

TAKING BHUTANESE YOUTHS ON BOARD

SENSITIZATION WORKSHOP ON

“SUSTAINABLE MANAGEMENT OF
SOIL, LAND AND WATERSHED AND
BHUTAN REDD+ READINESS.”



FINAL REPORT | 2016





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BHUTAN REDD+ READINESS.”

Organized by:

National Soil Services Centre (NSCC),
Department of Agriculture (DoA) and
Watershed Management Division
(WMD), Department of Forests and
Park Services (DoFPS)

Ministry of Agriculture and
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The awareness workshop on sustainable soil, land and watershed management, and REDD+ Program of Bhutan was able to reach to the students of six academic institutions across the country with great satisfaction. This achievement may not have been realized in absence of the relentless support, intuitive guidance and various other contributions during the preparatory and execution phase of the sensitization workshop.

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- Finally, the FCPF REDD+ Readiness Preparation Proposal (R-PP) at Watershed Management Division (WMD), under the Department of Forests and Park Services (DoFPS) for the financial support. Without this, in no way the workshop would have taken its first step. Thanks a lot!

ACRONYMS

AFOLU	Agriculture, Forestry and Other Land Use
ANGep	Anthropogenic, Natural and Geophysical
AR	Assessment Report
CNR	College of Natural Resources
CST	College of Science and Technology
DoA	Department of Agriculture
DoFPS	Department of Forests and Park Services
FCPF	Forest Carbon Partnership Facility
GCBS	Gaeddu College of Business Studies
IPCC	Intergovernmental Panel on Climate Change
JNEC	Jigme Namgyel Engineering College
LCMP	Land Cover Mapping Project
MoAF	Ministry of Agriculture and Forests
NAP	National Action Program
NDCs	Nationally Determined Contributions
NRM	Natural Resource Management
NSB	National Statistical Bureau
NSSC	National Soil Services Centre
PES	Payment for Environmental Services
REDD+	Reducing Emissions from Deforestation and Forest Degradation, and Conservation, Sustainable Management of Forest and Enhancement of Forest Carbon Stocks
RGoB	Royal Government of Bhutan
R-PP	Readiness Preparation Proposal
RTC	Royal Thimphu College
SC	Sherubtse College
SD	Sustainable Development
SDG	Sustainable Development Goals
SLM	Sustainable Land Management
SOC	Soil Organic Carbon
SWC	Soil and Water Conservation
SWM	Sustainable Watershed Management
UNCCD	United Nations Convention to Combat Desertification
UNFCCC	United Nations Framework to Combat Climate Change
WMD	Watershed Management Division

TABLE OF CONTENTS

Acknowledgement	i
Acronyms	ii
Executive summary	1
1 Introduction	5
1.1 Land degradation- in context of Bhutan	5
1.1.1 Current facts and figures	5
1.1.2 Scale and extent	6
1.2 Background on REDD+ readiness program of Bhutan	7
2 Program rationale	10
2.1 Primary objectives	10
2.1.1 Sensitization and Awareness-raising	10
2.1.2 Advocacy and empowering youths	10
2.2 Secondary objectives	11
3 Method	12
3.1 Program components	12
3.2 Financial support and expenditure	12
4 The event days	14
5 Questionnaires and questionnaire analysis	15
5.1 Structured questionnaires	15
5.1.1 Thematic	15
5.1.2 Outreach	23
5.2 Non-structured questionnaire	21
5.2.1 Some general comments on sensitization workshop	21
5.2.2 Soil, land and watershed management	22
5.2.3 Comments on REDD+, climate change and soil organic carbon (SOC)	22
5.2.4 Outreach	24

6 Findings and Discussions	25
6.1 Summary of questionnaire findings	25
6.1.1 Thematic findings	25
6.1.2 Outreach	26
6.1.3 Unstructured questionnaire	27
6.2 Discussion	29
7 Concluding remarks	32
Annexure 1. List of References	34
Annexure 2: Questionnaire Format	35
Annexure 3: Group photo from the workshop	37
Annexure 4: HR involvement during the workshop	41

EXECUTIVE SUMMARY

What is happening in today's world? Many countries are seriously challenged by problems such as land degradation and environmental issues of local, national and global in nature.

There is no escape for Bhutan too. The land locked Himalayan Kingdom perfectly sandwiched between the two Asian giants; India and China is at the crossroads. On the one hand, Bhutan is relentlessly pursuing its developmental goals through implementation of its ambitious planned activities causing a huge impact on the environment. Conversely, Bhutan wished to protect and conserve its pristine natural environment and champion in environment management. However, Bhutan being one of the fastest developing nations in South Asia, land and environment degradation is inevitable despite having good environmental policies in place. For this reason, land degradation has been taking place on a continuous basis posing a great threat to sustainable agriculture, ecosystem services, and other developmental activities.

Let us bring on some numeric facts and some of the worrying situational trends that confront Bhutan. The total geographical area of Bhutan is 38,394 km², of this about 70.5% is covered by forest and another 10.4% is under shrubs. Total protected area is about 51.3%.

Of the total, only about 8.0% of the total area is cultivable- out of which, the total cultivated area today is about 2.9%. This should not make one feel safe, unfortunately. This is because more than 65% of country's population lives in the rural areas carrying out farming activities. But farming in Bhutan is not comparable to the ones in the lowland countries. Except in few river valleys, flat lands that are suitable for agriculture are limited. An apparent thing is that most of the cultivation occurs on steep slopes, even up to gradient of 38° (degrees). And then there are unwelcome changes in social trends which Bhutan has been experiencing for years. These include, youth unemployment, rural-urban migration, increased anti-social problems in the urban areas, and prevalence of high poverty rate especially in the rural corners, which is estimated at 16.70% against the national average poverty rate of 12.0%.

The National Soil Services Centre (NSSC), under the Department of Agriculture (DoA) and Watershed Management Division (WMD),

under the Department of Forests and Park Services (DoFPS), of the Ministry of Agriculture and Forests (MoAF) share the above concerns. As a matter of fact, the two agencies envisioned that there is a crucial need to sensitize and educate the Bhutanese youths in the colleges to inculcate the sense of appreciation and responsibility in safeguarding the limited land-based resources. This was also an opportunity for the agencies to instill sense of awareness among the participants on various topics that are related to management of natural resources for sustainable future, and of their importance towards the achievement of many other sustainable development goals (SDGs) and not only the SDG 15, which is related to land. This focus was of particular interest since youths occupy a very special position in a social pyramid, which is potentially regarded as one of the main stakeholders of today and would be key players in future. Further, though the topic of the sensitization program was on soil, land and watershed management for various colleges of diverse fields including engineering and business studies, the topic was truly relevant to all because everyone depends on natural resources either directly or indirectly.

There were two major objectives for taking the sensitization workshop to the academic colleges that are spread across Bhutan. The primary objectives of the workshop were to:

- sensitize the participants on: a) sustainable soil, land and watershed management, b) REDD+ Readiness program of Bhutan, and c) National Action Program (NAP) to Combat Land Degradation,
- empower youths through aforementioned educational programs, and
- build institutional linkages for future collaborative activities in the allied areas.

On a secondary note, it was envisaged that this particular program designed for youths may help in easing the unwelcome social changes that currently engulf Bhutan. The changes are expected in a gradual manner.

The month long program was conducted in May, 2016 in six colleges. The program was attended by about 2000 participants, majority of which were college students. There were also faculty members present during the day-long event.

The program consisted of a series of power point presentations on various topics. Posters were displayed and brochures were distributed to the participants. National documentaries on “Sustainable Land Management” and “Watershed Management” and a documentary of an international origin- “The Lessons of Loess Plateau China (EEMC-2008)” were also screened. Structured and unstructured questionnaires were distributed to collect participant’s take on the workshop, their feedbacks and suggestions. The information was collected in three sections- thematic, outreach and open sections. At the end of the program, printed publications that originated from NSSC were also handed over to the head of institutes to be used as reference materials in the colleges.

Total of 1164 completed questionnaires from the survey were analyzed in the aftermath of the sensitization workshop. This exercise revealed many insights. First and the foremost, this particular program was well received by the participants. It was reflected very generously that the workshop timing was ideal for them and commended for efforts in bringing the workshop to their institutes. What it came out as a surprise was that Bhutanese youths do share concerns on natural resources, which is scarce and is depleting at a fast rate. The participants were of the opinion that soil, land and watershed related issues are cross-sectoral in nature. Therefore, this demands a concerted efforts from key stakeholders to disseminate knowledge and information on natural resource management (NRM) in a more efficient and effective manner to have a wider horizontal reach.

In many ways, the participants are very much aware that unsustainable management of natural resources is a prime cause of environmental problems- as indicated by 90% of them. One such problem is climate change, which is man-made and can be mitigated. The participants were of the opinion that as one of the stakeholders, they have very important responsibilities to shoulder. About 77% of the participants agree that they could play very vibrant role in mitigating climate related issues. The youths are also aware about the direction of government’s developmental approaches- particularly in areas of energy sector. Here, almost all the participants (92%) recognized that watershed management would be crucial for sustainable energy generation from hydropower plants.

