Decent and Sustainable

Green Jobs

in Nepal

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Acknowledgement

Green job has become a highly relevant issue in contemporary world. There are no debates that balance between Humankind and Nature is possible by environment protection and pollution minimization. Human being and nature from the day immemorial have been linked together by labour power inherent within men and women. Trade union movement as such and our organization GEFONT has the long run goal of achieving dignity for workers and decentization of employment. How can employment be made fruitful and descent is a challenge also associated with the emerging crisis through climate change. Hence, we are dedicated to maximize our efforts to ensure employment with three basic characters – fruitful, descent and environment-friendly. Through the dedicated efforts only, we hope to handover a healthy & safe Earth and Decent Work to the workers of future generation and human race.

As it is a new issue, this study and publication is our preliminary initiative and we have tried to explore various aspects of green employment through these case studies within a very short span of time. GEFONT position is also presented for further discussion in the days to come. The cooperation of ILO and Mr. Nabin Kumar Karna is highly appreciable for this publication. We extend sincere thanks to Dr. Rudra P Gautam and Dr. Jeevan Prasain as the senior researchers for their highly significant contribution. In this study, the involvement of GEFONT leaders, federation leaders and Central Office staffs has been highly appreciable. We extend our thankfulness to the union colleagues at the grassroots in concerned enterprises and workplaces and others who assisted us for a successful work in this new issue of green job.

Umesh Upadhyaya
General Seretary

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Background

Nepal is a multi-ethnic state with great social and cultural diversity. The country is characterized by widespread inequalities and discrimination in terms of ethnicity, gender and geography. Economic and social relations in Nepal continue to be governed by this deeply entrenched ethnic, caste and gender-based hierarchy, which has resulted in the exclusion of various ethnic, caste and gender groups in many political, social and economic activities. Discrimination and exclusion impact on poverty, literacy and health status; and make these groups particularly vulnerable in the labour market. Manifestations of discrimination include high instances of poverty, exploitative labour relations, unequal pay, unemployment and emotional devaluation.. The objective of the study is to assess green jobs in relation to decent work, conservation and sustainability. It was commissioned to assess the perception of workers and employers on workers' rights, conservation and climate change issues.

Employment and livelihoods stand to be impacted by increasing water shortages, droughts and desertification associated with climate change. Pandemics linked to the spread of infectious diseases as the weather warms may seriously affect labour productivity. For instance, the Nepalese tourism industry is experiencing increased pressures as glaciers recede and snow cover decrease.

It is estimated that approximately 66,000 - 89,000 new jobs could be created by investing 2 percent of GDP each year in four key sectors

(agriculture, construction, energy, and water) in Nepal. The level of additional jobs created each year would represent between 0.6 percent and 0.8 percent of total employment (ITUC, 2012).

The Nepalese economy relies significantly on its rich natural capital to support agriculture, tourism, industry and construction, which are particularly vulnerable to the effects of climate change. Rural households are largely dependent on natural resources, making ecosystem degradation, resource scarcity and climate change key sustainable development challenges for Nepal.

It has been recognised that Nepal is highly vulnerable to the adverse impacts of climate change. Rises in temperature related to global warming are associated with changes to rainfall patterns, increasing storms, and a growing threat from Glacial Lake Outburst Floods (GLOF). The climate induced hazards are not only causing damage and loss of human lives and property; they also undermine development progress in Nepal and put the achievement of the Millennium Development Goals (MDGs) at risk.

The Nepalese Government has implemented strategies, including targeting public expenditures, policy reforms and regulatory changes to promote further investment and initiatives by the private sector and civil society to address climate change. Decision makers in Nepal have participated in the meetings of the UNFCCC and signed the Convention on 12 June 1992 during the Rio de Janeiro Earth Summit, which entered into force on 31 July 1994; and signed the Kyoto Protocol on 16

September 2005, which entered into force on 14 December 2005. In order to promote and facilitate the activities related to the Clean Development Mechanism (CDM) in the spirit of the Article 12 of the Kyoto Protocol, the Government has assigned the Ministry of Environment, Science and Technology (MoEST) to function as the Designated National Authority (DNA) in Nepal.

