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Rangzhin

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Be a Member of RSPN:

When you become a member of RSPN, you become a part of a dedicated network of individuals and groups working to preserve Bhutan's pristine natural environment and incredible biodiversity for generations to come. Whatever financial support you pledge will be used to aid our projects in schools, communities, and protected areas throughout the country. As the nation's oldest environmental NGO, we depend on the generosity of concerned individuals like yourself to enable our research and advocacy – we can't do it without you, and every bit counts!

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Reforestation at Kuenselphodrang

RSPN Members and Volunteers at the plantation site.

Despite stern legislation and public awareness program in place to curb forest fires, it is one of the major environmental problems in Bhutan causing immense threat to the rich biodiversity.

Forest fires in Bhutan have caused huge damages to biodiversity resulting in environmental degradation. In response to substantial deforestation over many years due to forest

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Local groups trained on vegetable production and management.

During one of the practical sessions

Zhemgang Field Office in collaboration with the Ngangla Gewog (block) RNR Extension Agriculture Office and Panbang Organic Vegetable Group organized six-days training on Vegetable Production and Management to members of the of three vegetable groups of Ngangla Block under Panbang sub-district from 6th till 11th July, 2014. It is a part of ADB funded project on "Improving Gender-Inclusive Access to Clean and Renewable Energy in Bhutan". Its objectives are to train 35 farmers on basic book-keeping, organic components and pest management aiming at product improvement and income generation.

As part of in-house class, the farmers were educated on important concept, opportunities and affordability of low-cost organic farming, basic book-keeping – maintaining minutes

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Reforestation at Kuenselphodrang

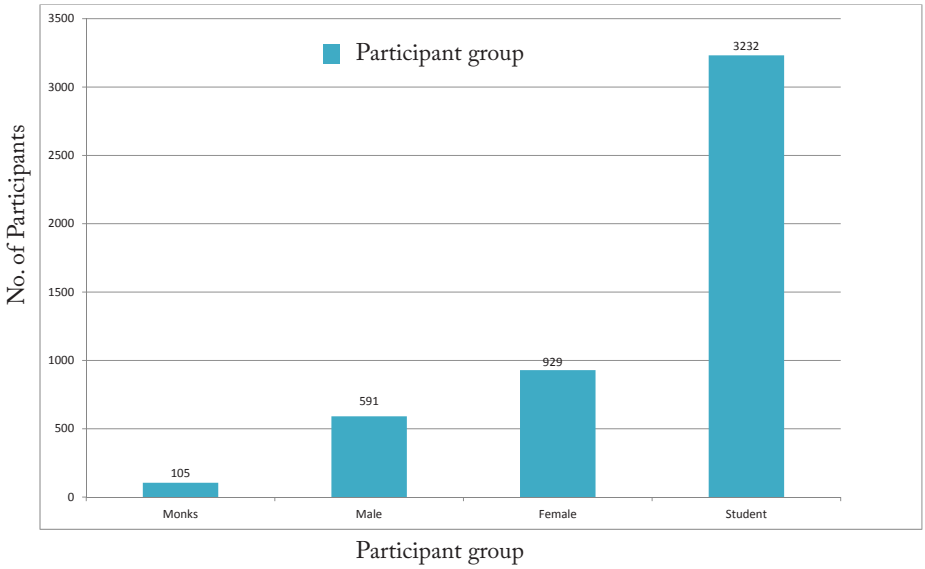
At the plantation site

fires, an approach to sustainable forest management through reforestation activities are being implemented by the Royal Society for Protection of Nature (RSPN).

About 140 RSPN members volunteered for the plantation of 15000 trees in the fire burnt area measuring 22.758 acres in Kuenselphodrang. The species consists of *Quercus grifitthii, Quercus semicarpifolio, Pinus wallichiana, Benthamedia capitata, Acer pectinatum, Rhododendron arboreum, Prunus persica, Yushania microphylla* and *Rhus chinensis* which are of local native species.

People trained on Safety and Efficient use of Electricity in Zhemgang

Training for monks in session.



Graph showing number of people trained.

Ninety percent of the Geogs (sub-blocks) in Zhemgang is electrified through Rural Electrification. And stringing of power-cable lines and construction of power sub-stations for rest 10% are currently under progress. This resulted in easing the hardships people of Zhemgang faced till the arrival of electricity.

Majority of the electrified households said that their household expenditure on energy has decreased due to electricity. However, since the electricity is new in the district, people are less aware on the concept of safe and efficient use of both grid-electricity and Solar Home Lighting System. To acquaint them with safety rules and efficient use of electricity, gender-sensitive user awareness and education program was conducted for 4500 men and women in eight Geogs starting from 7 May.