This should not surprise anyone- as expected, most of the participants have heard very little on the UN Conventions on the climate- United

"After my studies, I will not look for a job in the market. Rather, I will consider working in the farm, because my parents have adequate land back home. Agri-business is something I will pursue. This workshop gave me lots of information and ideas that I would need."

- Nim Dem (F), GCBS

Nations Framework to Combat Climate Change (UNFCCC), United Nations Convention to Combat Desertification (UNCCD) and global mechanism such as Reducing Emissions from Deforestation and forest Degradation (REDD+). The latter, which was framed by the global community to act on how to save the forests, was highly appreciated. Regarding this, the participants really liked the ideas on REDD+ as an incentive for countries who are putting every effort in conserving their forest resources.

The participants are also equally concerned about the outreach of such sensitization programs to wider stakeholders, particularly to farmers, students and teachers, and other private organizations. It was voiced that until now students and educators were left in an uncharted territory because there were no collaborative actions taking place to address issues related to the above subjects. In support of this, approximately 84% of the participants agreed that this particular program is relevant for other stakeholders as well. Though 86% of the participants wanted the hosting agencies to take similar programs to schools [for students], 67% of the participants are still of the opinion that it would be more crucial to sensitize educators in the education sector. This particular response comes in the form of silent, but very formidable recommendation to educate the educators first. This is because the teachers teach, and the children grow with what was taught in schools and utilize the knowledge thus gained in the future.

What is more interesting is that overwhelmingly 92% of the participants agreed to the point that taking such program to other stakeholders will change their perceptions on soil, land and watershed management. This is in fact a welcome finding since the very purpose of this program was to inculcate and bring about changes in the mindsets of participants.

The United Nation's SDGs are aimed at transforming the world by 2030. This requires working towards achieving 17 aspirational "Global Goals." It may be argued that "moving towards the goal of sustainability requires fundamental changes in the human attitudes and behavior."¹ If education is the widely trusted answer, then adequate sensitization of youths on the said topics would certainly change their mindsets. Such fundamental change would foster individuals to work towards sustainable future. At the end, the very result would ensure that the axiom "think globally, act locally" stands to be true at all times.

¹ Educating for Sustainable Future: A Transdisciplinary Vision for Concerted Action. Available at: http://www.unesco.org/education/tlsf/mods/theme_a/popups/mod01t05s01.html. Access date: 20/10/2016.

1 INTRODUCTION

Land degradation is defined as the “long-term loss of ecosystem function and the productivity caused by disturbances from which land cannot recover unaided,” (Bai et al., 2008),

Land degradation² is intensifying in many parts of the world. It is increasing in severity and extent year by year, causing serious threat to the livelihood of people and environment in the process. The FAO estimated that around 1.5 billion people are affected by various forms of land degradation globally.³ Its impact is even more detrimental in the developing and under developed countries where the prevalence of poverty among the people is higher. Further, it is generally recognized that the affect of land degradation is much more devastating and adverse to sections of people in the rural areas who directly rely on the land resources for their livelihoods. Thus, this builds direct relationship in increasing the carbon dioxide emission due to deforestation and forest degradation. Other factors are mainly tied to the socio-economic development activities such as unsustainable land management practices, industrialization, infrastructural development, etc.

Broadly, there are different forms of land degradation- specific to its geographical locations. These includes degradation caused by flooding in the low lands, salinization in the coastal plains, desertification in the semi-arid and arid regions, and the ones driven primarily by water erosion in the mountainous areas. These pose adverse impacts on the environment and an agronomic productivity of land- all of which leads to contentious consequences including poverty, increased carbon emission and global warming.

1.1 LAND DEGRADATION- IN CONTEXT OF BHUTAN

1.1.1 Current facts and figures

Bhutan is an agrarian country. More than 65% of the population lives in rural areas carrying out farming activities. According to LMCP (2010), total cultivable area in Bhutan is less than 8.0%, out of which only about 3.0% of this is cultivated. Poverty is a concern for Bhutan. The National Statistical Bureau (NSB, 2014) estimated that the average

² Land degradation- collective term referred to in this work for, land and land degradation caused by deforestation and forest degradation.

³ <http://www.fao.org/in-action/action-against-desertification/background/en>. Access date: 08/01/2016.

national poverty rate is about 12.0%.⁴ Unfortunately, this is largely a rural phenomenon, with poverty rate estimated at 16.7% in the rural areas.

1.1..2 Scale and extent

According to Norbu et al., (2003), due to its rugged terrain, physical land degradation that is primarily caused by water erosion is predominant in Bhutan. It is here, where the complex interplay of anthropogenic, natural and geo-physical (ANGep) factors is profound (Gyeltshen, 2010). The common processes or types of land degradation include splash, sheet, rill and gully erosions, land sinking and sliding, and in worst cases ravine formation (NSSC, 2005). Most of these generally occur within or in the vicinity of arable fields, in the deforested and overgrazed areas where land is reduced to barren, along the road networks and close to industrial sites where the land resources are harnessed in an unsustainable manner.

Due to the complexity of problem, combating land degradation is often considered as a huge challenge (NAP, 2014). This is mainly because all the stakeholders fail to come together to address the common problem. However, it needs a mention that land degradation due to deforestation and forest degradation is not as severe as it was thought to be initially as opposed to the physical land degradation occurring in the arable fields. This may be owing to the existence and effective implementation of forest and environmental policies, rules and regulations. Until now, the MoAF has been playing a crucial role in combating land degradation. Other government institutions had their own inputs, but the efforts were not adequate or satisfactory, considering the seriousness of the problems resulting from their activities. The land degradation problems, if addressed at the local level, could positively impact regionally and ultimately at the global levels. For instance, activities towards mitigating land degradation in the agriculture fields or degraded forest areas through the implementation of proper soil and water conservation (SWC) technologies and/or plantation of appropriate tree species could reduce carbon emissions from the agriculture fields or through carbon sequestration into forest ecosystems. In doing so, this could help in mitigating climate change, enhancing ecosystem services, and also serve as a potential income source in the global carbon market (Niles et al., 2002).

⁴ www.nsb.gov.bt/main/main.php#&slider1=4. Access date: 09/01/2016

During discourses on land degradation, roles and responsibilities of youths are often neglected, but they have significant roles and responsibilities to shoulder. This is because, youths like everyone in the society, depend on the natural resources.

1.2 BACKGROUND ON REDD+ READINESS PROGRAM OF BHUTAN

Reducing Emissions from Deforestation and Forest Degradation, and Conservation, Sustainable Management of Forest and Enhancement of Forest Carbon Stocks (REDD+) is a global initiative to reduce carbon emissions from forests and enhance carbon absorption. It aims to deliver enhanced carbon stocks and “co-benefits” that includes biodiversity conservation and poverty alleviation.

Climate change is currently a global topic of discussion. As per the fifth Assessment Report (AR) of the Intergovernmental Panel for Climate Change (IPCC), around 24% of green house gas emission to atmosphere causing global warming is from AFOLU (Agriculture, Forestry and Other Land Use) sectors (Fig. 1).

The REDD+ is a mitigation mechanism under the UNFCCC and is aimed to reduce carbon emission and enhance sequestration through five activities; i) reducing deforestation, ii) reducing forest degradation, iii) conservation, iv) sustainable management of forest, and v) enhancement of forest carbon stock. There are also other important co-benefits from implementing REDD+ activities that potentially include alternative livelihood provision and biodiversity conservation. If implemented effectively, REDD+ could help protect and enhance the world’s forests as carbon reservoirs and maximize their potential for slowing down and reducing the impact of climate change. In short, REDD+ aims to deliver enhanced carbon stocks and “co-benefits” that includes bio-diversity conservation and poverty alleviation.

Bhutan has a forest cover of 70.5% and another 10.4% under shrubs with 51.3% of total area under Protected Area management (LCMP 2010). This is mainly attributed to the existence of enabling policies and legislations for conservation and sustainable forest management and its effective implementation.

Recognizing that the goal of REDD+ mechanism at the global level is very much in line with the conservation efforts of Bhutan and the sustainable management practices adopted in implementing

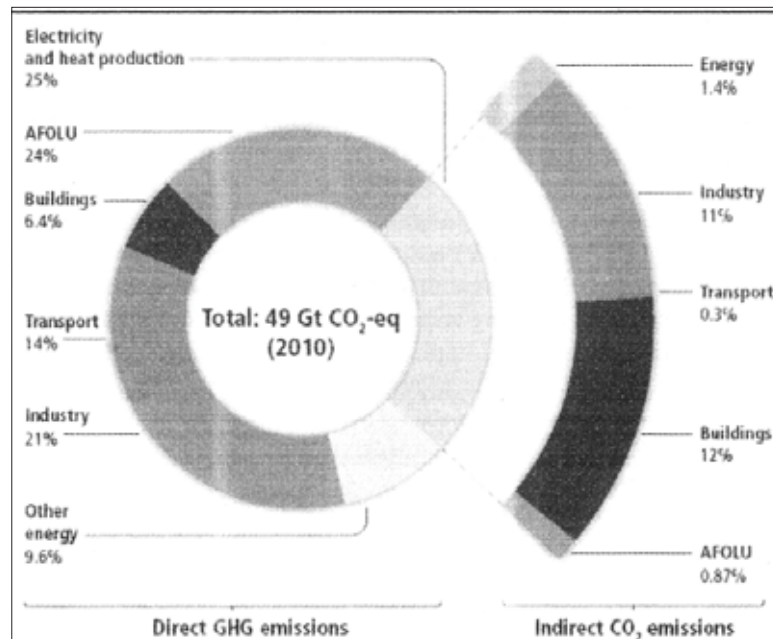


Figure 1. Greenhouse gas emission by sectors (IPCC Fifth Assessment Report, 2014)

various plans and programs, REDD+ was institutionalized in Bhutan in 2010. Bhutan envisages that participation in REDD+ mechanism has potential to generate carbon revenues as well as non-carbon co-benefits. REDD+ implementation can contribute to Bhutan's sustainable development through improved management of forest resources, forest law enforcement and governance.