Given that business and employment may suffer in the face of more-frequent and powerful floods and landslides which will damage property, production equipment, and infrastructure, adaptive efforts represent a major potential source of employment. Green jobs are a key component of this strategy, pivotal in achieving economic and social development that is also environmentally sustainable. The promotion of green jobs and green economies depend on an integrated and timely response supported by active labour market policy measures, based on labour market information and built up in collaboration between workers, enterprises, governments, public employment services and social partners.

Trade unions are vital actors in facilitating the achievement of sustainable green jobs in view of their experience in addressing industrial change, the high priority they give to the protection of the working environment and the related natural environment, and their promotion of socially responsible and economic development. The existing network of collaboration among trade unions and their extensive membership provide important channels through which the concepts and practices of green jobs can be supported.

Definition of Green Job

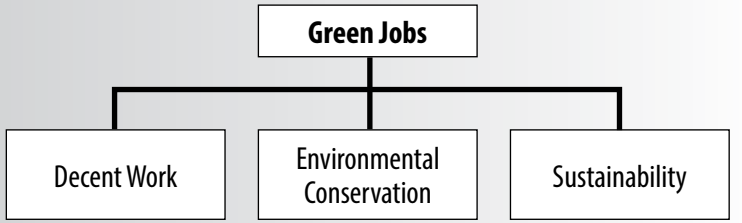
No single accepted and standard definition on green job is yet established among the policy makers, scholars and practitioners. However, many jobs which are environment-related in principle are not green in application because of the environmental damage caused by inappropriate practices. There is also evidence that many environment-related jobs do not automatically constitute decent work. Many of these jobs related to the environment are "dirty, dangerous and difficult". Employment in industries such as recycling and waste management, biomass energy and construction tend to be precarious and low paid. Therefore, we must strive to ensure that 'green' jobs are also seen as 'quality' jobs- while contributing to environmental sustainability.

According to the International Trade Union Congress (ITUC) a green job reduces the environmental impacts of enterprises and economic sectors to sustainable levels, while providing decent work and living conditions to all those involved in production, and ensures workers' rights are respected. Green jobs are not only those traditional jobs people think of as green – like making solar panels, manufacturing wind turbines, water conversation and sustainable forestry, they also include retrofitting and related jobs in the construction and public transport sectors, energy efficiency improvements in manufacturing plants, along with services supporting all industries. A decent job ensures safe work, fair wages, respect for workers' rights and social protection (ITUC, 2012).

Combining decent work with environment-related jobs effectively links Millennium Development Goal (MDG) One (poverty reduction) with Millennium Development Goal Seven (protecting the environment). It makes the two mutually supportive rather than conflicting (AusAID & ILO nd).

Regarding the green jobs definition, a number of indicators have been used in the selected cases.

Figure: Components of Green Jobs



Decent Work

According to International Labour Organization (ILO) decent work sums up the aspirations of people in their working lives. It involves opportunities for work that is productive and delivers a fair income, security in the workplace and social protection for families, better prospects for personal development and social integration, freedom for people to express their concerns, organize and participate in the

decisions that affect their lives and equality of opportunity and treatment for all women and men.

Productive employment and decent work are key elements to achieving a fair globalization and the reduction of poverty. The ILO has developed an agenda for the community of work. Putting the 'Decent Work Agenda' into practice is achieved through four strategic pillars: job creation, rights at work, social protection and social dialogue, with gender equality as a crosscutting objective.

Decent work is a key element to reducing poverty, and for achieving equitable, inclusive and sustainable development. It involves opportunities for productive work that deliver a fair income, provide security in the work place, insure social protection for workers and their families, gives freedom to express their concerns and to organize and participate in decision making that affect their lives.

