for information, communication and technology (ICT). Within the context of climate change, ICT acts as an evil by consuming high energy and emitting the GHG emissions; ICT acts as victim as climate-linked phenomenon damage infrastructures worth three billion USD, ICT as a solution by providing the mitigating opportunities and abating carbon emissions. He elaborated on mitigation opportunities and ICT's use in enhancing efficiency and facilitating conservation. In the present context, ICT is playing very big role in climate change awareness, mitigation, monitoring, and adaptation. He presented an example of water resource. ICT can be used to help marginalized people in various ways through information and communication. He concluded his presentation with the take home message which said that technology is the part of the solution. Being the most educated and enabled mass, if we mobilize, change will be possible.

Mr. Madan Rai: Green excursions: organic farming

The first green excursion that the participants visited was the organic farming practices by Mr. Madan Rai, an independent expert working in the green sector. He has been operating an organic farm on his 50 acres of land for 10 years and is hopeful that his approach to organic farming can be a part of the green economy at the individual or household level. He believed that much of global warming and pollution effects come from human wastes products. Based on scientific explanations about matter, 'matter can neither be created nor be destroyed' but only change its forms, which means that the food and water humans consume changes to feces and urine. These waste products, rich in nutrients, could be given to plants as fertilizer to continue the nutrient cycling. It is the process of connecting food with food as the forms of the matter keeps changing. Similarly, water that enters the human body helps deliver essential nutrients and also bring unused nutrients out as urine. Some of the major problems in the world are air, which human needs to survive. Trees produce oxygen for us, while humans and animals produce carbon dioxide for plants. So, this relationship is very important. Water that sustains marine life or fresh water resources for humans is also a global issue and soils that are being cultivated might be degraded in the future. In terms of natural resources, he believes that by extracting more resources from land (land use, food consumption, etc.) and by having wastes as result, these wastes eventually enter the ocean. This means that humans are moving land resources into the ocean, and ocean resources are moving to land. Each individual is capable of organic farming. Basic technologies are needed such as gloves, plastic tank, ashes, and others. He also referred to Buddha's lesson about *Thaha* ('to know' in Nepali) that people should understand and know themselves better. At the demonstration site, he allocated land for his house, an ecological sanitation toilet, a compost area, a grey water tank, an organic chicken coup, and a two layer *chulo* (stove). After the visit, participants commented that the organic farming at household level is an interesting approach to the green economy. The idea of recycling nutrients from the body, to the plants, and back to the body again is in a way trying to 'close' the system so that nutrients are retained on land. Though the idea is good, it is not easy to persuade people to establish similar systems in their own homes. Participants were influenced by the green excursion program and had ideas about starting such activities from their houses and teaching others about them.

Mr. Samden Sherpa, ICIMOD: Welcome and brief by the Godavari Centre manager followed by a brief update on the centre's activities

Participants got a chance to tour ICIMOD's Godavari Knowledge Park, the centerpoint of all appropriate green technologies for livelihood options, community development, sustainable land use practices in Lalitpur, Nepal. Mr. Samden Sherpa, ICIMOD's Godavari Knowledge Centre Manager gave a brief introduction about the park. Everything is possible by seeing the miracle from a naked land to a wonderful support functions and scientific research center with more than 165 kinds of spices and others wild flowers and edibles. The Godavari center basically is one of the most important research centers for mountains. It is a place where many technologies have been brought and experimented with for soil management technology, including SALT-Sloping Agriculture Land Technology, green manure and cover crops, composting, biodynamic, vermi-composting, tunnel method of composting, bio-pesticides and plants tonics) to water management technologies such as spring water harvesting (used for drinking), water harvesting pond, roof top rain water harvesting, stone line/grass line water ways and gravity sprinkle irrigation. All these technologies can be used effectively and affordably compared to other sources that bring to many benefits to mountains farmers as income generation (cash income), water collection, water used for downstream areas for

livestock and fish farming, etc. Moreover, renewable energy technology such as solar lights (to reduce firewood use in mountains areas for cooking, drying food, etc.), solar parabolic cookers, solar ovens, solar aqua still plants, and non-solar technologies like bio-briquetting technology, improved cook stoves, peltric sets for mini-hydro projects, rain water pumps and cool chambers have been researched and adapted for local modification.

Demonstration of the center's activities (sustainable land use practices, appropriate technologies - hedge rows, briquettes, mushrooms; air pollution monitoring station) followed by a short hike

The participants visited a typical place where useful technologies for farmers are selected, tested and demonstrated. Thirty acres of land area was provided by the government of Nepal in 1992 but there was no forest at that time because of deforestation. It was a barren land and people used to graze animals there. Then 695 different kinds of plant species including 30-40 kinds of orchids were planted. Multistoried vegetation reduced soil erosion. They gained information about soil erosion, SALT, and green manure. They also learned that nitrogen fixing plants could be used as fodder for the co-benefit of soil and livestock. Locally available biomass is also used to bio-pesticides and plant tonics. Fruits, nuts, spices (kiwi, ground apple, cardamom) as well as medicinal and aromatic plants were highly cultivated. As the Himalayan region is known as the repository of economically viable medicinal plants, many plants are used in the production of derivatives for allopathic medicines. Nearly 100 species of such plants are available at the Godavari site. Similarly, the participants visited and learned about the renewable energy technologies that help in reduction of firewood use. They learnt about mushroom cultivation in Bhutan, kiwi plantations, water harvesting plants, screw models of making briquettes, beehive briquetting technology, vermin-composting technology, fruit farming, and bio-dynamic composting.

Ms. Anja Moller and ICIMOD team: Knowledge sharing session

After touring ICIMOD's Godavari center, the participants gathered for the 'Knowledge cafe' session. The session was based on the 'World Cafe' format, and Mr. Tek Jung Mahat facilitated the session. The rules set up for the session were simple. Each participant was given a cue card and asked to note down a topic of their interest related to green economy. Next, the host went around reading out the topics as the participants raised their cards out to each other to induct members into their groups based on common interest areas. A few minutes were set aside for all the participants to meet into five groups. In order to form groups with balanced numbers, certain time was allotted for the participants to advertise and sell their theme to one another. Then among the variety of sub-issues chosen, participants settled into five groups, namely: Role of media; green jobs and entrepreneurship; capacity building; low carbon economy and climate change adaptation. The key element of the cafe method was 'group rounds' where each group discussed on the topic among themselves for twenty minutes and at the end each member moved to a different table. One person, the 'Table host', was left behind to welcome the new set of 'shifting' people for discussion on the same topic. Each group owned a table and a host was selected. The groups were provided with chart papers to arrange their ideas on paper for the last segment of the knowledge cafe where the host presented the ideas to the rest. Except for the host, members followed the 'shifting' schedule and this way contributed to more than one group/topic. After the allocated time, a separate five minutes was provided for the group presentations.

The first group presentation was from Media group. Team leader laid stress on the power of the media. He emphasized that the role of the media is to question authorities and link them to common people. He lamented that some issues are not highlighted at all by the media. He concluded by saying: “Media can teach, educate, monitor and compel authority.” Then Ms. Malika Munjal highlighted the role of traditional media (folk, street theatre, puppetry, community radio) in communicating and spreading awareness about issues to rural areas. The second group presentation was from the Green Entrepreneurship group. Ms. Saengabha Srisopaporn from Thailand highlighted green entrepreneurship as an excellent opportunity for youth to gain employment and as a tool towards achieving sustainable development. She suggested ideas for combining technology with business opportunity and according to her, combining environmental and social aspects can be a key to alleviating poverty. She also said that it was not a new concept but needs to be seen in a new light. For instance, greening of existing enterprises should be included under it. She took the example of the tourism sector. The biggest challenge is the lack of transfer of traditional knowledge to new generation. But, eco-tourism can counter this by transferring ancestral knowledge to the new generation for the benefit of local community. Also, she very rightly pointed out that most operations in the tourism sector are captured by the richer class and are large scale and commercialized with little importance being given to environmental conservation. Entrepreneurs should be informed more on how to use resources efficiently. She gave another idea on creating a value chain of procurement from organic farming. She explained by saying that organic farming could be promoted as a wholesale operation by local communities and then supplied down the value chain for profit. In the end, she suggested that we all should adopt and promote sustainable lifestyles, for example by using influential people like celebrities as ambassadors to attract the common people.

The third presentation was from the ‘Capacity Building’ Group. The leader Ms. Chap Sopornetra from Cambodia talked on sub-topics like stakeholders, tools, actions, challenges and opportunities. She listed down the stakeholders, government, policymakers, NGOs, CBOs and educational institutes for the capacity building exercise. She said that people are responsible and education should be included in school curriculum. A subject on ‘Green Economy’ should be introduced and rural exposure visits should be organized to bridge the rural-urban divide. “Practical exposure to children is the best form of communication,” she added. With a chance of comment, Mr. Tawin Kim shed light on a much neglected issue. He lamented how teachers are grossly underpaid. Ms. Timila Dhakhwa noted an interesting thing that during knowledge sharing, it’s very important to recognize that both sides are learning, which is different from ‘helping’, the common jargon which is usually used for such a situation. Next, she pointed out that training of stakeholders and inter-generational knowledge sharing should be encouraged. She also mentioned the role and importance of traditional media especially for developing countries. But at the same time modern mediums should also be applied like: blogging, IT, ICT. She proposed certain actions for operational capacity building: Building incentives, creating knowledge centers and enhancing community knowledge. She stressed the importance of ‘follow up’ as all initiatives, campaigns, projects fade away after a certain point and die their own deaths. She then listed some challenges identified by the group discussions: Gender equity, lack of resources and funds, lack of participation, commitment and trust, illiteracy among others. She ended her presentation on a positive note by saying that the biggest opportunity among so many challenges is the ‘Power of sharing’. So she urged fellow participants to continue sharing.