The implementation of REDD+ therefore has a huge potential to complement the efforts of the Royal Government of Bhutan (RGoB) for the conservation and sustainable management of forest resources. The REDD+ may be linked with a market mechanism which allows developed countries and private companies to fund for the planning and implementation of REDD+ activities in developing countries.

The REDD+ has the potential to generate additional investment for sustainable management and utilization of forest resources through a future international climate change agreement. However, the level of this investment will depend on Bhutan's success in implementing policies and measures that address the drivers of deforestation and forest degradation, and the barriers to the '+' activities (conservation, sustainable management and enhancement of forests).

Bhutan's decision to prepare for REDD+ paved an ideal way to the preparation of REDD+ Readiness Preparation Proposal (R-PP) which was submitted to and approved by the Forest Carbon Partnership Facility (FCPF) of the World Bank, in December 2013. The R-PP of Bhutan was designed based on priorities for the forestry sector under Eleven Five Year Plan Program (July 2013 to June 2018) in terms of bridging information gaps, strengthening institutional capacity for improved governance and continued engagement of stakeholders in forest resource management.

Countries aiming to participate and benefit from the future REDD+ mechanism are implementing readiness activities to become REDD+ ready. Readiness includes the development of a national strategy and policies and measures for addressing drivers of deforestation and forest degradation through a transparent, participatory and equitable process.

Currently, Bhutan is implementing its R-PP spanning from 2014 to 2018 and implementation is progressing smoothly on several fronts. Advocacy, awareness and consultation are continuously organized across the country. Manuals, documents, guidelines and reports on all the key components of REDD+ framework are developed as per the R-PP requirements. One of the main outcomes of Readiness phase is to develop the National REDD+ Strategy and Implementation Framework - a roadmap for implementing Bhutan's REDD+ program in future that will guide decisions on the policies and programs for addressing the drivers of deforestation and forest degradation and improving the carbon sink capacity of the forest. The Readiness phase will also benefit Bhutan in terms of establishing a mechanism to monitor forest cover changes and lay the foundation for improving forest management and governance.

Being "ready" for REDD+ will entail increased capacity to coordinate and harmonize sector policies with the view of mitigating future impacts on forest cover, while ensuring that benefits from forests flow to forest dependent communities and stakeholders that are vested in actions to address deforestation and forest degradation. The REDD+ architecture will also help in achieving Bhutan's obligation to contribute to global low carbon emission development and sustainable development agenda while responding to commitments under the (Intended) Nationally Determined Contributions (I) NDCs of the Paris Agreement.

2 PROGRAM RATIONALE

The REDD+ readiness program of Bhutan supported by the FCPF, World Bank, which has a strong component on engagement of stakeholders at various levels including awareness-raising amongst the youths on the role of forest and land-based resources in mitigating climate change impacts. Here, the practical consideration for formulation of this program was that youths in general have very important role in the prevention and mitigation of land and forest degradation in order to make the watersheds more sustainable. Also, it needs a mention that although the topic of the sensitization program was on soil, land and watershed management for various colleges of diverse fields including engineering and business studies, the topic was deemed highly relevant to all as they directly or indirectly deal with the natural resources.

There were two objectives for the proposed workshop; of primary and secondary in nature.

2.1 PRIMARY OBJECTIVES

2.1.1 Sensitization and Awareness-raising

Building understanding or creating awareness among youths of the prevailing land and forest degradation problems and the consequent widespread of food and nutrition insecurity, poverty and environmental problems is very crucial. The focus areas include: a) prevailing physical land degradation in Bhutan, b) sustainable land management (SLM) programs initiated by the MoAF, c) the national action program to combat land degradation in Bhutan (NAP), d) The REDD+ Readiness program of Bhutan, and e) the watershed management. It is generally perceived that sensitization and awareness-raising are the keystones in understanding the land and land-based resources and working towards safeguarding them for example combating land degradation.

2.1.2 Advocacy and empowering youths

With development, the focus and/or interest on agriculture is quickly waning particularly in youths. Therefore, it is necessary to remind the youths of the importance of the protection of land and land based resources in a country like Bhutan where natural resources are limited. On the other hand, youths are perfectly placed between the government systems and institutions, and perhaps to the closer grass-root stakeholders (rural community members). According to Dar (2010), "School programs have been shown to be one of the most

effective means of promoting awareness of environmental issues.”This may be mainly because of the large and responsive target audience, and an established structure [the school systems] that facilitates dissemination and presentation of materials.

Empowering youths will give them much needed knowledge and an understanding of the pressing issues and concerns regarding land and environment they live in. This will eventually provide youths with much needed ownership. As a result, they will be able to voice their opinions, seek strategies for intervention and implement it in a rightful manner. Besides, it is more likely that the youths will also take the messages home to their parents and family members who might have limited access to media or because of low literacy levels fail to obtain information from various media sources. Therefore, youth advocacy is quintessential as they provide another mode of dissemination of useful information to the community. Apparently, youths will provide not one-way, but multi-way dissemination of knowledge and information.

2.2 SECONDARY OBJECTIVES

Bhutan is currently confronted by multitude of least desirous socio-economic problems from many fronts. These include: youth unemployment which is on the rise, rural-urban migration and problem of farm labor, increasing social problems in the urban areas, poverty which is still a concern, etc. In the long run, it is expected that such sensitization program like this would help Bhutan in addressing some of the above pressing issues in future.

3 METHOD

3.1 PROGRAM COMPONENTS

The main components that were included in the sensitization workshop consist of thematic topics such as physical land degradation, approaches and methods of combating land degradation through SLM, national strategies to combat land degradation, REDD+ program of Bhutan and sustainable watershed management.

Besides, presentation on PhD research findings on soil organic carbon variability under montane ecosystem and screening of documentary on SLM and poster displays were also included as part of the program (See Table 1).

	Main components	Component details
1	Physical land degradation in Bhutan	<ul style="list-style-type: none"> its types causes impacts implications
2	Sustainable land management (SLM)- achievements & key lessons	<ul style="list-style-type: none"> achievements lessons learned way forward for SLM
3	National action program to combat land degradation	<ul style="list-style-type: none"> why NAP? its propose stakeholders
4	REDD+ Readiness program of Bhutan	<ul style="list-style-type: none"> what is it? its importance opportunities for participation
5	Sustainable watershed management (SWM)	<ul style="list-style-type: none"> approaches to SWM key players issues & challenges
6	Soil organic carbon variability under <u>montane ecosystem</u>	<ul style="list-style-type: none"> assessing the influence of landscape attributes
7	Documentary on SLM	

Table 1. The main workshop components

3.2 FINANCIAL SUPPORT AND EXPENDITURE

The program was supported by the REDD+ Program, which is housed WMD, under DoFPS, of MoAF.

Total amount of Nu 20,069,641.00 (Ngultrum Two Million, Sixty Nine Thousand Six Hundred and Forty One) was spent during the program.

From the total, 2.8% of the fund was spent on posters, poster stands and banners, 37.7% on lunch (x1) and refreshments (x2), 55.3% in printing publications and workshop materials that were distributed to the workshop participants and in the colleges as reference materials, and 4.1% as payment for DSA for the resource persons and support staff. Here the publications are either the ones that has originated from NSSC and WMD, or are co-authored by the researchers from these agencies.

4 THE EVENT DAYS

Academic Institution	Event Day
College of Natural Resources (CNR)	03-04/05/'16
College of Science & Technology (CST)	07/05/'16
Jigme Namgyel Engineering College (JNEC)	11/05/'16
Sherubtse College (SC)	13/05/'16
Gaeddu College of Business Studies (GCBS)	18/05/'16
Royal Thimphu College (RTC)	28/05/'16

Table 2. List of Institutions and corresponding dates during which the workshop was held.

Initially, the idea of the hosting agencies was to take the sensitization program to academic institutions during the month of February and March, 2016. However, this could not be executed on grounds of logistical issues; both from the side of hosting agencies and academic institutions.

Therefore, one-day sensitization program was scheduled in May, 2016 in consultation with the head of the colleges and faculty members who are involved with such activities. Since the academic calendar of respective institute was quite heavily booked during the stated month, the program day was either scheduled on Wednesdays or Saturdays.

Exception here was that the management at Sherubtse College agreed to host the event on Friday, 13th May 2016 (See Table 2 aside).

5 QUESTIONNAIRES AND QUESTIONNAIRE ANALYSIS

Workshop information, participant's take and their feedbacks and suggestions were collected by means of questionnaire survey that were of structured [closed] and non-structured nature [open-ended] nature. Total 1164 participants participated in the questionnaire survey.