In the four pillars of decent work (**employment**, **rights**, **protection** and **dialogue**) includes:

Employment

- a fair income that ensures a decent livelihood
- equal treatment and opportunities for all
- good working conditions
- health and safety in the workplace
- access to meaningful and productive work
- prospects for personal development

Workers' rights

- freedom to organise
- freedom of expression that both women and men are able to participate in decisions that affect their own lives
- the right to bargain collectively
- freedom from discrimination
- freedom from forced labour
- freedom from child labour
- legal recognition and access to a legal system
- the existence of labour laws and the general rule of law

Social protection

- the important link between productive employment and security for those who for some reason do not have a job at all
- protection from the loss or reduction of income due to unemployment, injury, maternity, parenthood or old age
- fair and inclusive societies

Social dialogue

- that workers and employers have the right and means to be represented through their organisations
- that the best and most enduring solutions are reached through cooperation which is central to social stability, sustained growth and sustained development

- that channels exist through which conflicts can be discussed and resolved

In Nepali context decent work can be summarized as follows

- A fair income that ensures a decent livelihood
- A job with equal treatment and opportunities for all
- A workplace with good working conditions which ensures health and safety
- An environment with freedom of organisation and expression; where both women and men are able to participate in decisions that affect their own lives
- A State with a mechanism for social protection to weak, sick, aged workers

Environmental Conservation

Even though humanity has co-existed with nature, shaping the landscape for thousands of years, the balance between man and nature was only questioned in more recent times. As a result the Integrated Conservation Development Project widely known ICDP was initiated in 1980 with the aim to reconcile the relationship between conservation and livelihoods. The practitioners of people oriented conservation approaches continue to struggle to find ways and means to balance biodiversity conservation with human welfare that are ecologically sound, socially just and economically feasible(Gurung, 2011).

From the past experience it is revealed that people oriented conservation approaches providing the space to negotiate human wildlife conflicts, are a desirable alternative to traditional nature of conservation approaches. In fact there are very few alternatives to inclusive participation for sustainable conservation that are compatible with democratic values and norms. Therefore people oriented conservation approaches should be pursued and refined for sustainable conservation and to meet the livelihood needs of local people.

Recognizing the role of forest conservation and the devastating effects of massive deforestation in the country, the Nepalese government initiated the program of Community Forestry and instituted Community Forestry Policy and Programs which has become an international model. Despite these government efforts, the decline in biodiversity resources in Nepal has been reported as due to the inadequate policies, legal, institutional and operational procedures in the country. Therefore, persistent gaps between these two approaches needs to be reduced (Khadka, 2011).

There is a need to link all types of jobs available in the country with conservation issue as much as possible to improve environmental sustainability and poverty reduction efforts. There is still low public awareness about the important link between agricultural production and the conservation of environment. Many are not aware on the provisions of the Environment Protection Act of 1997 due to a lack of implementation. The Preamble of the Act clearly states that "Whereas, it is expedient to make legal provisions in order to maintain clean and healthy environment by minimizing, as far as possible, adverse impacts

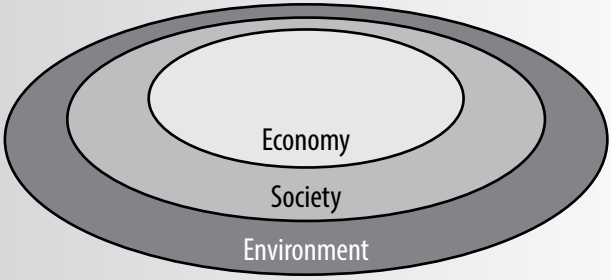
likely to be caused from environmental degradation on human beings, wildlife, plants, nature and physical objects; and to protect environment with proper use and management of natural resources, taking into consideration that sustainable development could be achieved from the inseparable inter-relationship between the economic development and environment protection."