The fourth presentation was given by Ms. Shanti Kandel from Nepal from the 'Low carbon Growth' team. She began by citing the importance of Intergenerational equity in the context of the limited natural resources that are now left with us. She constantly stressed the need to reduce emissions and suggested various low carbon options like green technology through Renewable Energy, the 3Rs and simple initiatives like using CFL bulbs for lighting. She also gave an example of the Delhi metro and the use of clean fuels. Climate finance and carbon trading were some of the tools suggested by her. Ms. Shanti also stressed on the importance of knowledge sharing. The final presentation was from the climate change adaptation group and was given by Ms. Marufa Ishaque of Bangladesh. She listed out the problems like drought, floods, irregular rainfall, landslides, salt water intrusion, extreme temperatures, increase in sea level, climate refugees, land use, land cover changes, decreased agriculture production, etc. and then brainstormed the solutions as building dams, introducing water harvesting, drip irrigation, drought resistant crops, adaptation of cropping patterns to changing climates, creating disaster management plans, introducing salt resistant varieties of plants, and conserving and increasing wetland areas.

In the second phase, Mr. Tek Jung Mahat from ICIMOD and Mr. Aman Sangha from AIT gave task to all the groups to decide a specific role for themselves as per their theme and to explain the reason for choosing it. The options were: media, policymakers, communities. The media group naturally chose 'Media' as they felt environment issues need to be featured in the mainstream media. The Green Entrepreneurship group chose the option of being policymakers. They justified it by saying that they believe in promoting youth as innovators and business makers. They felt instead of letting donors and foreign agencies take over operations, indigenous policies should be created to support local peoples. The Low Carbon economy group also chose the policymaker option as they quoted "There is no Planet B, so we cannot negotiate our lives." The Capacity building group chose no specific actor by saying "Shut up and Act!" They felt the category is not important but action is, so whichever role is chosen, they must act. At the end, Mr. Mahat appreciated the high participation levels and reflected upon the 'Knowledge Cafe' session. He said that the rationale behind conducting the session was to apply a process (World cafe) to distil ideas and create some output. He hoped participants would apply the method in future as well. His key advice to all the participants was: "rational thinking should guide us," since it improves the weight of argument. He also urged everyone to try and understand reality. Mr. Sangha advised participants to look at national level policies while proposing solutions so that they can be institutionalized and documented.

Prof. Suresh Raj Chalise, SEN: Intergenerational justice

The session on 'Intergenerational justice and green economy' was one of the most engaging and participatory events of the forum. The panel and comments from the floor afforded participants an opportunity to reflect upon their experiences engaging with children, youth, adults, policymakers and the older generation in their respective communities and countries. The result was a collection of stories, innovations, challenges, and calls to action that framed discussion on the green economy. Prof. Suresh Raj Chalise opened the session by defining intergenerational justice and highlighting its relevance to issues of the environment and climate change. Intergenerational equity aims to ensure the rights of sustainable economic, environmental and social outcomes for future generations. It is the concept of justice across all generations, particularly in terms of treatment and interaction. The fundamental ethics of intergenerational justice, he explained, is ensuring everyone–now and into the future—will have the same opportunities to flourish and be equal in human dignity. Discussion

on implementation of intergenerational equity needs to be contextualized in a meaningful and purposeful way. It was suggested, for example, when encouraging people to lead a low carbon life, rather than using new or complex language, simply talk about better waste management such as recycling, composting and minimizing the use of plastics. By framing the discussion with practical solutions and a call to action, individuals, both young and old, are more likely to understand and partake in the green economy. Another recurrent theme was youth participation. All delegates agreed in consideration of youth in debate. In the context of climate change and adaptation, youth must be involved at the decision-making level. Ultimately, changes to the environment will impact current and future generations of youths and it is paramount their concerns be considered by the state. At the same time, youth need to make a commitment to each other to promote youth participation when they are in positions in which they can influence policy. Though one is not an expert in green economy, one should always encourage standing and dialoguing on equity, environment and economy. As youth, one should take the lead and take action on tangible contributions. He said that knowledge needs to be disseminated among wide audiences in a digestible way. Environmentally inclusive decision-making will only occur if people demand it. Individuals need to believe that a small change will contribute to intergenerational equity.

Prof. Dr. Kedar Lal Shrestha, IDI: Global Change Adaptation and Green Economy

In the presentation given by Dr. Kedar Lal Shrestha, President of Institute of Development and Innovation, Nepal, he talked about the brown economy. He stated that about 66% of the world's livelihood supporting natural resources has been degraded. He said that much of the attention has been directed to the surface temperature rise but global environmental change is much broader. Then he talked about the millennium ecosystem assessment which is the largest assessment of the health of earth's ecosystem and is governed by the authorities of the United Nations. Then he showed the importance of the ecosystem services in terms of supporting, provisioning, and regulating cultural services. Ecosystem change can bring various consequences in human life like security, health, good relations, etc. There are two approaches to adapting to climate change. The first one is a science-driven approach with numerous complications, and the second one is a social-need based approach with effectiveness for the today's problem. Then he talked about various climate models (downscaling and impact) used for vulnerability assessment in scientific approach. He said that mountains are very important as they help in storage of water and ice, high precipitation, distribution to low lands, etc. According to his presentation, Himalayas are the water towers of world with various illustrations regarding the geology. He stated that human dimensions, uncertainties and surprises are some challenges in the governance of the water resources. He then concluded his presentation with highlighting the need to promote the multi-stakeholder involvement in managing trans-boundary resources through enhanced policies, institutional structures, funding mechanisms and other supporting systems.

Ms. Laura Seraydarian, CCB: Straw-bale Construction in Nepal: Lessons and Future Plans

Ms. Laura Seraydarian, CCB, talked about the importance of straw bale construction in Nepal. According to her, straw bale buildings are earthquake resistant, modern, and green and have many thermal properties. Nepal is vulnerable to earthquake and rapid urbanization along with the non-structural conventional buildings helped to evolve the project. The project came to practice through the pilot visit in Nepal and Pakistan. She showed the process of straw bale making and plastering techniques with the various illustrations. Then she talked about the risks in making straw bale and

strengths, weaknesses, opportunities and constraints of the straw bale usage. For example straw bale is environmentally friendly and risk mitigating but bears moisture. It has many opportunities as it is the new skilled trade and has the expert collaboration. It can also be made in modified form and help in the reduction of bricks use. At the end of the presentation, she talked about the future plans that included innovation centre, pre-fab panels, stakeholder dialogues, media-repackaging, use of other type of straw, involvement of international experts, etc.

Mr. Manjeet Dhakal, CEN: Briefing on Asia Pacific Graduate's Youth Declaration to COP-18

The session was conducted by Mr. Manjeet Dhakal, Program Director at Clean Energy Nepal (CEN). The session was focused on the finalization of the draft of Asia Pacific youth declaration for COP-18 to be held in Doha. For this, participants were divided into six different groups to work on six different thematic areas. The thematic areas were as follows:

- Sustainable Energy
- Green entrepreneurship
- Low carbon economy
- Climate change adaptation
- Youth empowerment and inclusion
- Collaboration and implementation of policy

The discussion among the different groups on their respective thematic areas was conducted to identify the key points for the commitment for youths and the declaration. All the groups made a conclusion on their discussion and after that all the groups presented their key points on their respective topics and suggestions from different other group for particular thematic areas were added.

Some of the points that were concluded from different groups are:

- Multi stakeholder engagement to implement policy
- Collaborating with communities and decision making
- Awareness raising and providing adequate education to all the groups of the communities
- Encourage stakeholders to generate green policy that must reach the local community
- Practical based action
- Global youth movement for the low carbon economy
- Communication with decision makers and dissemination of idea of youth that are significant for the green economy
- Cheap sustainable energy should be developed and opportunities should be given to youth
- One should start by themselves and must change themselves for the green economy then make change to others in a simple way
- Respect all age group, all the mind and go with collaboration

After team leaders of groups discussed on their points a final draft for the declaration was made.