5.1 STRUCTURED QUESTIONNAIRES

Structured questionnaire had two parts (See Annexure 2), first of which was on thematic. This was related to all topics that were covered during the workshop. Second part of the structured questionnaire was designed for outreach program. In this section, the feedbacks, their opinions and suggestions on the need of taking similar programs were taken to other stakeholders in the country were collected.

Data thus accumulated through questionnaire survey was entered into MS Excel Sheets. Once this was achieved, analysis of all the information was carried out and presented as pie charts in the ensuing sections. Highlights of each figure are indicated in shaded bullet points.

5.1.1 Thematic

In this section, participants were provided with the thematic statements and were asked to indicate which score corresponds more closely to their experiences of participation in the workshop. Following are the scores for each statement.

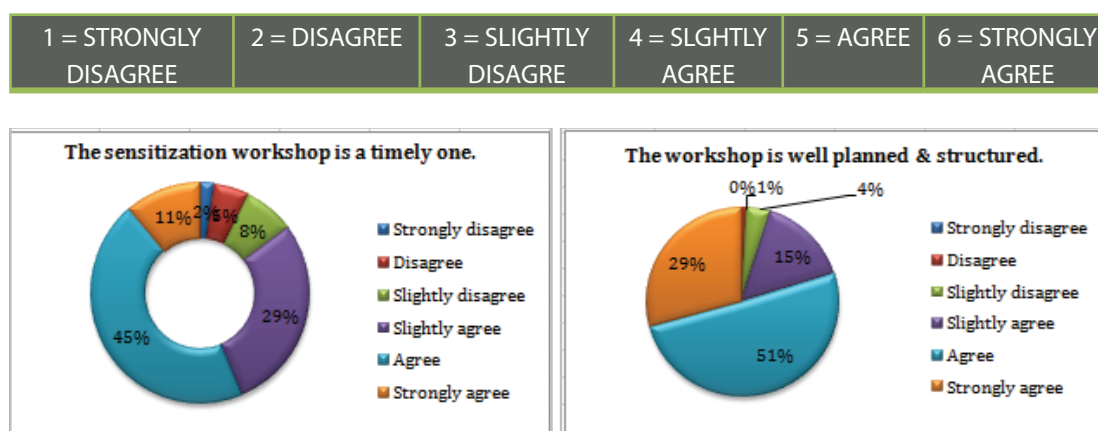


Figure 2. On the timing of workshop & its structure.

- About 55% of the participants reckon that workshop was conducted at right time, and
- About 80% agree that the event was well planned and properly structured.

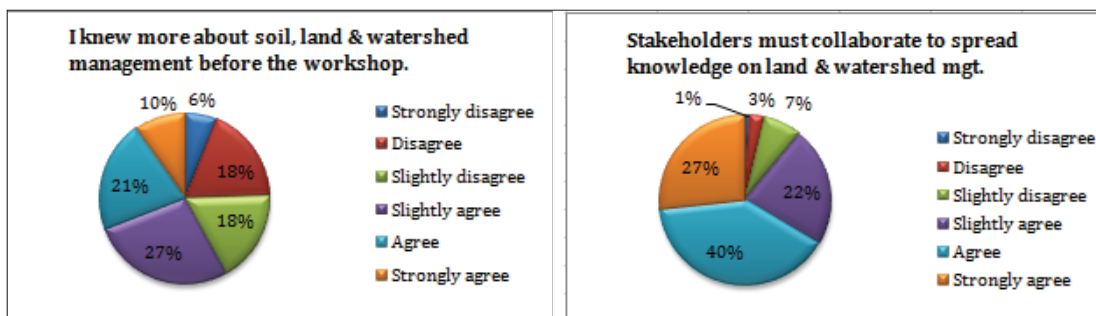


Figure 3. On the knowledge on management & stakeholder collaboration to disseminate knowledge.

- About 10% strongly agree on knowing more about soil, land watershed management and 21% agree on it, and
- About 67% are of the opinion that stakeholders should collaborate to spread the knowledge on the said subjects.
- About 80% agree that the event was well planned and properly structured.



Figure 4. About the REDD+ program & UN Conventions to combat desertification and climate change.

- About 74% of the participants have not heard about the REDD+ before the workshop,
- About 64% knew nothing about the two UN Conventions that are related to desertification/land degradation and climate change, and
- On a surprise note, about 10% of the participants agree that they have heard about REDD+, though this being a relatively new environmental framework.

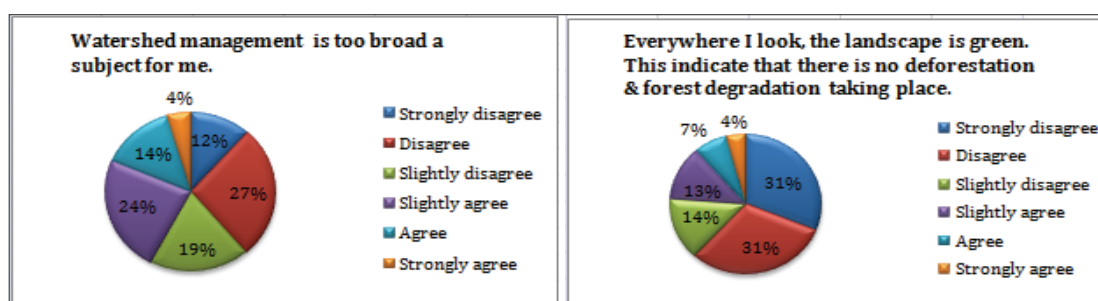


Figure 5. About the broadness of watershed management & deforestation and forest degradation.

- About 39% disagree that it is a broad subject, 43% either slightly agree or agree and the rest (12%) accept that it is a broad subject,
- For 62% of participants, sight of green landscapes around them is not an indication that there is deforestation and forest degradation taking place, and
- Split of opinion on the broadness of watershed as a subject may be attributed to the varied academic backgrounds of the participants.

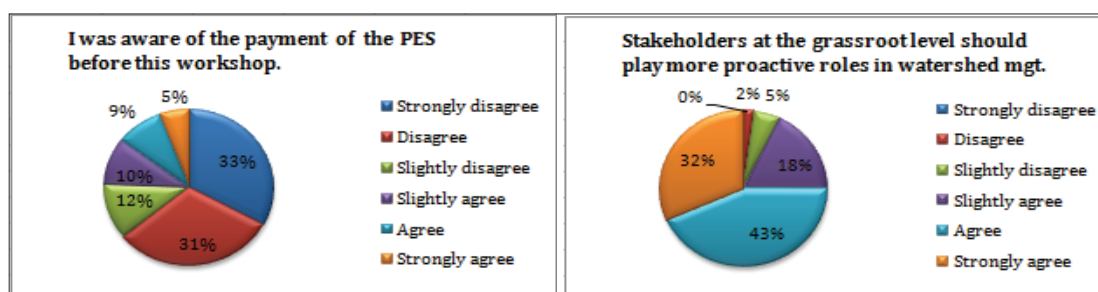


Figure 6. About the plough back mechanism for environmental services & the role of stakeholders

- About 64% disagree having any knowledge regarding the PES before the workshop,
- For 75% of participants agree that stakeholders at the grassroot level should play more proactive roles when it comes to watershed management, and.
- Even though the participants are relatively young, they are of the opinion that stakeholders at grass-root level should shoulder greater roles responsibilities.

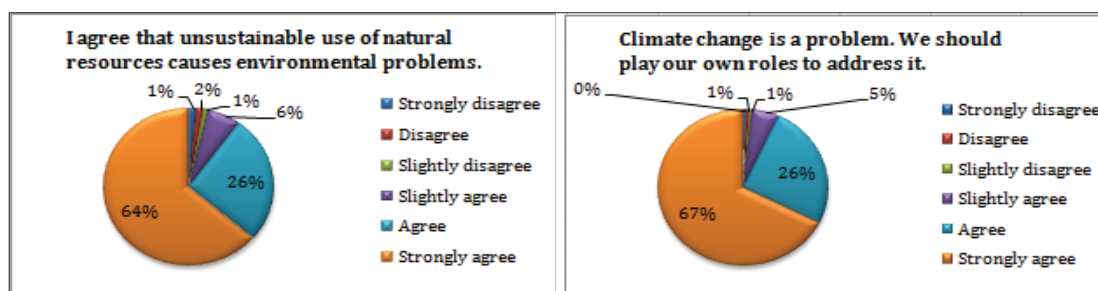


Figure 7. On the sustainable use of natural resources & its problems [climate change].

- A staggering 90% of the participants agree to strongly agree that unsustainable management of natural resources causes environmental problems ,
- About 93% of the participants agree on the statement that climate change is a problem, and
- As unanimous as it is, youths trace back the root cause of climate change to unsustainable use of natural resources.