Sustainability

The term sustainability is interpreted differently in different nations, locations, areas and context as per their goals. The original concept of sustainability developed by the United Nations in 1987 stipulates that we must meet your present needs without compromising the ability of future generations to meet their needs in any field (environmental, social, economic, ecological, etc). There are two major ways of managing human impacts on ecosystems. One approach is environmental management based largely on information gained from educated professionals in earth sciences, environmental sciences, and conservation biology. Another approach is the management of the consumption of resources, which is based largely on information gained from educated professionals in economics. Ways of living more sustainably can take many forms from controlling living conditions (e.g., eco-villages, eco-municipalities and sustainable cities), to reappraising work practices (e.g., using permaculture, green building, sustainable agriculture), or developing new technologies that reduce the consumption of resources. This study also attempts to find out the industries/enterprises generating and providing employment/livelihood to large numbers of people

without disrupting the present environmental situation generation to generation.

Figure: Three pillars of sustainability



The history of sustainability traces human-dominated ecological systems from the earliest civilizations to the present. However, the concept has changed over the years as society changed from traditional to modern. In the 21st century, there is increasing global awareness of the threat posed by the human induced greenhouse effect.

Objective of the study

One of the activities identified under the Green Jobs in Asia project is to conduct research and develop case studies on the Nepalese labour market where workers are engaged in environmentally efficient activities and sustainable enterprises that provide decent and productive work. In this context, the overall objective of the study seeks to contribute to strengthening trade union capacities for engaging in policy making and

initiatives for green jobs that respect the natural habitat and support sustainable production methods in national/regional/international tripartite and bipartite discussions, collective bargaining and decision-making processes.

The main objective of this study is three fold:

- to support awareness-raising among workers and their representatives about climate change and its impact on employment and development;
- to advance the capacity of workers' associations towards understanding the links between environment protection policies, workplace conditions and relevance of fundamental labour standards for advocacy on green jobs; and
- to provide a reference for social dialogue on policy options and strategies that can be used to promote green jobs initiatives, drawing lessons from the experiences of trade unions within the five target countries.

Methodology

Selection of the Cases

To assess the best case studies on green job the following criteria were considered.

- Regional and geographical representation
- Nature of product especially labour intensive and based on local resources
- Operated from different sectors
- Environment friendly
- Sustainable investing less capital

On the basis of these criteria, the following five cases were selected from different parts of the country.

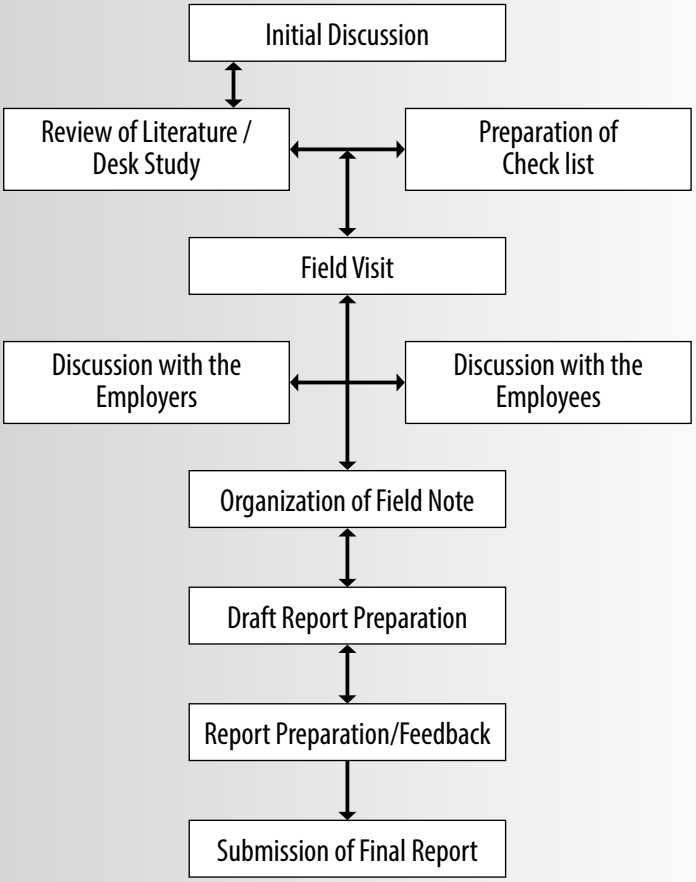
1. Tokla Tea Estate, Mechinagar Municipality of Jhapa District, Eastern Development Region.
2. Aashapuri Organic Pvt. Ltd., Nashika Village Development Committee (VDC), Kavrepalanchok district, Central Development Region.
3. Ashok Medicinal and Aromatic Plants Centre, Ugratara Village Development Committee, ward no 4, Janagal, of Kavrepalanchwok distric, Central Development Region.
4. Herbs Production and Processing Company Limited, Tikapur Municipality, ward no. 9, Kailali district, Far Western Development region.
5. Jiri-Dharapani Green Roads , Ramechhap district