Mr. Jeeban Panthi, SEN and Mr. Utsav Maden, ICIMOD: Exercise on Asia Pacific Graduate's Youth Declaration to COP-18

There were three steps to this exercise. With the guidance of Mr. Jeeban Panthi from SEN and Mr. Utsav Maden from ICIMOD, participants were divided into six groups according to the topics:

Sustainable energy, green entrepreneurship, low carbon growth, climate change adaptation, collaboration and implementation in policy, and youth empowerment and inclusion. After an hour for constructive discussion with major questions like “what do Youth want in their topic?” and “what can Youth do to implicate others and help implement it?” each group showed their idea for their topic and chose one member as group representative for the next step. In the next step, the chosen members discussed their group answers for their topic‘s question with others (they could get support from the remaining members), before writing down the draft of Asia Pacific Graduate's Youth Declaration to COP-18. Finally, as the representation of youth forum, Ms. Laura Mc Manus noticed the Asia Pacific Graduate's Youth Declaration to COP-18 for all forums and got the feedback. The draft of the ‘Asia Pacific Graduate's Youth Declaration to COP-18’ was provisionally approved with their common actions to engage on personal level as activists in the community, promoting and practicing the elements of the green economy; urging youth and stakeholders alike to approach the policies and implementation of the green economy.

Mr. Gregory Pierce, CCB and Mr. Dhiraj Pradhananga, SEN: Green economy-take home key message

This session was facilitated by Mr. Gregory Pierce from CCB and Mr. Dhiraj Pradhananga of SEN. The participants were divided into 10 groups. Each group was asked to list the five most important and interesting things that they learnt during the forum. Each group was then asked to prioritize the five important things that they noted. The one that each group placed the highest importance was then brought into discussion forum by the facilitators. The key messages of the forum as identified by the groups were:

- Networks with participants from different countries
- Knowledge sharing on the role of science in the changing world
- Networking, capacity building and getting result in a short period of time
- Interaction among the various interconnecting sectors (journalists, government officials, environmentalists, foresters, NGO representatives etc.)
- Defining the concept of green economy through the technical sessions
- Learning on ways how the youth can contribute to green economy
- Learning the importance of intergeneration roles and connections in green economy
- Making a declaration to an international forum
-

In each of the key messages, there were discussions and the participants presented their views on the key messages.

### 2.5.3 Closing Ceremony

During the session, Mr. Jeeban Panthi and Mr. Utsav Maden gave the overview of the forum by sharing some of the major activities conducted during the forum. From the first day to fifth day, all agenda items were looked back on respectively. Mr. Tek Jung Mahat presented the key pillars of sustainability and leadership, and Mr. Basanta Shrestha from ICIMOD gave the keynote speech. Then Ms. Sumaiya Ahmed recited the declaration which was adopted by the participants. Prof. Suresh Raj Charise made the appreciation to presenters, supporters and participants. Ms. Anja Moller Rasmussen gave appreciation to the Chair and the Chief Guest and announced the five selected participants for COP-18. She also suggested the other participants to join COP-18. Ms. Laura McManus presented the banner to bag project that she had been involved with. Mr. Dhiraj Pradhananga handed over the program banner to Ms. McManus. Mr. Gregory Pierce gave the vote

of thanks to all the participants and presenters. Dr. Bhanu Neupane, UNESCO, appreciated the effort in gathering dedicated mass from the Asia Pacific region. Lastly, Dr. Madan Lall Shrestha gave the session summary and closing remarks. He mentioned the organizers and supporters of the forum. Dr. Shrestha told to the participants that he was willing to support youth actions, in spite of his age. Intergenerational actions for Green Economy is to be built up from here, Kathmandu.

## 2.6 Activities of National Graduates' Workshop on Green Economy

A one-day workshop was organized on 28 July 2013 which provided a common platform for 35 young Nepali researchers to exchange their knowledge, experiences and activities carried out on different themes such as: sustainable agriculture, renewable energy, eco-tourism, forestry and biodiversity conservation, and techniques of climate adaptation. The workshop included keynote speeches from experts and both paper and poster presenters. A panel discussion was also organized to address the emerging issues on green economy and the scope of young researchers to address those issues.

### 2.6.1 Opening Session

The formal opening session was chaired by Prof. Suresh Raj Chalise, Advisor, SEN and Mr. Gokarna Mani Duwadee, Joint Secretary, Ministry of Science, Technology and Environment (MoSTE) and National focal person of APN was the Chief Guest. The workshop started with the welcome remarks by Mr. Sudarshan Rajbhandari, Vice-President, SEN. Mr. Rajbhandari congratulated all the selected participants and wished for their active participation.

**Green Economy: How are we building the capacity of young people? - Mr. Jeeban Panthi, SEN**

Mr. Jeeban Panthi, SEN, with an informative poster on green economy introduced the definition of green economy. He reflected on the activities that SEN has been doing to build the capacity of young people. Back in 2010, SEN co-organized the International Graduates' Conference on Climate Change and People which was one of the most successful events in SEN's history. More than one hundred young graduates from 18 countries participated in the conference and deliberated on Graduates' Youth Declaration to COP-16 with the formation of the Eco-Generation Network, a virtual network for information sharing among youth. SEN has also been contributing to international events by actively participating in drafting the Asia Pacific Youth Position Paper on Green Economy, which was submitted to the United Nations Convention on Sustainable Development (UNCSD) and to produce "State of the Planet". SEN actively participated in the World Leadership Conference (Singapore) and Planet under Pressure Conference (London) with the regional voice of young people in green economy. Moreover, SEN celebrated the World Environment Day 2012 by organizing the National Graduates' workshop on Green Economy. After its success, SEN organized regional level Asia Pacific Graduate's Youth Forum in Green Economy which was a grand success in 2012. The event was specially focused on green entrepreneurship which came up with a declaration to COP-18. SEN has been empowering and engaging youth in negotiations like Rio+20 and UNFCCC-COP which have given young people the platform to connect with policymakers, researchers, scientists and world leaders. Moreover, Mr. Panthi said the energy recovery and use of clean and renewable energy are twin pillars of green economy. He also shared about some potential green sectors in Nepal like

hydropower and renewable energy, forest products, sustainable agriculture, eco-nature tourism and energy recovery from solid waste.

**SEN's recent activities on Green Economy and Climate Adaptation – Mr. Piyush Dahal**

Mr. Piyush Dahal gave an overview about SEN, which was established as a non-governmental organization in 2001 with the goal of promoting sustainable lifestyles. SEN has been working under the strategy of the S-T-S (Students-Teachers-Scientists) Network, including four major programs: Research, capacity building, publication and awareness/advocacy. SEN has different working areas such as weather and climate information, agriculture, water resources, biodiversity and natural resource management, and solid waste management. It has been undertaking research on climate change impacts on discharge in the Koshi River Basin, glacial lakes vulnerability assessments in the Eastern Nepali Himalaya, water quality mapping of Bagmati river systems, baseline studies of Ramaroshan wetland areas, and climate change impacts and adaptation in Nepal are few of the organization's recent activities. Similarly, SEN is also carrying out awareness and advocacy activities like 'Best from Waste', climate change awareness programs in remote areas, 'Monks' Meet on climate Change' and so on. SEN has been building the capacity of youth through various programs like trainings on GIS, statistical analysis, and remote sensing as well as by conducting different conferences and forums on different environmental issues. The Kathmandu Valley Groundwater Outlook, the Pani Prasad Series, and a water conservation booklet are some of the major publications of SEN. Adaptation to Climate Change by Livestock Smallholders in GRB, Economic Impact Assessment due to climate Change in Agriculture, Runoff Scenario and Water based Adaptation Strategies in South Asia, Policy Brief Write-shop for Early Career Researcher from South Asia and Clean up Nepal are currently running projects of SEN. SEN also provides different opportunities for youth such as research grants and internship.

**Keynote Speech: Mr. Gregory Pierce**

Mr. Pierce elaborated on structural solutions for natural hazards over what has become the orthodoxy in disaster studies. Over the decades, terms like "vulnerability', 'resilience', and 'risk' have taken on very specific, even jargonistic meanings in the subject. Indeed, this forty-year history of the ascendance of critical disaster studies and especially of its linguistic framework has constituted something akin to a Kuhnian paradigm shift within the broad field of disaster studies. Mr. Pierce stressed the word "hard/pseudo-hard" science as he believed that the vast majority of professionals entering into disaster research and practice have continued to come from "hard" physical and engineering sciences or "pseudo-hard" economics backgrounds. He identified how the current scientific method of conceptual reduction and abstraction with their own scientific community and framework insulates it from other critical components that would be important for a green economy to be attainable. He urged the youth to be aware of the history and Shangri-la effect. He said everything has culture, and history shows from where power emerged and who yields it. So it is very important to question history. He also criticized the report of the United Nations Environment Programme (UNEP) where it explains about the green economy for the least developed countries. He said we don't live in one dimension, we live in four dimensions. We also don't live in a fantasy world but a real one and thus, when writing, we need to consider the real world. Finally, he urged youth to be role-models by applying what they have learnt and implementing it in practice and research.

**Key Remarks: Green Economy from an Agriculture Perspective: Prof: Dr. Nabaraj Devkota**

Prof. Dr. Nabaraj Devkota from Agriculture and Forestry University (AFU) stated that green economy is not that easy to define, work or achieve but we are the part of this game. He believes that the youth efforts may count in this context. He congratulated SEN for being a part of this challenging issue with the youth group. This is an example of milestones for whole country which needs to be continued in future and AFU will be very glad for partnerships to organize such programs in the coming days. SEN has given youth a good platform in being a kind of leader in this sector.