User Education Participants:

The list of user attended the campaign are as shown in the graph.

RSPN would like to thank all stakeholders who were involved in the program. The project is funded by Asian Development Bank.

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Local groups trained on vegetable production and management.

The participants

of the meeting, attendance register, monthly saving book, sales records, payment receipts and bills, stock register and single-entry cash book. They were also informed on the negative impacts of using chemical fertilizers and geo-pesticides in the long run.

Besides, the participants were trained on preparing bio-pesticides from garlic brew mixing with garlic and cow-urine, liquid-manure mixing with Artemisia (green grass) with cow-dung and cow-urine, preparing heap-compost by mixing with dry and green grass and cow-dung and preparing Vermi-Composting by raising earthworm. The program could train 36 farmers comprising 18 women and 18 men.

First JKERF grantees presented their research

A comprehensive research presentation on various environmental subjects were made by Jigme Khesar Environmental Research Fund (JKERF) grant recipients comprising undergrad students from College of Natural Resources (CNR), Lobeysa and Sherubtse College, Kanglung on 30 June, 2014. The research findings will be made public through the Jigme Khesar Environmental Resource Centre attached with RSPN Research Program. The funding for the grant was secured from the Gross National Happiness Commission under the Joint Support Program (JSP).

The research initiative is part of the JKERF launched by Her Majesty Gyaltsuen Jetsun Pema Wangchuck, Queen of Bhutan as the Royal Patron of Royal Society for Protection of Nature (RSPN) in August 2013.

Title of the research	Recipient/Institution
Radial growth of Blue pine trees along altitudinal gradient.	Mr. Tenzin Dorji, CNR
Influence of Human disturbances on floristic diversity and composition in Phobjikha valley.	Ms. Jigme Zangmo, CNR
Forest fire and its impact on community – Case study on forest fires in Eastern Bhutan.	
(Trashigang, Mongar, Trashiyangtse).	Mr. Pema Dorji , Sherubtse College
Forest Resource Utilization by the communities of Semtokha, Yesipang, Hontso and Dochula, Western Bhutan.	Mr. Phurba Wangdi, CNR
Human-Wildlife Conflict: Crop depredation by wildlife in relation to the habitat type under Tsirang Dzongkhag.	Mr. Sacha Dorji, CNR
Floristic Diversity along the Seasonal and Perennial Streams of Phobjikha Core Wetland.	Ms. Ugyen, CNR
Effect of Himalayan Dwarf Mistletoe (Arceuthobium minutissimum) on the growth performance of Blue pine stands in Thimphu.	Mr. Chhimi Dorji, CNR

Table showing a list of research title and the recepients.

Theme: The antrhopegenic global warming and climate change is a serious concern throughout the world and the agriculture production, uncluding Bhutan will be worst hit in a decade of two. How do you see the scenario of climate change and Bhutan food security in 2020?

The following entry won first position in the Category II of Essay Competition on above theme.

Firstly, we must understand what "anthropogenic climate change" is. The hypothesis of the anthropogenic climate change theory is as follows "it is now clear that the made greenhouse gases are causing climate change. The rate of change began as significant, has become alarming and I simply unsustainable in the long term." With this hypothesis, it is easy to understand that the anthropogenic climate change will have a large impact on the Earth and its entire people. If we look into how the greenhouse effect takes place, we can see how humans have a part in increasing climate change. When the solar rays hit the earth and heat up the surface, the earth emits infrared radiation back to the space. But due to the greenhouse gases present in the troposphere, some of the infrared rays are trapped and sent back to the surface. The anthropogenic climate change theory suggests that due to increases in carbon-dioxide concentration in the atmosphere, caused by humans, is raising the global temperature.