Methods of Information Collection

To collect information for the preparation of the case studies the expert team visited each site and conducted interviews with the owners/ management, trade union executives and workers with the help of a checklist focusing on the working environment, workers' rights, conservation knowledge and practice, sustainability of the job.

Formal and informal discussions were held with the trade union leaders separately and in groups. Information from the workers was generated through focus group discussions combining both male and female workers from different caste/ethnicity as much as possible. Besides these the researcher themselves made their own observations during the visit and discussions with the stakeholders. Furthermore, desk study or relevant literatures have also been studied to prepare the case study.

Figure: 1 Research Processes



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International Labour Organization (ILO) ……

Case Studty 1

Ashapuri Organic Pvt. Ltd., Kavre

Concept of Organic Farming

Organic farming is agriculture that avoids or largely excludes the use of synthetically compounded fertilizers, growth regulators and livestock feed additives. To the maximum extent feasible organic farming relies on crop rotations, crop residues, animal manures, legumes, green manures, off farm organic wastes and aspects of biological pest control to maintain soil productivity and tilt to supply plant nutrients and to control insect pests diseases and weeds (Lampkin, 1990). Likewise, it is an environmentally friendly ecological production system that promotes and enhances biodiversity, biological cycles and biological activities. It ensures the production of healthy and nutritious food year after year without environmental degradation. The primary goal of organic farming is to optimize the health and productivity of interdependent ecosystems of soil life, plants, animals and people (Dahama, 2002). The importance of organic farming has been recognized in many parts of the world as one of the vital tools to mitigate the adverse impact of the climate change. Environmental degradation and health problems brought about by the use of chemical fertilizers and pesticides in farming have been of concern.

Organic farming combines traditional practices, innovation and science to benefit the shared environment and promote fair relationships and a good quality of life for all involved (IFOAM, 2008). It is the fastest growing food sector with an annual global growth rate of 15-20 percent for the last ten years vis-à-vis 4-5 percent per year of overall food industry. The organic food supply chain is a consumer driven sector, with a market

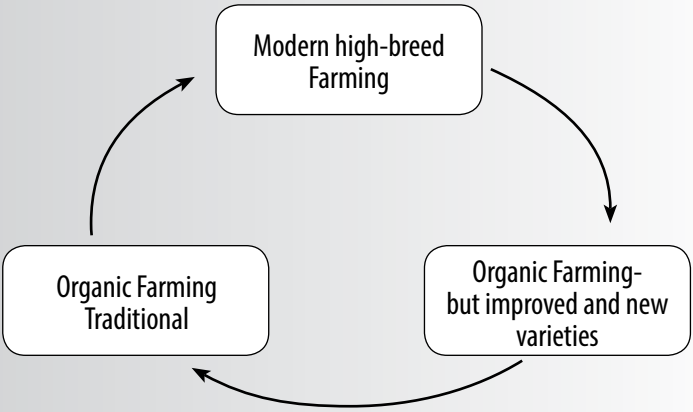
value of US$ 40 billion. Organic production at present covers more than 31 million hectares (IFOAM, 2008).