**Remarks from The Chief Guest: Mr. Gokarna Mani Duwadee, Joint Secretary, Ministry of Science, Technology and Environment and National Focal Point (NFP) from Nepal to APN**

With an overview on Rio+20, Mr. Duwadee said sustainable future is possible when the three pillars are equally strong: environment, society and economy. Stressing UNEP's definition of the green economy, he emphasized the need to rethink changes in and sources of growth and development. He also shared that the Ministry of Science, Technology and Environment (MoSTE) has been working in the green economy sector and has been formulating different policies and programs. It has been also promoting green investment. He stressed that young people have major responsibilities for capacity building in climate change, environment and green economy in different ways. He stated that youth are paying more attention to such environmental problems and its solution and the ministry has been achieving numerous proposals, plans and suggestion regarding the issues. Last but not the least, he said the government was committed to partnerships and to working with the young people.

**Concluding Remarks from the Chair: Prof. Suresh Raj Chalise, Advisor, SEN**

Prof. Chalise focused on biasness in research and research output and reflected on the changes that come with the introduction of new "buzzwords" every ten years. He envisioned the knowledge was constantly growing and that each branch of knowledge was contributing to other branches of knowledge. "Green economy" and "sustainable development" are examples of such buzzwords, the meanings of which can be debated. He stressed the need for young researchers to debate and not to accept history as the final word. He emphasized the traditional ways on how Nepalese have been discovering and practicing green economy, with changes in the last fifty years due to technological changes. Although everyone in Nepal was engaged in agriculture in the past, people are rapidly abandoning it now. Agriculture practitioners have become limited to old women and young children in most of the rural places due to migration abroad. Science doesn't have the answer to everything but it can provide solutions to mitigate some problems. Prof. Chalise encouraged people in the developing world to understand that the buzzwords should come from within and of our own experiences rather than some external entity that has defined them for us.

### 2.6.2 Technical Session

**a. Green Economy – Agriculture, Forestry and Biodiversity**

**Human Urine: A sustainable Alternative source of fertilizer, Debendra Shrestha**

Chemical fertilizers are widely used to increase agriculture production in order to combat increasing challenges in meeting the demand for food around the world. But chemical fertilizers are expensive and their prices keep increasing. Poor farmers often cannot afford chemical fertilizers, and they are not easily available in the remote and hilly parts of Nepal at the required time, place and quantity. In spite of this fact, Nepal is spending billions of rupees every year to import chemical fertilizers from other countries. Human urine, a nutrient-rich fertilizer, is easily available and could be a viable alternative to chemical fertilizers for sustained crop production. At the same time, use of human urine in crop production not only provides valuable fertilizers but also reduces the impact on environment and the water bodies if properly managed. Research was conducted on a commonly grown vegetable, the sweet pepper (*Capsicum annuum* L.), to evaluate the fertilizer value of human urine in different combinations and to compare the value with compost, urea and their combinations based on plant performance. The experiment was done using Randomized Complete Block Design consisting of eight treatments, each replicated thrice. Each treatment was fixed to a supply of 100 kilograms of nitrogen per hectare. The highest plant height (54.7 centimeter), number of fruit per plant (9.1), and fruit yield per plant (553.9 gram per plant) were recorded with the treatment fertilized with human urine in combination with compost. Plants fertilized with the combination of human urine and compost showed better growth and yield compared to the application of chemical fertilizer alone. The results indicated that the human urine performs better when used in combination with compost, and can be used as a promising fertilizer source as revealed in the case of sweet pepper production.

**Prospective of Nepalese Youth on Future of Food, Dinesh Pandey**

Nepalese agriculture is typically characterized by small holder, traditional and subsistence in nature but it is enormously rich in terms of biodiversity and natural resources, and plays a very important role in the country's economy. Nepal is also very rich in youth population, which makes up 40% of the total population. But many youths are unemployed or underemployed. There is a decreasing interest among people of this generation in traditional and subsistence agriculture and an increase in interest in adapting to new changing socio-economic and climatic conditions. Yet the resulting questions are obvious: who will feed the future generations, and who will help manage our natural resources? Understanding the needs and aspirations of this young population is an important factor for spreading new habits, raising awareness and advocating for changes, and their different perspective, vision and motivation can contribute to practical solutions. Keeping these possibilities in mind, to meet food for growing population of present and future, food security considerations could be used majorly with sustainable agricultural practices of change in food habit, crop promotional based on pocket areas, sustainable crop management practices and participatory varietal development approach which could include youth as well as components of adaption on climate change in agriculture. Using change in food habit concept will help to focus on food diversification with well processing technologies to produce nutritious value added products where youth can be directly involved in raising awareness and engage in such type of agri-production. Likewise, product diversification and proper marketing may add pertinent areas in meeting the goals. Demand based pocket area production could be another way to make agriculture more profitable. Leasehold farming will be better to commercial and competitive agriculture which creates employment opportunities considering sustainable soil management practices. Similarly traditional knowledge/practices and conservation of local genetic resources may play key roles in farmers' and community's capacities to adapt to climate change to increase food production. Another important

approach is organic agriculture, which is not only associated with local and national markets but also with global markets. Thus, if visions of a future based on sustainable and inclusive agriculture are to be realized and if young people are going to have a place in that future, these approaches have to be taken carefully while developing our national level programs and agendas for Nepal.

**Impact assessment of climate change on parasitic and vector borne diseases in livestock and humans in buffer zone areas of Chitwan National Park of Nepal, Tara Nath Gaire**

Raising livestock, a major economic and social activity in Nepal, is providing a source of livelihood and social benefit to the people. Livestock productivity is largely influenced by the level of nutrition derived from natural grazing, water availability, and health status of the animals. Climate change is disrupting natural ecosystems by providing more suitable environments for infectious diseases into new areas where they may harm wildlife, domestic species, as well as humans. The increased incidence of infectious diseases in wildlife, livestock, and people may be one of the important immediate consequences of global warming. Nepal is already subject to an enormous number of animal diseases; the burden will further grow with the increased incidences of existing or newly emerging diseases that are difficult to predict. A study was conducted to understand climate change and its impact on livestock and human health particularly on parasitic and KAP (knowledge, attitude and practice) study on vector borne diseases (Dengue, Malaria and Japanese Encephalitis). The study was conducted at Gitanagar, Padampur, and Patihani areas of Chitwan district from April to December, 2012. Primary data were collected through a number of participatory appraisal tools - focus group discussion, key informant interview and household surveys. A total of 150 households were selected for the study. Findings revealed that only 22% respondents were aware about climate change "Jalabayu Paribartan" whereas 78% were unaware about this information. About 36% respondents are taking some adaptive measures to reducing the adverse effects of changing climate in their livestock. Similarly, most of livestock farmers felt that flies and tick were the major vectors of diseases. The main climatic factors that are affecting the livestock production were vector borne diseases, infectious diseases, parasites, and insufficiency of feed and forage. Among these factors, disease and parasitic infections were more important for decreasing livestock production. The main problem in livestock health was considered as *Fasciola* sps. Only 34% people are using bed nets as preventive measure for vector borne diseases, where as 49%, 31% and 43% people knew about mosquitoes are vectors responsible for the transmission of Dengue, Malaria and Japanese encephalitis respectively. Observed thirty year (1981-2011) annual temperature and rainfall data showed slightly rising in temperature and more erratic rainfall in Chitwan district. In conclusion, there is less understanding of impact of climate change and its impact on livestock.

**b. Green Economy – Water, Climate Adaptation and Energy**

**Annapurna Dhaulagiri Community Trek - Some Possibilities and Learning, Saurav Dhakal**

Long-term climate is changing all over the world but in the Himalayas, it is changing in a faster rate than the world's average. The impacts of climate change are now becoming visible with detrimental impacts that are affecting the mountain communities, livelihood, tourism and economy in an

immense way. The local people living in the mountain areas are coping with the problems caused by climate change in a traditional ways through their modest effort. Their effort is less effective in comparison to the impacts caused by global climate change and it needs further assistance through a global effort to make the mountain communities' climate resilient. Last year, the author spent more than three months traversing Nepal's harsh mountainous regions, taking stock of the life of vulnerable people and assessing the impacts of climate change. Along with Apa Sherpa, the 21st-time Everest summiteer, he completed a grueling 1,555 kilometers trekking which took him to some of the highest Himalayan passes and acquainted him with diverse cultures, lifestyles and people. Now the author is into exploring information and service delivery systems at local levels, based on eco-tourism. Fragile environments, rugged terrain, and low agricultural productivity in mountains are particularly affected by climate change in the Himalayas. But, the majestic beauty of nature has largely trickled down the impacts of such changes through tourism in mountain communities. Everest and Annapurna regions are famous trekking destinations for trekkers, mountaineers, climbers, researchers and others from all over the world. Most of the tourists come to Nepal to see the outrageous beauty of those regions. In Nepal, tourism may have played a significant role in poverty reduction, livelihood improvement and nature conservation, that makes the people living in that regions, climate resilient to the current climate changes and it's impacts.