Now, we shall look into the interrelation of climate change and the agriculture

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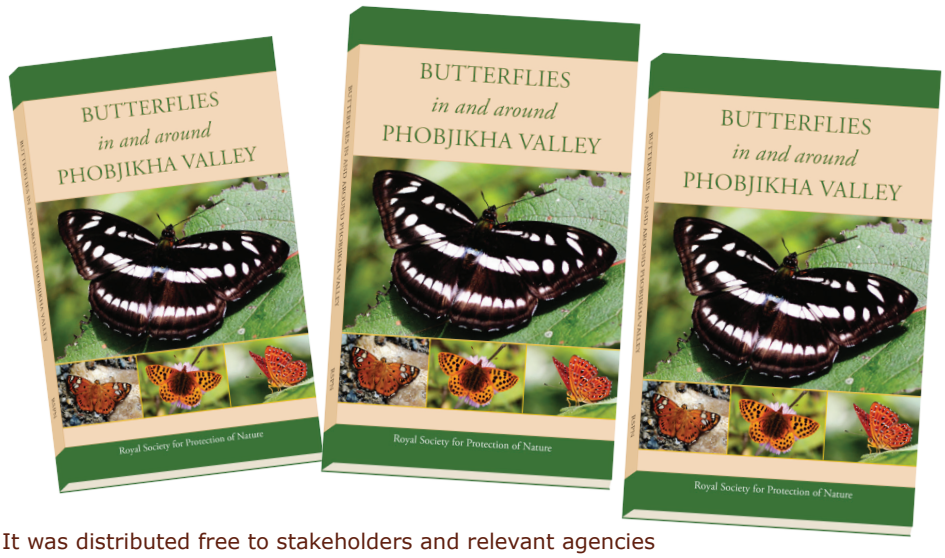
A book titled, "Butterflies in and around Phobjikha Valley" launched



It was distributed free to stakeholders and relevant agencies

A pictorial field guidebook on "Butterflies in and around Phobjikha Valley" was published under the Community-based Sustainable Tourism Project. The booklet contains 80 species of butterflies that are found in and around the valley and along the highway between Wangduephodrang and Phobjikha.

The significance of Phobjikha valley is primarily attributed to the wetland ecosystem that serve as a winter habitat for the endangered Black-necked cranes. The wetland, surrounding watersheds, and agricultural areas make Phobjikha a biologically rich and scenic tourist destination. In the process of implementing conservation and sustainable livelihoods program, RSPN has continuously generated information and knowledge and created environmental awareness among local communities and institutions.

The book contains around 120 pages of pictorial description of butterflies with remaining pages of the book describing physical description of butterflies. With 163 total pages and handy for the field usage, it was published in collaboration with Japan International Cooperation Agency (JICA) and Japan Environmental Education Forum (JEEF).

In 2007, RSPN also published a pictorial handbook titled "Butterflies of Bhutan", which is RSPN's continued effort to document rich and diverse butterfly species in Bhutan.

Assessment of Ecosystems and Ecosystem Services

Overview of the assessment site in Tsirang

To understand the state and dynamics of ecosystems and their linkages to human wellbeing and mainstream the knowledge into planning and development strategies, the RSPN has conducted and completed the household survey on Ecosystems and Ecosystem Services in Barshong Gewog under Tsirang Dzongkhag from 10th - 30th May, 2014.

Stretched over a period of three weeks, the program included a weeklong training program for the field enumerators on the concepts, principles, tools, and application of ecosystem-based management, approaches, assessment of ecosystem services and methods of conducting household survey. Participatory Rural Appraisal and Focus Group Discussions were also carried out with the local community and Geog officials to garner authentic information on the actual ground situation in the area.

On completion of the training program, the enumerators covered all five Chiwogs and collected household data with the help of a standard tested questionnaire designed exclusively for ecosystem services. Both the training and data collection were facilitated and monitored by researchers and experts from RSPN, ICIMOD with support from the Geog Forestry officials.

The assessment is part of the ongoing Ecosystems and Ecosystem Services Assessment in Bhutan under the Rural Livelihoods and Climate Change Adaptation in the Himalayas (Himalica), supported by ICIMOD. The final assessment report will be published on completion of the project towards end of December 2014.

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Theme: The antrhopegenic global warming and climate change is a serious concern throughout the world and the agriculture production, uncluding Bhutan will be worst hit in a decade of two. How do you see the scenario of climate change and Bhutan food security in 2020?

industry. Agriculture and climate change are closely interrelated. The affects of the global warming on the temperature, glacial run-off and precipitation have significant impact on agriculture as well. These conditions also determine whether the biosphere would be able to produce enough food for human beings and the domesticated animals. At the same time, agriculture is also the main contributor of greenhouse gases such as methane and nitrous oxide. Such harmful gases are contributed through deforestation, desertification, and use of fossil fuels and alteration of land cover, which can change its ability to absorb or reflect heat, thereby contributing to the radioactive force, which is the amount of how much sun rays are absorbed and how much are reflected back. As you can see that the most of the activities that causes global warming through agriculture as a medium is caused mainly by us, the human beings. Therefore, we can call this anthropogenic global warming.