Given the available natural resources of Nepal, agriculture provides a strong basis to alleviate poverty through sustainable economic development and a strong rural economy. Unless there is a departure from the low use of technology to raise productivity per unit, agricultural development cannot be accelerated (NPC, 2002). More than two-thirds of the population depends on the agricultural sector (mainly subsistence). Reducing poverty through income and employment generation is the focus of several development plans. It is supported by implementing different project and activities in agricultural sectors. There is interlinking between agricultural farming and environment (Dhakal, 2007). Sharma (2001) has made the case for organic farming as the most widely recognized alternative farming system for sustainable production without seriously harming the environment and ecology.

Organic Farming in Nepal

The history of organic farming in Nepal is as old as the farming system in the country. The traditional farming system was replaced by modern agricultural systems using chemical fertilizers, pesticides and insecticides with the hope and lure of high yields. As a result farmers are slowly diverting back towards the traditional farming system with improved and new varieties. However, the market for organic products is not well developed and no market statistics are available in Nepal.

Figure: Cycle of Organic Farming



A systematic approach to promote organic farming was started in 1980 after the establishment of the Institute for Sustainable Agriculture Nepal (INSAN). Commercial organic farming in Nepal was initiated in 1987 by Judith Chase, an American woman. She started organic farming in *Gamcha* Village of Bhaktapur under the name of Appropriate Agricultural Alternatives (AAA).[1] Organic paddy production was first started with the technical support of the German Technical Cooperation (GTZ). With the rise in the demand of organic agricultural products, innovative Nepali has started such farming in different parts of the country and more and more farmers are attracted to this sector.

1 See: http://www.ecs.com.np/archive/may_03/article_5.htm

Organic Farming is gaining momentum for its ecological importance and economic opportunities. The common practices adopted by the organic growers are crop rotation, natural pest management and the use of bio-fertilizers and organic manures, vermi-compost and green manure in soil fertility management. The major organic products grown in Nepal and available in the markets are tea, coffee, large cardamom, ginger, fresh-vegetables, honey and herbal products. However, data related to the area coverage, production, certification procedures and market situation of the commodities are extremely limited (Pokhrel and Pant, 2009). The number of organic farms in Nepal is 1,247 and the area under organic management is 1000 ha. If the area under traditional farming where farmers never used fertilizers and pesticides is also considered, then the area under organic farming should be much higher (IFOAM, 2008).

Challenges for Organic Farmers

There are several challenging issues to be resolved both on theoretical and practical grounds for promoting organic farming in Nepal. The major one being setting up norms and standards for individual products, developing product guarantees and certification mechanisms and awareness building for state agencies, organic producers, traders, consumers and other stakeholders (Pant, 2006). Ranabhat (2007) identifies various constraints in developing organic agriculture in Nepal. They are production constraints (lack of appropriate and adaptive technology, lack of promotional incentives to the farmers, lack of efficient alternatives for the management of soil plant nutrients and pests, organic conversion period takes longer time which is risky

for small farmers); policy constraints (clear and supportive organic agriculture policy including standard and certification, lack of incentive mechanisms for supporting organic agriculture at the operational level); marketing constraints, the non-availability of market information and no storage facilities, too many administrative hurdles to get final clearance for export and several other constraints such as lack of research and awareness on organic products, problems of coordination among different organizations, etc.

Though institutions of organic farming are weak, they are gaining momentum. Organic agriculture has maintained its pace of development and recognition. Many actors such as Government Organizations (GOs), Non Government Organizations (NGOs), private sector and farmers are involved in different activities in its promotion and consolidation. The problems of mass poverty and unemployment can be significantly addressed if people resort to commercial organic farming on a large scale. This may also be a relief to local farmers as they can avoid rising prices of chemical fertilizers and pesticides and use local resources and labour in farming.

Ashapuri Organic Pvt. Ltd.