**Study on Energy Consumption pattern and GHGs Emission: A Case Study in Belwa VDC of Parsa, Nepal, Binay Sa Kanu**

The study was conducted in 2012 to know the energy consumption pattern and greenhouse gases (GHG) emission of Belwa Village Development Committee (VDC) of Parsa, Nepal. The major energy resources used in the study area were biomass based fuel, hydroelectricity, and petroleum products. Biomass based fuel such as fuel wood was used in large amount in spite of the problems associated with its use - including energy inefficiency, deforestation, increasing use of time for collection of fuel, increased indoor air pollution, and other deleterious health and environmental effects. Both primary and secondary data were used to assess the energy consumptions situation for the research purpose. Major findings revealed that more than 95% of the population in the VDC used firewood as a main source of fuel for cooking whereas almost all people have been using electricity for the lighting purpose. Among the total sampled households (104), 734.6 Tonnes per year of fuel wood, 50.6 Megawatt-hour per year of electricity, negligible amount of kerosene (3.248 Liters per year per household) was used. The total energy consumption among the survey households was 13968.7 Giga Joule per year with 18.2 Giga Joule per year per person. The total GHGs emission was 1161.7 tonnes of CO2eqv year with per capita share of 1718.5 kilograms of CO2eqv per year per person. Based on the findings, improved cooking stove (ICS) was recommended as the best alternative energy technology for the area. It will reduce 143.88 tonnes of CO2eqv per year if all traditional cook stoves (TCS) are replaced by ICS. ICS is reported to be more efficient that TCS that could save fuel wood by 74.9 kilogram per month in the ICS installed house. There was a reduction of 43.5% in the amount of total suspended particle concentration compared to TCS using houses resulting in better indoor air quality and decreased rate of respiratory diseases observed in women and children. Therefore, use of ICS significantly reduced the indoor air pollution and the emission of greenhouse gases.

**Study on Changing Trends of Various Population Parameters in Relation to climate Change and its impact on people's livelihood in Dubiya VDC, Kapilvastu District, Rajib Khanal**

Deterioration of climate sensitive ecosystem services such as agriculture, water resource, and forest affects the livelihood of people whereas limited livelihood opportunities and exposure to climate related hazard increase the vulnerability of population. A study was conducted in Dubiya Village Development Committee (VDC) of Kapilvastu where participatory tools such as household survey, focus group discussion, transect walk, and key informant interview were conducted besides a household survey with the use of limited and precise information related to the objective The objective of the study was to assess the demographic status and document the perception of local people on climate change.. The findings revealed that the problem of resource encroachment, deforestation, food availability and land fragmentation were associated to rapid population growth and high arrival of new settlers. Simultaneously local people have perceived change in temperature and precipitation pattern in the area. Erratic rainfall and other rainfall extreme events might have affected farming, degrading the livelihood of population. Agriculture was reported to be the most vulnerable sector affected by change in population dynamics and climate change with decreased productivity and increased incidences of disease, pest and weeds. The vulnerability of local people is enhanced by land fragmentation and distribution, large household size, and lack of income diversification, low education status, food insecurity and institutional constraints. It was noted that family planning, awareness on climate change and capacity building to diversify the livelihood source will help to strengthen the resilience of people. It was suggested by the respondents that mass migration is likely to occur in response to climatic variability that should be regarded as a legitimate response to the effects of climate change.

### 2.6.3 Panel Discussion – Green Economy: Challenges and Opportunities

The discussion was moderated by Dr. Soni M. Pradhanang, City University of New York, USA, with the introduction of the panelists and the general guidelines of the discussion.

**Suchita Shrestha:** Certainly, conventional agriculture has provided us the economic benefits, however, when we talk about green economy, it should provide not only economic benefits but maintain ecological balance and ensure sustainability. Commercially produced crops, vegetables, and fruits contain chemical fertilizers and pesticides. Farmers use these chemical fertilizers and pesticides in indiscriminate ways resulting in health hazards, environmental pollutions such as soil, air, and water pollution, and biodiversity loss. On the other hand, organic agriculture is a production system that sustains the health of soils, ecosystems and people. It relies on ecological processes, biodiversity, and cycles adapted to local conditions, rather than the use of inputs with adverse effects. The global market for organic food is increasing every year. Agriculture sector contributes 35% of gross domestic product of Nepal's economy. Since fertilizers and pesticides have not reached yet to certain remote parts of Nepal, it can be taken as an opportunity to promote the business of Nepali organic products. Government support and favorable policy is therefore the necessity for its promotion as a sustainable business and helping in the uplifting small farmers economically.

**Christopher Butler:** Since the mid-1990s, the World Bank had decided against funding large dams because of the social and environmental implications to the areas in which the dams were situated. But in April 2013, the World Bank changed its position, labeling large hydropower as "green" energy necessary to support the growth of developing countries like Nepal. It is apparent that dams are not completely "green." Even in the best of situations, the installation of dams exacerbates erosion, impacts water flow and water quality, and can, in some cases, generate methane. On the other hand, compared to carbon-based fuels, hydropower is certainly greener and more desirable in terms

of minimizing greenhouse gases. So, the "green" of hydropower depends largely on who you talk to. Environmentalists in Nepal would not consider hydropower to be green, while the private sector and the state endorse hydropower as green so as to take advantage of the wealth of renewable energy running down from the Himalayas.

**Saurav Dhakal:** Climate change has had varied impacts on the community and they are coping with these changes largely in traditional ways and occasionally using the modern ways. Use of the poly-tunneling housing (greenhouse) for off season vegetable farming in Solukhumbu district, plantation of new cash crops cardamom and orange in Taplejung and Sankhuwasabha districts, and potato farming in cold regions of Dolakha and Gorkha stand out as some humble efforts of the local towards dealing with climate change. Cash crops (tea and cardamom) and non-timber forest products have huge economic impacts in eastern region. Stories created in the camps will have close connection to the locations, people, their culture, their way of living and livelihood and facilities available there for travelers. Local foods, their identity and socio-economic affairs related to the communities will also be part of the media contents. The main priority will be addressing the environmental problems of mountain regions. Our media output will try to reflect the general life in these communities in respect to the aforementioned issues. The ultimate goal is to create contents that help the communities, local journalists and entrepreneurs publicize the uniqueness and potentials of their place so that they can draw the attention of stakeholders as well as tourists.

**Shankar Adhikari:** About 1.6 million green jobs are available in Nepal which is 9.3% of the total employment figure in Nepal. Payment for Ecosystem Services (PES) and Reducing Emission from Deforestation and Forest Degradation (REDD) should be introduced in an effective and participatory way to promote green economy. Accounting values that address issues related to green economy is needed to be carried out on national and regional scales. If the overall system is good then the subsystem will be good. Nepal is working with the overarching goal of forestry for prosperity. New Forestry sector strategy is also being prepared with major emphasis on sustainable and scientific forest management, productivity enhancement, ensuring environmental goods and services, and promoting good governance. Views from different sectors should have common issues and the cross cutting themes should go to multipurpose stakeholders to settle the conflicts between the departments under the ministries. For example, in the case of agroforestry, when the impact of any project seems good the two departments' forestry and agriculture try taking the credit, but blame each other for failed or failing programs. Therefore, there needs to be a proper multi-stakeholders coordination mechanism.

**Moderator's Summary Note**

Dr. Soni M. Pradhanang was delighted with the interactive discussion on the floor. She emphasized that the panel discussion should come up with broader sector including water resources management, technology transfer, and bio-engineering aspects and so on. It is also equally important to balance the gender. SEN has been doing some good practices in agriculture like implementing the drip irrigation in its three research sites. She admired the story telling method to promote green economy and liked the term Eco-Pricing.

### 2.6.4 Poster Presentation

**Integrated Farming Systems: Key to Agricultural Sustainability in Eastern Mid-Hills of Nepal, Diwakar Dahal**

A project on food security in Sankhuwasabha implemented by Rural Reconstruction Nepal (RRN) since 2011 has been strengthening the integrated agriculture system to enhance the local economy. Integrated Pest Management, Plant Clinic Tools, and Mono-culture, Mixed-cropping and Inter-cropping along with livestock and forests were the key components to motivate and convince the farmers for better production without the use of chemical fertilizers. Efforts have been made to use more effective and sustainable organic control measures such as cow urine, "Banmaara" (*Lantana* spp.), "Titepati" (*Artemisia spp*.), wood-ash and tobacco powder per liquid.

**Production of Biodiesel from Micro-algae, Sagar Kafle**

A demonstration on 'Production of Biodiesel from Micro-algae' demonstrated that biodiesel remains a promising renewable bio-fuel in comparison to fossil fuel including diesel. Since algae uses waste carbon dioxide, it helps to conserve environment and as a non-food source, it aids the value on food security. The possibility of algae biodiesel in Nepal is higher as Nepal is rich in water resources and there are hectares of barren land which can be used to cultivate large amount of algae from which a trillion liters of biodiesel can be produced that may resolve the ongoing fuel crisis and price hikes.