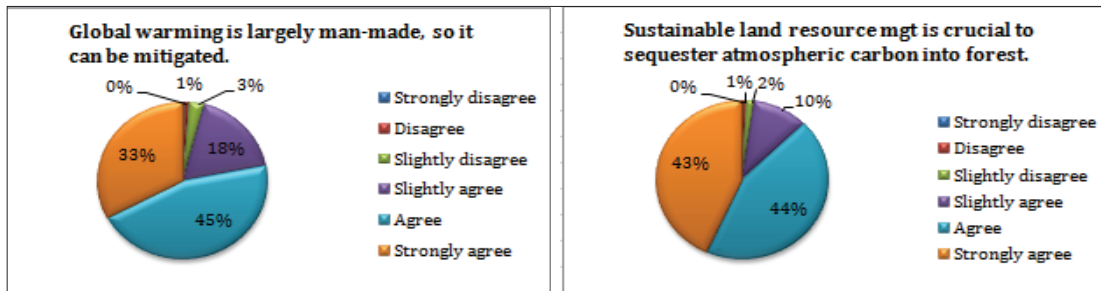


Figure 8. On the mitigation of climate change & its strategies

- About 78% of the participants agree to strongly agree that global warming is largely man-made and so it can be mitigated,
- About 87% of the participants agree sustainable land resource management is crucial to mitigate climate change, and
- A clear reflection here is that for a problem created largely by man, being judicious in utilization of natural resources could be an answer to mitigate the problem.

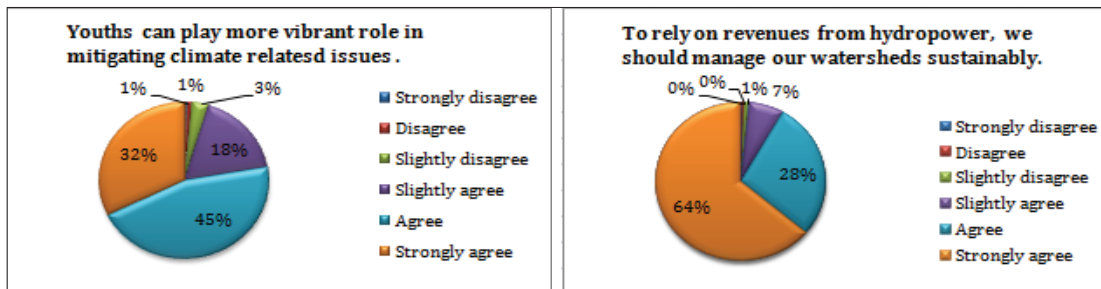


Figure 9. On the role of today's youths to address climate related issues & importance of watershed management in order to depend on revenues from hydropower.

- About 77% of the participants agree to strongly agree that youths can play more vibrant role in mitigating climate related issues,
- About 92% of the participants reckon that it will be important to manage the watersheds in a sustainable manner for hydropower's to stay as a constant source of national revenue, and
- Realization and sense of performing one's duty. Youths agree that they have roles to play and are aware of the vitality of managing watersheds in a sustainable manner.

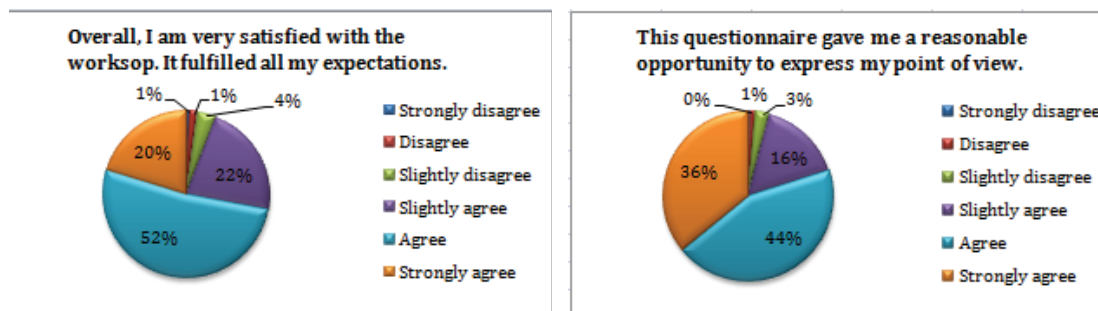


Figure 10. General views on the workshop.

- About 72% of the participants agreed that the workshop fulfilled their expectations,
- About 80% indicated that the questionnaire gave them a reasonable opportunity to express their point of views,
- About 1% is in disagreement mood saying that the workshop was not satisfactory and failed to fulfill expectations, and
- The level of satisfaction was also indicated by 1% of participants disagreeing that questionnaires gave them not enough opportunity to express their views.

5.1.2 Outreach

Horizontal spread of sensitization program is crucial to educate stakeholders on the above-mentioned topics. The sensitization was first of its kind to be taken to tertiary institutes across Bhutan. It included both technical and non-technical institutes. Participants mostly comprised of students and faculty members. Therefore, the team felt that it is necessary to collect information through questionnaire surveys in an attempt to collect the participant's opinions, feedback and suggestions.

Therefore, this particular section of questionnaire aimed to accumulate feedbacks on taking similar programs to a wider reach. Participants were asked to put a score against the statements on the scale provided. The scale ranged from 1- 5, where 1 is equated to strongly disagree and 5 is equated to strongly agree (see below).

1 = STRONGLY DISAGREE	2 = DISAGREE	3 = NEUTRAL	4 = AGREE	5 = STRONGLY AGREE
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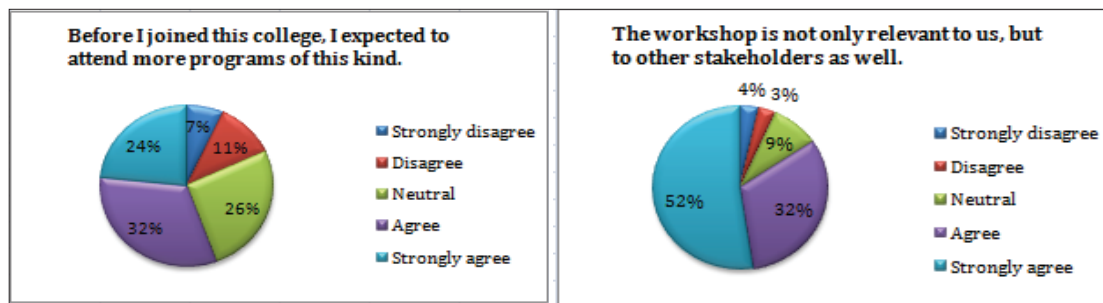


Figure 11. On the expectations & relevance of workshop to other stakeholders.

- About 56% of the participants agree that they expected to attend more programs of this kind,
- About 84% of the participants were of the opinion that similar type of program is relevant to other stakeholders as well, and
- A strong backing of opinions here- such workshop is important to others who shares same platform when it pertains to addressing issues surrounding natural resources.

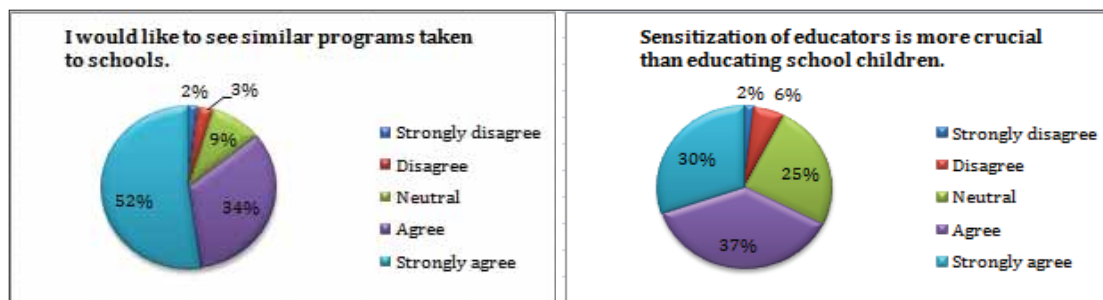


Figure 12. Regarding taking similar programs to other stakeholders.

- About 86% of the participants agree similar sensitization program should be taken to schools,
- About 67% of the participants are of the opinion that at this moment of time, time sensitization of educators is more crucial than educating school children ,and
- The concerned agencies should take similar programs to schools, but more than half of the participants thought it would be more crucial to educate teachers.

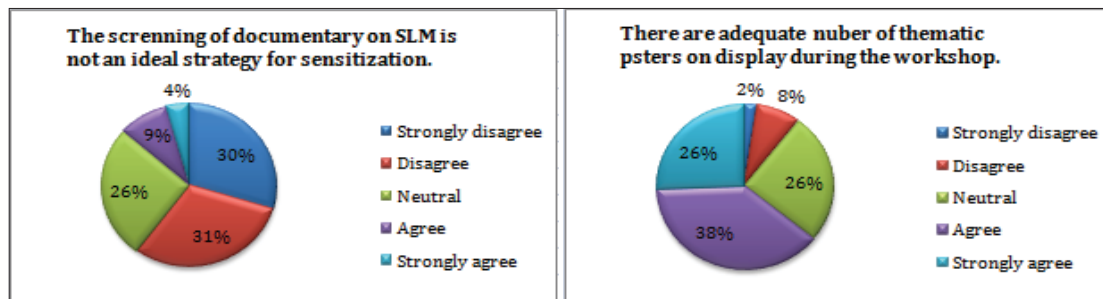


Figure 13. On the various tools used for sensitization.