Aashapuri Organic farm lies in Nashika Village Development Committee (VDC) Ward No. 7 of Kavrepalanchok district, 5 km south from Sanga chowk at Arniko highway, seven kilometers from the Banepa Town and 25 Km from Kathmandu expanded in approximately 13 hectares (personal and family land). It is owned and managed by an energetic

entrepreneur; Prem Lama (61years) who has started producing varieties of organic products like paddy, pulses, different varieties of vegetables and fruits, over the last 10 years. This includes carrots, Korean onions, cauliflowers, broccoli, spinach, shiitake mushrooms, selari sugar beet, asparagus, ground apple, faba beans, swiss chard, sweet potatoes, gourd, pumpkins and kiwis. The farm has also established a jam and wine making unit (in the name of Ashapuri Organic Pvt. Ltd. and Ashapuri Wines Pvt. Ltd.) using the fruits which are returned from the market due to oversupply and could not be preserved. The farm is using local manpower, locally available irrigation facilities, compost fertilizers and animal dung. It also using pests prepared from unsold/rotten vegetables and fruits as fertilizer. It is confirm that the Ashapuri Organic Pvt. Ltd has been following all the procedures of organic culture, it is yet to receive the certificate due to government delay. Many expatriates have already tested the products and recognized as organic one.

Figure: A View of Ashapuri Organic Farm

The farm was initially started from less than one hectare for personal consumption and gradually increased as he inspired from his friends and foreign diplomats who got the chance to test his products. Initially he produced and distributed his organic products to his native and foreign friends and relatives in Kathmandu. It was full of challenge at the initial stage. He did not lose his hope but continued to expand his organic production areas. Gradually, his business was introduced to expatriates and embassy officials. Mostly, his products are sold in organic markets in Kathmandu and via email locally as well as exports to Singapore.

It takes at least five years to make farm land fully organic. Thus, it is not profitable at the initial stage, but in the long run, organic farming is very beneficial and profitable from human health, soil productivity, sustainable agriculture and environmental conservation perspectives.

According to the owner the major aim of the farm is to supply organic products within and outside the country owing mainly the following reasons.

- To raise awareness of the people on the importance of organic products,
- To generate employment to the local youths and train them on organic farming developing work culture from their school age,
- To substitute the import of organic products, and
- To earn foreign currency by exporting quality organic products in the foreign market.

Decent Work

The farm has 8 local workers (2 male and 6 female) having little skill on organic farming by experience. They believe in 'learning by doing'. But no single worker has specialized in any particular type of vegetable or fruit and has no formal training. Among them, two male workers have to look after the whole farm. Additional labour demand is fulfilled from the high school and college students (at and above 16 years of age) residing at the nearby community during their holidays. The owner himself provides necessary technical advice to his field workers frequently and supervises regularly. Not only that he is trying to establish a work culture among the workers and community people that involves mental to manual work in the field. For advanced technical support, technicians from within and outside the country visit the farm frequently.

No worker in this farm has got an appointment letter though working since its establishment but in practice the eight workers have permanent status. They have each Sunday off and also enjoy leave and some other leaves on the mutual consent however, it is limited.

Wages vary according to the nature of work and time spent. The two male workers, who are working from the morning to evening and take full responsibility of the farm get Rs. 9000 per month where the regular female workers (6) working eight hours daily are paid about 6000 rupees monthly. Daily wage workers get Rs. 150 for their seven hour labour power. All the workers are paid for their overtime work. Besides that, all the workers receive Tiffin at their work place.

In this farm, there is no trade union, owner and workers felt no need to have a trade union, because there is a good owner-worker relationship and pay and perks to the workers is increasing as their experience and inflation rate.

To date, no accident had happened in this farm. The regular workers never involve any type of heavy works such as log cutting and transportation. It has been done by other people who used to work in activities as daily wage or contract basis. In this situation neither the management nor the workers think about the medical facilities, compensation and insurance. There is no policy in relation to social protection of the workers because workers are not aware on this issue because of their ignorance about their future and workers' rights.

Figure: Shitake Mushroom Production

Environmental Conservation

Environmental sustainability is directly linked with living standards of the people and economic growth. Nepal lies in a region that is highly vulnerable to the risk of climate change.