### 2.6.5 Closing Session

The closing session was chaired by Dr. Kedar L. Shrestha, President- IDI Nepal and APN Project Leader. He expressed his gratitude to the organizers and all the participants. The certificates were handed to the presenters. He concluded the session with his understanding on green economy and by suggesting that young people to have a look on Millennium Ecosystem Edition and proposed a new buzzword "Knowledge: Green Economy Grasp".

## 3. Results and discussion

Through the presentations and the lectures from the experts and resource persons in the sector of green economy, the workshop contributed in capacity building of the participants. The inclusion of the topics like ICT and GIS added more flavor to the green context thereby establishing the linkage between the information technology and the green economy. The results of the workshop also include:

### 3.1 Selection of delegates for COP-18

The delegates for COP-18 were selected from the participants on the basis of their performance, biography and previous activities. The selected delegates were Ms. Chap Sopornetra from Combodia, Ms. Marufa Ishaque from Bangaladesh, Ms. Rozita Singh from India, Ms. Timila Dhakhwa and Mr. Sagar Aryal from Nepal. Among the delegates, Mr. Aryal could not participate in COP-18 due to a visa issue.

### 3.2 Declaration Preparation

The selected delegates worked to fine tune the declaration drafted during the youth forum. They consulted each other and the project team members during the process. The final draft of the declaration was circulated among the youth forum attendees for wider consultation, and feedbacks were encompassed in the final document. The declaration text has been attached to this report in Appendix 5.

### 3.3 Delegates' performance at COP-18

The delegates performed their best to spread the declaration at COP-18. They stayed in Doha from 30 November to 7 December 2012. During their stay, their main work was to share the declaration and attend the various sessions at Qatar National Convention Centre (QNCC). Some of the key events participated in by the youth delegates were as follows:

- World Climate Summit (December 2, 2012)

They attended two workshops in the World Climate Summit:

-Implementing the green climate fund in collaboration with UNEP finance initiative

-Technology transfer: Creating a global marketplace in collaboration with UNDP, CMIA and IETA

The delegates spoke about the declaration and discussed about promoting green entrepreneurship through the green climate fund. They handed over the declaration to their respective government delegates and policymakers. During that session, they also managed to pass the declaration to Ms. Christiana Figueres, UNFCCC Executive Secretary.

- ICIMOD Mountain Day 2 (December 3, 2012)

Delegates took part in the knowledge café and learned about climate agendas.

- Asian Youth Climate Network

Through the network, the delegates collaborated with other Asian delegates to strengthen the alliance for sustaining meaningful activities during COP and afterwards. They presented the declaration in a youth event called 'Global Youth Forum on Mountain Issues and Green Solutions', which was later incorporated into the Global Youth Appeal for COP-18.

- Momentum for change

They attended 'Lighthouse Activities' that are bringing the social and environmental benefits to the urban poor in developing countries. Delegates attended the Momentum for Change program as well as side events where representatives from each of the projects showcased their work.

## 4. Conclusions

The Asia Pacific Graduates' Youth Forum on Green Economy proved to be a successful capacity building program for the youth participants, who were empowered with the knowledge of green economy and its beneficial approach in the Asia Pacific Region. The workshop provided an excellent opportunity to build networks among the research communities including government bodies, national and international organizations, young scientists and the policymakers. The participation of delegates to COP-18 helped to further disseminate awareness. It also helped in reaching the declaration of youth in international communities. The forum concluded with the production of the declaration by the participants that spoke about the six key areas - green entrepreneurship, sustainable energy, low carbon economy, climate change adaptation, collaboration, policy implementation and monitoring, and youth empowerment and inclusiveness. The forum acted as a platform for addressing and mobilizing youth, who will be both the building blocks and the drivers of the nation. They are therefore of crucial importance, which is why more such forums, workshops, and conferences should be organized in the future. One is just not enough; the continuity of such programs is of utmost importance.

## 5. Future Directions

The participants will explore more for research in the sector of Green Economy for sustainable development as well as on climate change adaptation. The project has successfully broadened the knowledge and built the capacity of young people, who might otherwise have been floating with different ideas on how to foster green economy in their community. It has plotted the major roles of youth in green economy sector and moved forward with some innovative initiations. The organizers and collaborators will scale up such activities and seek new platforms for enhancing youth capacity on various aspects via different activities that include workshops, forums, seminars, conferences, webinars, virtual discussions or field trips at national to global levels.

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## Apppendix

### Appendix 1: Program schedule

**PROGRAMME**

**Asia Pacific Graduates' Youth Forum on Green Economy, 25 – 29 September 2012**

**Organizers:** The Small Earth Nepal (SEN), the Consortium for Capacity Building at the University of Colorado and the International Centre for Integrated Mountain Development (ICIMOD)

**Day 1 - Venue: ICIMOD Headquarters, Kathmandu, Nepal**

| **Time** | **Agenda Item** | |
|---|---|---|
| 08:30 – 09:00 | Registration of participants | |
| **OPENING SESSION:**<br>**Chair: Prof. Suresh Raj Chalise,** The Small Earth Nepal (SEN) | | |
| 09:00 – 09:10 | Welcome and opening remarks | **Mr. Dhiraj Pradhananga**, SEN |
| 09:10 – 09:20 | Context, objectives, structure and expectations from the workshop | **Mr. Tek Jung Mahat**, International Centre for Integrated Mountain Development (ICIMOD) |
| 09:20 – 09:40 | **Keynote:** Rio+20 deliberations, mountains and youth. | **Dr. David Molden**, Director General, ICIMOD |
| 09:40 – 09:50 | Message from partners: Consortium for Capacity Building | **Mr. Gregory Pierce**, Consortium for Capacity Building (CCB) |
| 09:50 – 10:00 | ICIMOD's new strategy 2013-2017: need for intergenerational partnership and mountain development | **Dr. Eklabya Sharma,** Director, Programme Operations, ICIMOD |
| 10:00 – 10:15 | Remarks from the Chair | **Prof. Suresh Raj Chalise,** SEN |
| 10:15 – 10:25 | Introduction by the participants | Name, country and academic background |
| 10:25 – 10:35 | Vote of Thanks | **Ms. Anja Møller Rasmussen**, IKM Programme Manager, ICIMOD |
| 10:35 – 11:00 | Tea/Coffee Break (Photo Session) | |

| | | |
|---|---|---|
| **TECHNICAL SESSION 1:**<br>**Chair: Associate Prof. Suresh Das Shrestha, Tribhuvan University**<br>**Moderator: Dr. Sangam Shrestha, Asian Institute of Technology** | | |
| 11:00 – 11:30 | Green Economy: Challenges and opportunities – Mountain Perspective | **Dr. Golam Rasul**, Division Head, Economic Analysis/Policy Development Specialist, ICIMOD |
| 11:30 – 12:00 | REDD+ and Forest Carbon: linking Green Economy | **Dr. Bhaskar Singh Karky**, Resource Economist, ICIMOD |
| 12:00 – 12:30 | Application of Geographic Information Systems, Earth Observation in Climate Change Adaptation towards a Green Economy. | **Dr. MSR Murthy**, Geospatial Application Lead, MENRIS, ICIMOD |
| 12:30 – 13:00 | Moderated discussion followed by remarks from | |

| | | |
|---|---|---|
| | the Chair | |
| 13:00 – 14:00 | Lunch (served in ICIMOD cafeteria) | |
| 14:00 – 15:00 | Introductory session on UNFCCC COP 18 processes at Doha and presentation on the outcome document from the Asia Pacific Graduates' Youth Forum | **Mr. Dipesh Chapagain** & **Mr. Manjeet Dhakal**, Clean Energy Nepal (CEN) |
| 15:00 – 15:45 | 21 Emerging Environmental Issues for the 21st Century | **Prof. Michael H. Glantz,** CCB |
| 15:45 – 16:00 | Tea Break (served in conference hall) | |
| 16:00 – 17:00 | Social Media for Youth Advocacy | **Mr. Utsav Maden** & **Mr. Basudev Upadhyay**, ICIMOD; **Mr. Piyush Dahal** & **Mr. Jeeban Panthi**, SEN |
| 18:00 onwards | Inception dinner at Nepali *Chulo, Lazimpat* | |

**Day 2 - Venue: Hotel Goodwill, Kathmandu, Nepal**

| **Time** | **Agenda Item** | |
|---|---|---|
| 09:00 – 10:00 | Low Carbon Growth: State in Asia Pacific Region | **Dr. Madan Lall Shrestha,** Nepal Academy of Science and Technology (NAST) and APN |
| 10:00 – 12:15 | Quantification of Water, Energy and Carbon Nexus | **Dr. Sangam Shrestha**, **Mr. SHM Fakhruddin** & **Mr. Aman Sangha,** Asian Institute of Technology (AIT) |
| 12:15 – 12:30 | Tea/Coffee Break (facilitated in session) | |
| 12:30 – 13:00 | Rural Energy Technology: A Concept of Green Economy | **Dr. Rhiddi Bir Singh,** RECAST |
| 13:00 – 14:00 | Lunch | |
| 14:00 – 16:15 | **COUNTRY PRESENTATIONS:**<br>**Chairs:** Prof. Michael H Glantz, CCB and **Mr. Dhiraj Pradhananga**, SEN | |
| | Country group presentations (10 min. presentations) | Group presentations from each country |
| 16:15 – 16:30 | Tea Break (served in conference hall) | |
| 16:30 – 17:00 | Session summary and wrap up | Chairpersons |