Even though we have advanced technologically in the field of agriculture, with the improved varieties of plants and genetically modified organisms, the key factor of agricultural productivity is weather and soil properties as well. Due to climate change affecting these factors, many countries could lose massive production of their staple diets or their main crop. A study published in Science says that southern Africa could lose 30 percent of maize production and South Asia could lose 10% of rice, maize and millet by 2030 due to climate change. Overall, a fall of up to 30 percent in agricultural productivity over the 21st century has been predicted. The hardest hit would be the poor countries with reduction in crop yield in most tropical and sub tropical regions. Droughts have also been more recurring in the past few years which results in crop failure and loss of pasture land, thereby affecting the overall agricultural production of a place as well. Not only agriculture, but marine life and the fishing industry would also be affected severely in some places.
Overall, the agricultural industry would be affected in the following ways:

1. Productivity: the quality and quantity of different crops in the different regions would be affected either negatively or positively.
2. Practices: the agriculture practices would have to be changed to suit the crop's needs along with the increase in temperature.
3. Environment: this would affect the frequency of soil erosion, nitrogen leaching and therefore, ultimately resulting in crop reduction.
4. Space: with the need of more agricultural areas, more space for settlement is lost.
5. Adaptation: survival of the fittest. With the change in climate, the organisms must change or adapt as well to suit their needs. Along with this, we may have to develop better varieties of plants and more competitive organisms as well.

There is also the worry of the impact of climate change on food security. Due to differences of impact in different places due to climate changes, come countries would be able to provide enough food for more people whereas others would have more people being malnourished. With Africa being one of the most impacted areas due to the climate change, it is predicted that they will overtake Asia as the world's most food insecure region by 2080.

Bhutan is a small and under-developed country. Most of the country's economy is dependent of agriculture. So the affects of agriculture would affect the whole country. Therefore, the climate change is a serious for the Bhutanese people. As I have stated earlier, climate change affects different crops in different places differently. So, as a result, Bhutan would most likely see two types of scenarios in 2020.

Firstly, the crops might start growing at a large scale. The amount of production of different crops could be raised dramatically. This would secure Bhutan as an independent country in South Asia, not having to rely on other countries to get the staple crops we need, such as rice and maize. The other scenario would be complete opposite. The crops might also have a drastic decrease in production, thereby leading to Bhutan becoming more dependent on its neighbours, especially India, who in turn might also be affected negatively due to climate change. This, in turn, greatly affects the economy of our country.

So, as for the scenario of food security in Bhutan: Firstly, food security refers to the ability of the country to be able to provide sufficient amount of food for the population. In relation to the above mentioned affects of climate change on Bhutan, food security in Bhutan would also be affected in two ways, that is, either positively or negatively. If the crop production is increased, then there would be food security as Bhutan would be able to provide food for itself and would not have to rely on its neighbours as much as it does today.

On the other hand, the negative result would be due to drastic drop of crop production where country would not be able to self-sufficient. We may have to rely on other neighboring countries like India. Due to these factors, other two scenarios could be seen. One could be that India is not badly hit as Bhutan, thereby we would at least be able to buy crops from India. On the other hand, if India is as badly hit or even worse than Bhutan, it would have trouble providing crops for its own people which can severely affect Bhutan's food security.

But climate change will not always have to affect a region. There is the fourth scenario of Bhutan not being affected drastically by climate change, leaching it in the condition it is today. In such case, Bhutan would have to increase its crop production so that it is truly self-sufficient and would not have to depend on other countries in future.

In connection with the scenario for Bhutan's food security by 2020, there would most likely be four different scenarios:

1. Bhutan would have an increase in crop production so it would not have to rely on its neighbours as well being a completely self sufficient country.
2. Bhutan would have decreased crop production, but its neighbours are not as badly hit by climate change whereby Bhutan would have to rely on other countries to maintain its food security.
3. If other neighbouring countries too face problem with their food security due to adverse affect of climate change, Bhutan will also face serious problem of food security.
4. Bhutan might not be affected by climate change drastically and might maintain its agriculture and economy as it is today.