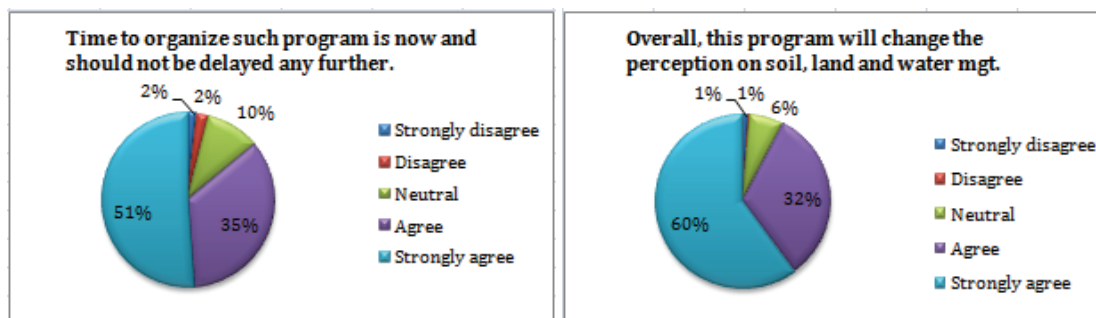


Figure 14. On the timing to take such program to a wider reach & change in stakeholder perceptions.

5.2 NON-STRUCTURED QUESTIONNAIRE

Likewise, participant's thoughts, remarks and their opinions were collected using a non-structured questionnaire format. Notable comments from the participants were categorized into 5 categories as outlined below.

- Overall/ general comments on the workshop
- Land and land management
- Watershed and watershed management related
- Comments on REDD+, climate change and soil organic carbon (SOC), and
- Outreach

5.2.1 Some general comments on sensitization workshop

Lhap Gyem- B Com Accounting, GCBS: Before this program I was not aware of any topics presented today, except climate change.

Tandin Dorji- Civil Engineering, CST: It is important step forward in protecting the natural resources in the country.

Tashi Tobgay- Civil Engineering, CST: There are many valuable information that can be shared to local people. I have learnt a lot on the sustainable management method that can be aligned with construction.

Sonam Yangzom- Electronic and Communication, JNEC: Through this workshop I learnt about the things which I was unaware of it, so it is good for knowing as youth of Bhutan.

Dorji Zangmo- Civil Engineering, JNEC: Such programs are very important for the youths like us as we are the future civil servants so

that we can work towards preserving the environment from and not degrade it.

Wangchuck- BSc Life Science, SC: The sensitization workshop is very helpful and I got many new ideas about sustainable use of soil and watershed management.

Tenzin Wangchuk- Faculty Member, SC: Very enriching and useful presentations. Presenters are all very resourceful and articulate. Keep it up! Such programs should be conducted, especially in tertiary institutes on regular basis.

Sonam Choki- BSc Life Science, SC: The workshop was informative and provided us with additional information and made us realize the importance of soil, land watershed and its management in a sustainable way.

Kinley Yangzom- BSc SD, CNR: This program broadened my knowledge on land degradation and watershed management. This comes at a time when the world is developing at a very fast pace, and where climate change is a burning issue.

5.2.2 Soil, land and watershed management

Tashi Lhamo, RTC: Such workshop really makes us aware on the conservation of forest and gives us information to conserve the forest property.

Dhan Raj Gurung- BA Eco & Env Studies, RTC: The seminar was informative. We are able to understand how we should go about managing land.

Sonam Choden- B Com Finance, GCBS: It is really high time to focus on the issue of land management seriously as many problems like land degradation, forest fires and floods are occurring.

Pema Choden- B Com, GCBS: I think soil fertility assessment must be conducted. Incentives must be provided for those who go for SLM.

5.2.3 Comments on REDD+, climate change and soil organic carbon (SOC)

Ugyen Dema- BA Eco & Env. Studies, RTC: I have gained knowledge on SOC. I thought that carbon, overall is bad but through this workshop I was about to rethink about the role of carbon.

SNAPSHOTS| THE WORKSHOP IS TIED TO...



SOIL LAND FOREST
LAND DEGRADATION
MANAGEMENT

AGRICULTURE FARMING
DEFORRESTATION
FOREST DEGRADATION
CLIMATE CHANGE POVERTY

STEEP SLOPES
SUSTAINABLE RESOURCE
RURAL-URBAN MIGRATION

Tandin Lhamo- B Com Finance, GCBS: This workshop made me realize the importance of managing the natural resources, which is very crucial in today's world. Before this, I had no idea on REDD+, but now I am aware of it.

Tashi Phuntsho- Civil Engineering, JNEC: This sensitization workshop has made us take more responsibility on climate change around world and particularly in Bhutan.

Dechen Lhadon- BSc Env. Studies, SC: It was interesting and I learnt a lot from attending this workshop, especially about REDD+ and conventions.

Tenzin Dema- BSc Life Science, SC: It was really informative even though we are hearing some topics for the first time and was hard to understand. After attending the workshop, I felt more responsible about the climate change, watershed management and about the soil. It was awesome. Thank you la!

Kinley Yangzom- BSc SD, CNR: This program helped me in broadening my knowledge on land degradation and watershed management. This comes at a time when the world is developing at a very fast pace, and where climate change is a burning issue.

Sajan Rai- BSc SD, CNR: Workshop was very informative and inspiring especially the presentations on Rio-conventions, REDD+ and Sustainable use of natural resources.

5.2.4 Outreach

Khedrup Dorji- Political Science & Sociology, RTC: Should sensitize responsible agencies and awareness on such issues should be given at grass-root people [in the villages].

Mindu Wangmo- BA Eng & Env Studies, RTC: If this program is held at schools, students will be able to understand and choose their field of interest when they join high school and college.

Raj Kumar- Civil Engineering, CST: I think that such awareness program should not be limited just to the related institutions.

Basant Pradhan- Analytical chemistry, CST: Collaborative research can be undertaken to facilitate learning and knowledge sharing.

Yogesh Chhetri- Electrical Engineering, JNEC: Government should give extra support to such type of awareness program to sensitize students and other people especially farmers.

Goma Chhetri- Civil Engineering, JNEC: Awareness program based on watershed management is important so it should be carried out throughout colleges in Bhutan. Students should be given an opportunity to carry out clean campaign during vacation by supporting them with requirements.

Chimi Rinzin- BSC Life Science, SC: The workshop should be held for educators and high school students so that they can spread the message and work for it.

Yeshe Dorji- BSc Env Studies, SC: I have learnt a lot from the presentations. The program should not only be focused on students but also for school teachers as well.

Shukar Mishra- MSc Development Program, CNR: Holistic approach is needed in SLM. NSSC, MoAF alone cannot achieve the goal.

Dorji Yangki- BSc SD, CNR: Taking similar programs to education sector would be very important.

Sonam Zangpo- BSc SD, CNR: This sensitization program should cover private sectors for necessary cooperation. NSSC should put forward its efforts and garner mutually agreed agendas with other relevant organizations for better SLM and water management results.

6 FINDINGS AND DISCUSSIONS

As discussed above, there were many reasons for developing a methodology that was designed to collect participant's take on the sensitization workshop through structured questionnaires [thematic and outreach sections], and also the constructive comments or otherwise- using the unstructured and/or open ended questionnaires.

6.1 SUMMARY OF QUESTIONNAIRE FINDINGS

6.1.1 Thematic findings

According to the participants, the timing of the workshop was perfect. This was agreed by more than half of the participants (55%) and efforts of the hosting agencies were recognized as 80% of the participants agreed that the event was well planned and properly structured. The findings revealed that not many participants knew about the subject- soil, land and watershed management. This disagreement was indicated by 24% of the participants. Since the issues related to the subject are cross-sectoral, a need for strong stakeholder collaboration to disseminate knowledge on the mentioned subjects was supported by 67% of the participants.

It is of little surprise and quite rightly so. A majority of the participants are unaware of mechanisms under climate change framework and also about the UN Conventions such as UNCCD and UNFCCC. Here, about 76% of the participants have not heard about the REDD+ before this workshop. Likewise, 64% of the participants knew nothing about the two conventions.

Some thoughts on watershed management as a subject- on this, there were clear opinion split amongst the participants. About 39% disagree that it is a broad subject, 43% either slightly agree or agree and the rest (12%) accept that it is a broad subject. And for the 62% of participants, the sight of green landscapes around them is not an indication that there is deforestation and forest degradation taking place. Furthermore, the concept of PES is relatively new for the participants. About 64% disagree having any knowledge regarding the PES before the workshop. On the other hand, a large fraction of participants agree that stakeholders at the grass root level should play more proactive roles when it comes to watershed management.

A cumulative opinion of still higher score- a staggering 90% of the participants agree to strongly agree that unsustainable management of natural resources causes environmental problems. For instance, climate change is a problem, as indicated by 93% of the participants. Since the problem is man-made, this can be mitigated. As atmospheric carbon sequestration into forest is crucial to address climate related issues, a staggering 87% of the participants agree sustainable land resource management is crucial for this.

Participants also indicated that unsustainable use of natural resources causes climate change, which is a problem. It was also indicated that sustainable land resource management can help sequester atmosphere carbon into forest ecosystem. What about youths and their roles? An overwhelming 77% of the participants agreed that youths can play more vibrant role in mitigating climate related issues.