**Day 3 - Venue: Hotel Goodwill, Lalitpur, Nepal**

| **Time** | **Agenda Item** | |
|---|---|---|
| 09:00 – 10:00 | Green Entrepreneurship | **Mr. Vivek Dhar Sharma**, UNDP/GEF/SGP |
| 10:00 – 10:45 | Green Economy at the Scale of 1:1 – The Shape of Spatial Moments at a Rounded Market within a Town Square | **Mr. Gregory Pierce**, CCB |
| 10:45 – 11:00 | Tea/Coffee Break | |
| 11:00 – 12:00 | Sustainability Session | **Prof. Michael H. Glantz**, CCB |
| 12:00 – 13:00 | ICT and Climate Change: Quo Vadis? | **Dr. Bhanu Neupane**, UNESCO |
| 13:00 – 14:00 | Lunch | |
| 14:00 – 17:00 | Green Excursion (Dholahiti, Lalitpur) | **Mr. Madan Rai**, Organic Farming Expert |

**Day 4 - Venue: ICIMOD Godavari Knowledge Park, Lalitpur, Nepal**

| Time | Agenda Item | |
|---|---|---|
| 09:00 – 10:00 | Welcome brief on Godavari centre's activities followed by discussion (Q & A) | **Mr. Samden Sherpa**, Godavari Centre Manager, ICIMOD |
| 10:00 – 10:20 | Tea/Coffee Break | |
| 10:20 – 13:00 | Guided tour of the campus with demonstration of appropriate green technologies for livelihood options, community development, sustainable land use practices etc. | **Mr. Samden Sherpa**, Godavari Centre Manager, ICIMOD |
| 13:00 – 14:00 | Packed Lunch | |
| 14:00 – 17:00 | Knowledge sharing session facilitated by ICIMOD KM team<br><br>**(Note: Tea will be served during the session)** | **Ms Anja Møller Rasmussen, and team**, ICIMOD |

**Day 5 - Venue: Hotel Goodwill, Lalitpur, Nepal**

| Time | Agenda Item | |
|---|---|---|
| 09:00 – 10:00 | Panel Discussion: Intergenerational Justice in Green Economy | **Chair: Prof. Suresh Raj Chalise**, |
| 10:00 – 10:30 | Global Change Adaptation and Green Economy | **Dr. Kedar Lal Shrestha,** Institute of Development and Innovation-Nepal |
| 10:30 – 11:00 | Straw-bale Construction in Nepal: Lessons and Future Plans | **Ms. Laura Seraydarian,** CCB |
| 11:00 – 11:15 | Tea/Coffee Break | |
| 11:15 – 12:00 | Briefing on Asia Pacific Graduates' Youth Declaration to COP-18 | **Mr. Dipesh Chapagain** & **Mr. Manjeet Dhakal**, CEN |
| 12:00 – 12:50 | Exercise on Asia Pacific Graduates' Youth Declaration to COP-18 | **Mr. Jeeban Panthi,** SEN & **Mr. Utsav Maden** ICIMOD |
| 12:50 – 13:00 | UNEP perspective | **Ms. Bidya B. Pradhan,** ICIMOD |
| 13:00 – 14:00 | Lunch | |
| 14:00 – 15:00 | Exercise on Asia Pacific Graduates' Youth Declaration to COP-18 | **Mr. Jeeban Panthi,** SEN & **Mr. Utsav Maden** ICIMOD |
| 15:00 – 15:30 | Green Economy: Take Home Key Messages | **Mr. Gregory Pierce,** CCB and **Mr. Dhiraj Pradhananga,** SEN |
| 15:30 – 15:45 | Tea Break (served in conference hall) | |
| 15:45 – 17:00 | **CLOSING SESSION:**<br>**Chair: Dr. Madan Lall Shrestha, APN** | |

**Appendix 2: List of Resource Persons for the Forum**

| S.N. | Full Name | Affiliation |
|---|---|---|
| 1 | Dr Golam Rasul | ICIMOD |
| 2 | Dr. Bhaskar Singh Karky | ICIMOD |
| 3 | Dr. MSR Murthy | MENRIS, ICIMOD |
| 4 | Mr. Dipesh Chapagain | CEN |
| 5 | Mr. Manjeet Dhakal | CEN |
| 6 | Prof. Michael H. Glantz | CCB |
| 7 | Mr. Utsav Maden | ICIMOD |
| 8 | Mr. Basudev Upadhyay | ICIMOD |
| 9 | Mr. Piyush Dahal | SEN |
| 10 | Mr. Jeeban Panthi | SEN |
| 11 | Dr. Madan Lal lShrestha | NAST, APN |
| 12 | Dr. Sangam Shrestha | AIT |
| 13 | Mr. SHM Fakhruddin | AIT |
| 14 | Mr. Aman Sangha | AIT |
| 15 | Prof. Krishna Raj Shrestha | RECAST, TU |
| 16 | Mr. Prashant Singh | HCI |
| 17 | Mr. Vivek Dhar Sharma | UNDP, GEF, SGP |
| 18 | Mr. Gregory Pierce | CCB |
| 19 | Prof. Michael H. Glantz | CCB |
| 20 | Dr. Bhanu Neupane | UNESCO |
| 21 | Mr. Madan Rai | Independent Expert |
| 22 | Mr. Samden Sherpa | ICIMOD |
| 23 | Ms. Anja Møller Rasmussen | ICIMOD |
| 24 | Dr. Kedar Lal Shrestha | IDIN |
| 25 | Ms. Laura Seraydarian | CCB |
| 26 | Ms.  Bidya B. Pradhan | ICIMOD |
| 27 | Mr. Dhiraj Pradhananga | SEN |

**Appendix 3: List of Participants for the forum**

| SN | Name | Country | Email |
|---|---|---|---|
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**Appendix 5: Declaration**

**Adaptation and Mitigation Strategies for Climate Change through Green Economy Initiatives**

We, representatives of the youth of the Asia Pacific Region1, are alarmed by the slow pace of action that has marked negotiations on climate change to this point. This will result in nothing less than a future of disastrous impacts for people living in highlands to oceans in our and other regions of the world. We believe that adaptation and mitigation measures developed through collective action and based on principles of green economy will ensure that the goals of the UNFCCC for stabilizing greenhouse gas concentrations are met. We therefore encourage you, our government officials and decision makers, to take immediate steps towards implementing the following six key areas, which emerged in discussions among youth participants at the Asia Pacific Graduate Youth Forum on Green Economy held in Kathmandu, Nepal from September 25 – 29, 2012.

Green Entrepreneurship

We encourage you to strongly support green entrepreneurial programs, projects and green entrepreneur-friendly policies. This will promote a culture of creativity and impact-driven solutions. We also strongly emphasize that youth be given incentives to innovate and that deserving ideas be encouraged through the support of the Green Climate Fund (GCF).

Sustainable Energy

We encourage you to transition to greater reliance on renewable energy solutions like hydropower, solar, wind and biomass technologies through local participation and ownership. We also encourage you to advocate sustainable energy technologies that are affordable and feasible in local contexts and to take serious and meaningful actions for the implementation of these technologies.

Low Carbon Economy

We expect you to be more ambitious and committed towards Green House Gas (GHG) mitigation by ensuring to include diverse sectors, from the energy sector, transportation and infrastructure to existing manufacturing industries. We encourage you to hold all countries at any development level accountable through the implementation of zero-carbon and low-carbon strategies that focus on incentives for transformation and sound waste management systems based on the principles of the four 'R's—reduce, reuse, recycle and reclaim.

Climate Change Adaptation

We ask you to formulate adaptation strategies that are grounded on the traditional knowledge of local communities and that can be owned and sustained by those communities with local resources and skills. We encourage you to focus on resilience building techniques and effective dissemination of information that makes climate science relevant to society.

Collaboration, Policy Implementation and Monitoring

We strongly encourage you to implement and monitor policies in collaboration with local communities at all levels of decision-making. We also encourage you to ensure the utilization of traditional media as well as the growing Information Communication Technologies (ICT's) to enhance opportunities for participatory coordination and collaboration.

Youth Empowerment and Inclusiveness

We encourage you to take a participatory and an inter-generational approach in sound decision making by including youth in the planning process. Today's international youth community despite their diversity is united by a vision for a better future. Thus, we encourage you to act as mentors to youth by giving them the platform, resources and backing for devising innovative ideas to face the challenges of climate change.

The *Asia Pacific Graduates Youth Forum on Green Economy* was held in Kathmandu, Nepal from 25 – 29 September 2012. The forum was organized by the joint effort of The Small Earth Nepal (SEN), the Consortium of Capacity Building (CCB) of the University of Colorado at Boulder, International Centre for Integrated Mountain Development (ICIMOD), and over a dozen other partners with a funding

support from the Asia Pacific Network for Global Change Research (APN) under the CAPaBLE program.
The forum hosted 40 passionate youth from 13 different countries across the Asia Pacific region and this declaration is the outcome of the hard work and effort put in by all of them.