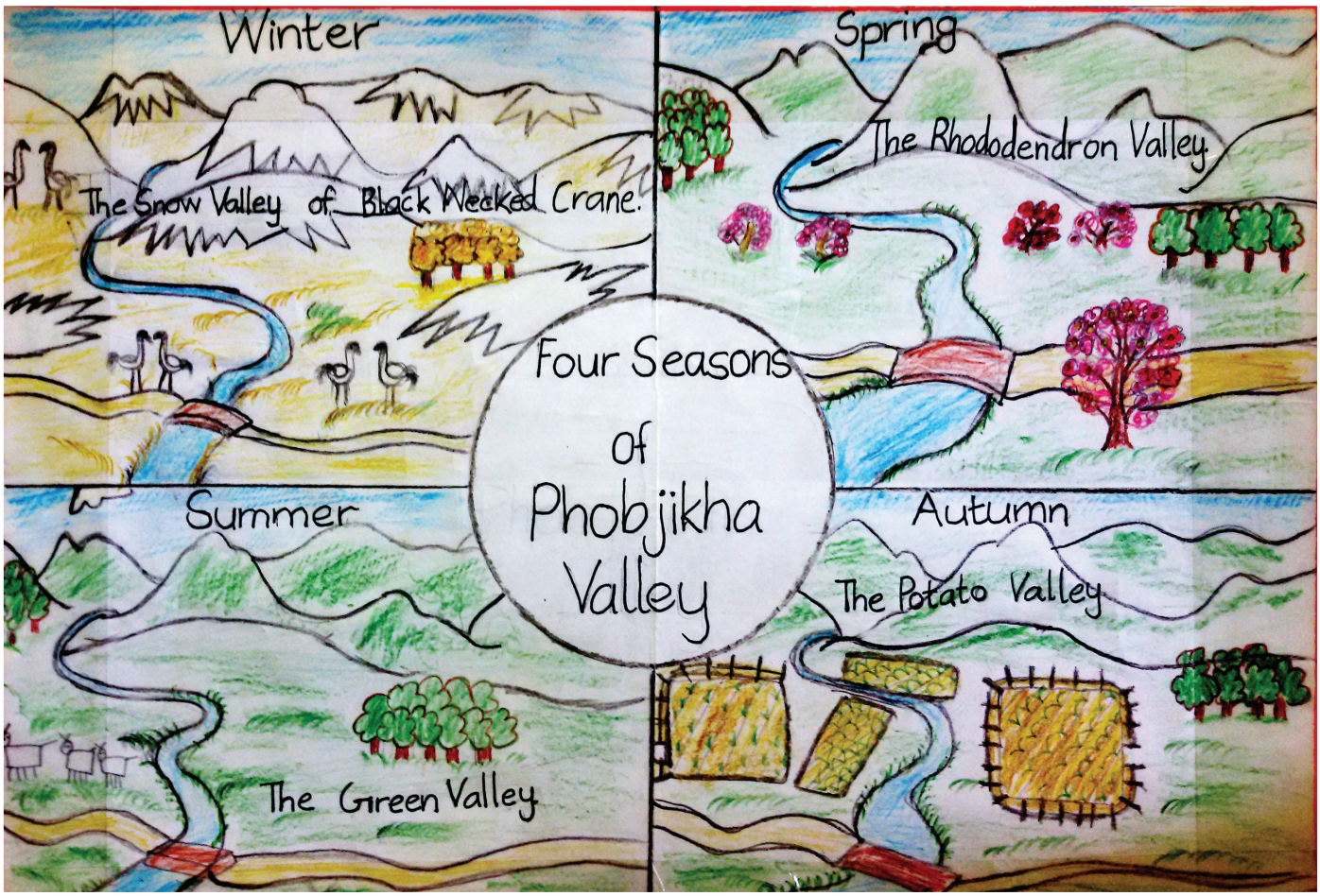
But climate change will not only affect the agriculture. Due to increased temperatures, the glaciers in Bhutan have begun retreating more rapidly and as a result, the frequency of glacial lake outbursts flood have increased over the last thirty years. The glaciers of Bhutan might completely retreat in another two to three decades time. As the main renewable source of Bhutan's rivers are the glaciers, this could cause a problem as the rivers would run dry.

As mentioned above, anthropogenic climate change will not only affect Bhutan, but the whole world with consequent problems like global warming. But the affects of climate change and global warming are not necessarily negative. Some regions might be affected in a positive ways whereas other regions might be affected in negative ways. Some regions might not even have any drastic changes.

Ugen Kezang
Class: IX
Druk School
Thimphu

Winning entry of Art Competition

To commemorate Coronation of His Majesty the Fourth King of Bhutan and Social Forestry Day, RSPN conducted art and essay writing competition among students in different categories in June 2014. We will feature winning art entries of in this section for next few issues.



Title: Four Seasons of Phobjikha Valley

(The entry won 1st position in Category-I which was for class PP-III)

Dolma Tshokye Yoezer
Class: III
Phobjikha MSS, Wangduephodrang

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