On the other hand, participants are aware that RGoB has spent and is still spending astronomical amount of money [totaling to billions] into construction of hydropower. Regarding this, a massive per cent (92%) of the participants would like to see watershed management in a sustainable manner for revenues from hydropower plants to stay as a constant source of national revenue.

Furthermore, the participants were satisfied with the workshop and it fulfilled their expectations- as agreed by 72% of the participants. About 80% indicated that the questionnaire gave them a reasonable opportunity to express their point of view.

6.1.2 Outreach

Yes. Youths occupy very important platform in a social structure. Of the wide spectrum of spectrum of stakeholders, they should be regarded as one of the crucial ones for today and in future. But what do the participants think about further dissemination of knowledge and information on the subject? About 56% of the participants agree that they expected to attend more programs of this kind, while 26% preferred to remain neutral. On the other hand, about 84% of the participants were of the opinion that similar type of program is relevant to other stakeholders as well.

Taking the sensitization program to schools would be crucial in disseminating knowledge on soil, land and watershed management- so says the participants. In support, about 86% of the participants

agree on this. On the other hand, they are also in agreement [about 67% of the participants] that at this moment of time sensitization of educators is more crucial than educating school children.

As shown by about 61% disagreement among the participants, it was still opined that screening of documentary is one of the trusted/convincing tools and an ideal strategy for sensitization and there were also adequate number of posters on display during the event. The latter was agreed by 72% of the participants.

What is more? Majority of the participants (about 86%) agreed that time to organize such program is now and should not be delayed any further. And on top of that overwhelmingly 92% of the participants are in agreement of taking such programs to the stakeholders will change the perception of stakeholders on soil, land and watershed management.

6.1.3 Unstructured questionnaire

General comments on sensitization workshop

Overall, the participants talked about the fulfillment and satisfaction that they felt after the workshop. They were overwhelmingly impressed for bringing such educational topics at the right time. For large fraction of the participants, environmental mechanisms and UN Conventions related to land desertification and degradation and climate change were unheard of. Many commended that the workshop was important step forward in protecting natural resources in the country and in that sustainable management methods can be aligned with the approaches and methods.

Majority of the participants who participated in providing feedbacks in open structured questionnaires were of the opinion that the workshop gave them in-depth knowledge and information on soil, land and watershed management. "The workshop was brought to our institutes in a right time," said the participants. Analyses of the feedbacks made it clear that most of the participants share concerns on the depleting natural resources and its entailing problems. As a result, unsustainable use of natural resources would deprive younger generation of their own rights.

Soil, land and watershed Management

Participants are aware that natural resources such as land and forests are finite. Sensitization program gave them new knowledge and an

WHAT DID THE YOUTHS SAY?

"Overall it was a well fulfilled workshop and it really broadened my range of knowledge on land and watershed management."

- Pema Namgyel, BSc Env Science, RTC.

"The information covered from the workshop was very useful and I learned some techniques of soil and land management. Watershed management was very informative. I have heard about it once but today I learned more and I hope I will use it someday in my life."

- Karishma Tamang, BSc Life Science, SC.

"The presentations remind me of the importance of taking part in combating the climate change that the world leaders are worried of. Personally I am going to disseminate the information to my village people back at home during my vacation so that the aims and goods of MoAF are fulfilled thereby making the country and world as a whole a better place to live in."

- Leki Tenzin, Civil Engg, CST.

"We cannot protect our land unless we educate all the people. So it is necessary to educate all Bhutanese through BBS, Kuensel, and other information media."

- Ram Kumar Bhujel, Civil Engineering, JNEC.

"Sensitization of the policy makers is important so that there will be no conflict between different sectors."

- Sangay Dema, BSc SD, CNR.

insight into how to manage these resources in a sustainable manner, methods and strategies to prevent and mitigate degradation of these resources. Though acquiring practical knowledge is one thing, the theoretical knowledge that they gained has opened up their views and understanding of the subject.

Comments on REDD+, climate change and SOC
Anthropogenic actions, environment degradation and climate change [its causes and mitigation approaches] are some of the key points that were reflected by the participants. Matters related to the environment were of great interest for the participants as reflected in their comments. Before the workshop, some even thought negatively of the roles of carbon. Some participants did talk about their responsibility and commitment in working towards safeguarding the environment in their own small ways, for instance, dissemination of knowledge and information in the villages during the vacations.

As the participants were relative from a youth group, most of them did mention that they have heard very little regarding the environmental mechanism [REDD+] and UN Conventions that are related to land desertification and degradation and climate change. Further, though most of the participants have not heard about REDD+, they really liked the idea on this mechanism as an incentive for countries who are working hard to conserve their forest resources.

Comments on Outreach

Most of the participants have voiced that this sensitization workshop is not only important for them, but also for stakeholders as well including the private sectors alike. According to them, it would be so vital to take such programs for schools and educators amongst others. What they say is that they even put educators on top

of their list in the order of importance in relation to sensitizing the stakeholders. Participants recognized that issues emanating from land and watersheds are cross-sectoral issues. Therefore, every stakeholder should play their own roles and responsibilities or work jointly with others in mitigating the problems. In terms of managing natural resources sustainably, MoAF alone cannot achieve the sustainability goals at the local and national levels.

6.2 DISCUSSION

Issues relating to soil, land and watersheds are on the rise and will continue to become worse if: a) timely policies are not put in place and implemented, b) appropriate mitigation measures are not designed and implemented, c) existing institutions and human resource capacities are not strengthened, d) adequate financial supports are not made available, and e) the stakeholders are not educated and made aware on the mentioned subjects. These bring multitude of problems that can be categorized into socio-economic and environmental domains. Bhutan cannot be complacent on the above issues. National statistics are quite alarming and socio-economic changes are not progressing in a desired direction. Current facets include, increasing population, very high rural poverty rates in the rural areas- 16.7% as indicated by NSB (2014), high rate of rural-urban migration, increasing youth unemployment, increased social problems such as alcohol related issues, substance abuse, theft and robbery, and the list goes on and on. Root cause of all these can be traced back to growing complacency and lack of seriousness while using the natural resources [land] in an anticipated manner.

According to UN (2015), if one is to go by statistics, global population could peak around 8.5 billion people by the end of 2030. For certain, Bhutan would be contributing its fair share to this figure. In the face of depleting natural resources, increasing socio-economic and environmental issues, the journey towards achieving sustainability at local, regional and global levels could prove to be a rough and daunting one. Amid all these, education in whatever forms, could provide better answers.

The power of education is something that one cannot deny. In relation to natural resources, there is wide spectrum of stakeholders who play different roles, and of varying magnitude. College youths are one crucial segment of stakeholder today and they will definitely be part of it in the future. While many of them may not work directly with land

or land-based resources, they would be working indirectly, which is equally crucial. The program, though it is tailor-made, is deemed to act as an external mechanism to educate and empower youths on various issues (Newby, 2000). This is part of the reason why the two hosting agencies [NSSC & WMD] deemed it highly necessary and appropriate to sensitize college youths across Bhutan.

From above figures (Section 5) and discussions (Section 6), it is realized that this particular program was well received by the participants at large. Timing of the workshop and the efforts that went into preparation and eventually reaching it to the academic institutes was commended by the management of the institutes, faculty members and students. Though majority of the participants were comprised of youths, they too are of the opinion that soil, land and watershed related issues are cross-sectoral in nature. This demands need of cross-sectoral stakeholder collaboration in dissemination of knowledge and information sharing to have wider horizontal reach. The split opinions among the participants on the broadness of the watershed management as a subject may be because of the different field of study of the participating members. The participants are very much aware that unsustainable management of natural resources is a prime cause of environmental problems- as indicated by 90% of them. One such problem is climate change, which is man-made and can be mitigated. The participating youths are of the opinion that they as part of the stakeholder, they have very important responsibilities to shoulder. About 77% of participants agree that they can play very vibrant role in mitigating climate related issues. The youths are also aware about the direction of government's developmental approaches- particularly in line areas of energy sector. Massive 92% of the participants are of the opinion that watershed management would be crucial for sustainable energy generation from hydropower plants.

The participants are equally concerned about the outreach of such programs to wider stakeholders, particularly to farmers, schools, teachers, and private organizations. If not all, most of the farmers receive trainings, awareness programs through concerned agencies. Unfortunately, schools and educators are generally left out of the scenario, which is a case of missing link when in pursuit of sustainable development. About 84% of the participants agree that this particular program is relevant for other stakeholders as well. Though 86% of the participants wanted the hosting agencies to take similar programs to schools for students, 67% are of the opinion that it would be more

crucial to sensitize educators in the education sector. What is more interesting is that overwhelmingly 92% of the participants agree to the point that taking such program to stakeholders will change the perception of stakeholders on soil, land and watershed management.

One thing that came out of this sensitization program was that the participants are really concerned about the depleting natural resources around them. They are aware that the natural resources are finite and sustainable management plans, strategies and options should be in place. In essence, all these amplify Agenda 21 of the United Nations on children and youths,⁵ where it ardently calls for participation of this particular section of stakeholders.

In order to help contribute towards achieving the SDGs of the United Nations, holistic education approaches of all forms, including the sensitization programs is quintessential. Above response figures are but formidable indication that youths matter when striving towards sustainable development. At a time when the pace of socio-economic development is so fast and abrupt in the country, adoption of action, result and impact oriented activities would be indispensable.