***This paper is made from 100% traditional Nepali handmade paper called Lokta paper.***

# Graduates' Workshop on Green Economy

28 July 2013

Summit Hotel, Kathmandu, Nepal

## *Program Schedule*

| | |
|---|---|
| **Opening Session** Mc: Ms. Nicky Shree Shrestha, SEN<br>**Chairperson: Prof. Suresh Raj Chalise, Advisor, The Small Earth Nepal (SEN)**<br>**Chief Guest: Mr. Gokarna Mani Duwadee, Joint Secretary, MOSTE, and nFP, APN** | |
| 0930-1000 | Guest and Participant Registration |
| 1000-1005 | Chair, Chief Guest and Distinguished Guests called to the dais |
| 1005-1010 | Welcome remarks: Mr. Sudarshan Rajbhandari, Vice President, SEN |
| 1010-1020 | Green Economy: How we are building capacity of young people? – Mr. Jeeban Panthi, Research Coordinator, SEN and APN projects collaborator |
| 1020-1035 | SEN's recent activities on Green Economy and Climate Adaptation – Mr. Piyush Dahal, Program Coordinator, SEN and APN project collaborator |
| 1035-1050 | Green Economy-Keynote Speech, Mr. Gregory Pierce, Senior Associate Scientist (CCB) & PhD Student, Human Ecology (LUCID Research Prgrm, Lund University) |
| 1050-1055 | Key Remarks: Green Economy from an Agriculture Perspective – Prof. Dr. Nabaraj Devkota, Research Director, AFU |
| 1055-1100 | Remarks from the Chief Guest |
| 1100-1110 | Concluding remarks from the Chair |
| 1110-1120 | Group Photograph |
| **1120-1145** | **Tea Break (Networking session)** |
| **Session I: Green Economy – Agriculture, Forestry and Biodiversity**<br>**Session Chair: Prof. Dr. Nabaraj Devkota; Co-Chair: Mr. Jeeban Panthi** | |
| 1145-1200 | Human urine: A sustainable alternative source of fertilizer, Mr. Debendra Shrestha |
| 1200-1215 | Prospective of Nepalese Youth on Future of Food, Mr. Dinesh Panday |
| 1215-1230 | Impact assessment of climate change on parasitic and vector borne diseases in livestock and humans in buffer zones area of Chitwan National Park of Nepal, Mr. Tara Nath Gaire |
| 1230-1240 | Chair and Co-Chair's summary note |
| **1240-1340** | **Lunch Break** |
| **Session II: Green Economy – Water, Climate Adaptation and Energy**<br>**Chair: Prof. Dr. Kedar Rijal; Co-Chair: Mr. Piyush Dahal** | |

| | |
|---|---|
| 1340-1355 | Annapurna Dhaulagiri Community Trek - Some Possibilities and learning, Mr. Saurav Dhakal |
| 1355-1410 | Study on Energy Consumption pattern and GHGs Emission: A Case Study in Belwa VDC of Parsa, Nepal, Mr. Binay Sa Kanu |
| 1410-1425 | Study on Changing Trends of Various Population Parameters in Relation to Climate Change and its impact on people's livelihood in Dubiya VDC, Kaplivastu District, Mr. Rajib Khanal |
| 1425-1435 | Chair and Co-Chair's summary note |
| **Session III: Poster Presentation** | |
| 1435-1455 | Integrated Farming Systems: Key to Agricultural Sustainability in Eastern Mid-Hills of Nepal, Mr. Diwakar Dahal |
| | Production of Biodiesel from Micro-algae, Mr. Sagar Kafle |
| **Session IV: Panel Discussion – Green Economy: Challenges and Opportunities<br>Moderator: Dr. Soni M. Pradhanang, City University of New York, USA<br>Panelists: Mr. Christopher Butler, Mr. Saurav Dhakal, Mr. Sanker Adhikari, Ms. Suchita Shrestha** | |
| 1500-1505 | Program Overview/Panelist Introduction by the Moderator |
| 1505-1525 | Panelists' Comments |
| 1525-1545 | Question/Answer |
| 1545-1550 | Moderator's Summary note |
| **1550-1605** | **Tea Break (Networking session)** |
| **Closing session<br>Session Chair: Dr. Kedar L. Shrestha, President-IDI Nepal and APN Projects Leader** | |
| 1605-1615 | Certificate distribution |
| 1615-1620 | Remarks from participants and presenters |
| 1620-1630 | Concluding remarks from Session Chair |

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**Appendix 6: Glossary of Terms**

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|---|---|
| ACAU | Asian Coalition of Architecture and Urbanism |
| AEDB | Alternative Energy Development Board |
| AIT | Asian Institute of Technology |
| AP | Asia Pacific |
| APMN | Asia Pacific Mountain Network |
| ASA | Association of Siamese Architecture |
| AWBDN | Afghanistan Women Business Development Network |
| AYCC | Australian Youth Climate Coalition |
| BA | Bachelor of Arts |
| BHU | Banaras Hindu University |
| BUP | Bangladesh University of Professors |
| BYLC | Bangladesh Youth Leadership Centre |
| CBO | Central Bureaucratic Office |
| CC | Climate Change |
| CCB | Consortium for Capacity Building |
| CEE | Centre for Environment Education |
| CERED | Centre for Environment Research Education and Development |
| CoP | Conference of Parties |
| CREEW | Centre of Research for Environment Energy and Water |
| CSE | Centre of Science and Environment |
| CSR | Centre for Social Research |
| CSR | Corporate Social Responsibility |
| CSUWN | Conservation and Sustainable Use of Wetlands in Nepal |
| CWIN | Child Workers in Nepal |
| CWISH | Children and Women in Social Service and Human Rights |
| DHM | Department of Hydrology and Meteorology |
| EU | European Union |
| FAO | Food and Agricultural Organization |
| FRA | Forest Resources Assessment |
| GAP | Good Agricultural Practice |
| GCF | Global Climate Fund |
| GE | Green Economy |
| GEF | Global Environment Facility |
| GHG | Greenhouse Gasas |
| GIS | Geographical Information System |
| GoB | Government of Bhutan |
| GPS | Global Positioning System |
| HKH | Hindu Kush Himalayas |
| HTH | Human to Human |
| IACER | Institute of Advanced Communication, Education and Research |
| ICC | International Climate Champion |
| ICIMOD | International Centre for Integrated Mountain Development |
| ICT | Information Community Technology |

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|---|---|
| IDI | International Development for Innovation |
| IIT | Indian Institute of Technology |
| INGO | International Non Governmental Organization |
| INSTAAR | Institute of Arctic and Alpine Research |
| IoF | Institute of Forestry |
| IYCN | Indian Youth Climate Network |
| LDC | Least Developed Countries |
| MoFSC | Ministry of Forest and Soil Conservation |
| MPP | Master of Public Policy |
| MUN | Model United Nations |
| NAPA | National Adaptation Plan of Action |
| NAST | National academy of Science and Technology |
| NGO | Non Governmental Organization |
| NIT | National Institute of Technology |
| NOMA | Norwegian Medical Authority |
| NPCA | National Child Protection Alliance |
| NSCS | Nature and Social Concern Society |
| NSS | National Social Scheme |
| NYCA | Nepalese Youth for Climate Action |
| OECD | Organization for Economic Co-operation and Development |
| OFDA | Office of Foreign Disaster Assistance |
| PTI | Press Trust of India |
| QNCC | Qatar National Convention Centre |
| QNFSP | Qatar National Food Security Program |
| REDD | Reduction of Emission from Degradation and Deforestation |
| RET | Renewable Energy Technology |
| SALT | Sloping Agricultural Land Technology |
| SDC | Swiss Agency for Development Corporation |
| SEA | Small Earth Australia |
| SERVIR | The International Space station Environmental Research and Visualization Centre |
| SEN | The Small Earth Nepal |
| SHEAC | Self Help Environment Awareness Camp |
| SPG | Scientific Planning Group |
| SURE | Society for Rural Upliftment of Women |
| SUSI | Study for US Institute |
| TAL | Terai Arc Landscape |
| TEEB | The Economics of Ecosystems and Biodiversity |
| TERI | The Energy and Resources Institute |
| UHP | Unleashing Human Potentials |
| UNCED | United Nations Conference on Environment and Development |
| UNCSD | United Nations Conference on Sustainable Development |
| UNDP | United Nations Development Program |
| UNEP | United Nations Environment Program |
| UNESCO | United Nations Educational Scientific Cultural Organization |

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|---|---|
| UNFCCC | United Nations Framework Conference for Climate Change |
| USA | United States of America |
| USAID | United States Agency for International Development |
| WICPER | Weeramantry International Centre for Peace Education and Research |
| WTLCP | Western Terai Landscape Complex Project |
| WWF | World Wide Fund for Nature |
| YDF | Youth Development Fund |
| YOUNGO | Youth Non Governmental Organizations |