⁵ Agenda 21 of the UN- Chapter 25: Children and youths in sustainable development. Available at:

<https://sustainabledevelopment.un.org/content/documents/Agenda21.pdf>. Access date- 27/10/2016

7 CONCLUDING REMARKS

In its quest to sensitize the Bhutanese youths on soil, land and watershed management and REDD+ program of Bhutan, the two agencies; National Soil Services Centre (NSSC) and Watershed Management Division (WMD) embarked on a tedious but exciting month-long journey traversing Bhutan. While on this mission, one-day sensitization workshop was conducted in six academic institutions, in May 2016. Close to 2000 participants attended the event.

Primarily, the program aimed to youths on the abovementioned subjects, nurture and empower them through dissemination of knowledge and information, sharing experiences and key lessons learnt and build institutional linkages for future collaboration. Likewise, the secondary objective of this program was to help Bhutan ease socio-economic and environmental problems in the long run.

Analyses of questionnaire (sample size 1164) indicated that the program was well received by the participants. An interesting finding was that Bhutanese youth's share concerns on natural resources that are depleting by the day, its implications today and in the future. It was also found that the youths are also positive about shouldering their own roles and responsibilities in managing the land and forest resources in a sustainable manner and mitigate the effects of climate change. As expected, most of the participants have heard very little on the UN Conventions on climate (UNFCCC), desertification and land degradation (UNCCD) and global mechanism such as REDD+. The latter, which was framed by the global community to act on how to save the forest resources, was appreciated wherein the participants really liked the ideas on REDD+ as an incentive for countries who are working relentlessly to conserve their forest.

Youths do recognize that the land and watershed related issues are of cross-sectoral in nature. Therefore, all the concerned agencies should put collective efforts in addressing the issues. Any delay, ignorance or being complacent about it may turn into a very costly error that cannot be reversed with ease in future. One recommendation in particular that demands mention is that it would be vital to take similar programs to the education sector. Here, majority of the participants wanted educators in the education sectors to be sensitized on such subjects. This silent push that was provided in the form of their feedbacks

because the teachers teach and children grow with it and utilize the knowledge thus gained in the future.

Youths are aware. Youths are concerned. This echoes that an amicable way of achieving sustainability could be through education. Realization of short national goals and long-term sustainable development goals by 2030 may prove to become a distant dream if today's youths are left out of the platform. Youths need to be educated and be informed today to realize the change in future, the real change which everyone is craving for.

ANNEXURE 1. LIST OF REFERENCES

Bai ZG, Dent DL, Olsson L and Schaepman ME (2008): Proxy global assessment of land degradation- *Soil Use and Management* 24, 223-234

Dar, B (2010): Tana Beles Integrated Watershed Development Project- Sensitization and Awareness Raising Strategy.

Gyeltshen, P (2010): The dynamics of socio-economic situations of communities in relation to land degradation- Bhutan. MSc Thesis, Wageningen University, The Netherlands.

LCMP (2010): Land Cover Map of Bhutan, National Soil Services Centre, DoA/ MoAF, Thimphu

NAP (2014): National Action Program to Combat Land Degradation- National Soil Services Centre, DoA/ MoAF, Thimphu

Newby R (2000). Innovative teaching of the experimental sciences in regional Queensland- School of Biological and Environmental Sciences, Central Queensland University

Niles JO, Brown S, Pretty J, Ball A and Fay J (2002): Potential carbon mitigation and income in developing countries from changes in use and management of agriculture and forest lands- Centre for Environment and Society Occasional Paper 2001-4, University of Essex

Norbu C, Baillie I, Dema K, Tamang HB and Turkelboom F (2003): Types of land degradation in Bhutan- *Journal of Bhutan Studies*, 8, 88-114

NSB (2014): Statistical Year Book of Bhutan. National Statistics Bureau. Thimphu

NSSC (2005): Assessment of land degradation in Bhutan, National Soil Services Centre, DoA/MoAF, Thimphu

United Nations (2015). Population 2030. Demographic challenges and opportunities for sustainable development planning. New York.

ANNEXURE 2: QUESTIONNAIRE FORMAT

A THEMATIC ASSESSMENT OF THE WORKSHOP

Name:; Gender:; Field of Study:.....

Please read each of the following statements below and indicate which square corresponds more closely to your experiences of participating in this sensitization workshop.

1 = STRONGLY DISAGREE	2 = DISAGREE	3 = SLIGHTLY DISAGREE	4 = SLIGHTLY AGREE	5 = AGREE	6 = STRONGLY AGREE
1. The sensitization workshop is a timely one					
2. The workshop is well planned and structured					
3. The power-point presentations were clear and stimulated my interest during workshop					
4. I knew more about soils, land and watershed management before the workshop					
5. I care less about soil, land and watershed around us					
6. Soil and land management is important, but the problem lies in not getting the information					
7. Information reflected on soil and land mgt in the presentations is not in detail, but elementary					
8. The stakeholders should collaborate closely in disseminating information and knowledge					
9. Watershed management is too broad a subject for me					
10. Everywhere I look, the landscape is green, so there is no deforestation and forest degradation					
11. Stakeholders at the grassroot levels should play more proactive roles in watershed mgt					
12. Bhutan is reliant on revenues from hydropower, so should manage watersheds sustainably.					
13. I agree that unsustainable use of natural resources causes environmental problems					
14. Climate change is a problem. We should play differing roles to address it.					
15. To sequester atmospheric carbon into soil, it requires proper knowledge, training and skills					
16. If finance resources is not a question, I will work towards addressing environmental problems					
17. Youths can play more vibrant role in mitigating the climate related issues					
18. Global warming is man-made, so it is reversible					
19. Overall, I am very satisfied with the workshop					
20. This questionnaire has given me reasonable opportunity to express my point of view					

B TAKING THE SENSITIZATION PROGRAM TO A WIDER REACH

This sensitization workshop is first of its kind to be brought to the premier institute. The target audience was primarily final year students, students taking courses in life sciences, civil engineering, environmental management studies, agriculture, forest and livestock related fields.

The purpose of this questionnaire is to accumulate feedback to take similar program to a wider reach.

Please respond to each statement on the scale provided where 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, and 5 = strongly agree

	S/Disagree			S/Agree	
1. Before I joined this college, I expected to attend more programs of this kind	1	2	3	4	5
2. The workshop is not only relevant for us, but to other stakeholders as well	1	2	3	4	5
3. People are aware of the problems pertaining to soil, land and watersheds.	1	2	3	4	5
4. I would like to see similar programs taken to other institutes, e.g. schools	1	2	3	4	5
5. Hosting similar programs to head of schools and teachers is equally vital	1	2	3	4	5
6. This program is more vital for children than teachers and head of schools	1	2	3	4	5
7. Sensitization of educators is more crucial than educating school children	1	2	3	4	5
8. Time to organize such program is now and should not be delayed any further	1	2	3	4	5
9. For similar programs in future, content of presentations need change	1	2	3	4	5
10. I realized that the timing allowed for discussion session is too short	1	2	3	4	5
11. The documentary is not relevant and is not an ideal strategy for sensitization	1	2	3	4	5
12. There are adequate number of thematic posters on display during the day	1	2	3	4	5
13. Research component included in the workshop is not adequate	1	2	3	4	5
14. The institutional linkage and collaboration needs further strengthening	1	2	3	4	5
15. Overall, this program will change the perception on soil, land and water mgt.	1	2	3	4	5

ANNEXURE 3: GROUP PHOTO FROM THE WORKSHOP



A College of Natural Resources (CNR), Lobesa, Punakha (Batch-I)



B College of Natural Resources (CNR), Lobesa, Punakha (Batch-II)



C College of Science & Technology (CST), Kharpandi, Phuentsholing



D Jigme Namgyel Engineering College (JNEC), Dewathang, S/Jongkhar



E Sherubtse College (SC), Kanglung, Trashigang



F Gaeddu College of Business Studies (GCBS), Gaeddu, Chhukha



G Royal Thimphu College (RTC), Thimphu



H Resource Persons with the Director General, Department of Agriculture

From Left to Right: Dr Tshering Dorji, Mr Phuntsho Gyeltsen, Dasho Nim Dorji (DG), Dr Karma Dema Dorji and Ms Sigyel Delma.

ANNEXURE 4: HR INVOLVEMENT DURING THE WORKSHOP

Resource Persons

Dr Karma Dema Dorji, Program Director, NSSC

Ms Sigyel Delma, Project Director for REDD+, WMD


Dr Tshering Dorji, Principal Land Management Officer, NSSC

Mr Phuntsho Gyeltshen, Workshop Co-ordinator, NSSC

Support staff

Mr Chador Wangdi, Driver, NSSC

Mr Tashi Dorji, Driver, NSSC.

The background of the page is a solid green color with a series of wavy, diagonal lines in varying shades of green, creating a textured, organic effect. The lines flow from the top left towards the bottom right.

Organized by:

National Soil Services Centre (NSCC), Department
of Agriculture (DoA) and Watershed Management
Division (WMD), Department of Forests and Park
Services (DoFPS)

Ministry of Agriculture and Forests