Environmental conservation is the precondition of the success of the organic farm. The owner of the farm found very much conscious on environmental conservation and workers are trained accordingly.

The Ashapuri organic farm owner is planning to organize trainings on organic issues to the aspirant farmers/workers in collaboration with international agencies that helps to extend the awareness of the preservation and promotion of the environment within and outside the farm.

The most important aspect of organic farming is the availability of Open Pollinated (OP) seeds. The owner of the farm has got OP seeds from abroad through his personal connection with expatriates' friends all over the world, but in a limited quantity. Now, he produces about 90 per cent of the seed in his own farm land.

All the participants have experienced climate change and its impact on human beings, migration of birds, cropping pattern of paddy, fruits and vegetables over the years. Temperature is increasing gradually where rainfall is erratic.

Figure: Varieties of Organic Vegetables

Sustainability

In the three decades long history of organic farming it still has not gained momentum in Nepal. But today the demand for organic products is increasing all over the country especially among the educated urban elites and abroad as the people become more and more health conscious. As a result, a number of farmers and areas under cultivation is increasing every year. For example, the owner of this farm himself has started organic farming for his own consumption and now it is extended to about 13 hectare with improvement in quality and variety. The owner also expanded the business in the districts Sindhupalchowk, Gorkha and Chitwan jointly with other educated youths. They are also planning to develop an organic network in all parts of Nepal within one decade. This sector generates more employment compared to the traditional farming

system. The discussions with the workers and owner of the farm conclude that there is no question, it is the sustainable business provided to have patience, honesty and hard work.

Major Problems Faced by the Farm

Even though organic farming in Nepal is gaining momentum, this sector is not free from problems. The major problems faced by this farm are:

Human resources: The farm is facing manpower problems especially male. There are few experienced manual workers and technical experts available in this sector.

Unavailability of OP seeds: To expand and extend organic farming, OP seeds are needed. Organic farms could not sustain with the traditional farming practice. It needs new varieties, new species, new looks and tests to cater to the requirement/demand of the market. To do so, new varieties of seeds are urgent needed. It is difficult to import such seeds from the farmers' level.

Promotion of market: Individual farmers could not do much to promote organic markets. On the other hand it takes about five years to make the land suitable for organic production. Thus farmers have to wait long to take the expected gains.

Availability of organic fertilizer: To develop organic farming, availability of sufficient organic fertilizer is a precondition. But no such fertilizer factory is available in the country. Thus farmers are compelled to use imported fertilizers which cost a lot in the Nepali market. This increases the costs of production.

Support mechanism: To expand the farm and explore its market, organic farmers need technical as well as financial support from the government. But till date the owner has not received any kind of support due to lack of technical hands in the field and because the sector is not in the government priority. However, in the last two years the government has realized the importance of organic farming and allocated a token amount through its budget but implementation is not aspiring.

Strike and Bandha: Frequent strikes and bandha by the political parties, caste/ethnic groups, religious communities, community people and other interest groups to fulfil their vested interests hampers the smooth supply of the products and creates a lot of loss to the farmers.

Figure: Owner of the Farm selling his Products in Organic Market at Kathmandu

Lesson Learned

- Organic farming is a traditional system but recently it has expanded as the level of health awareness increased among people (foreign and domestic). The system is re-introduced with improved technology and varieties taking commercial concept.
- Generally local people in personal contact or recommendations from the experienced workers are preferred while hiring in the enterprises.
- Age is not the constraint to initiate business. It needs realistic motivation and strong dedication and work culture.
- This profession does not need any specialized skill and is a method of 'learning by doing'. It is less risky from the OSH perspective and favourable to the workers' health.
- Workers are not aware of social protection because of their ignorance about their future in absence of a trade union. But self-satisfaction and good labour-management relations is much more important than that of monetary benefits.
- Such farming is gaining momentum for its ecological importance and economical opportunities. Environmental conservation is the precondition of the success of the organic farm.
- This business is sustainable but needs patience, honesty and hard work.
- This profession is gaining momentum where profit level is increasing gradually, but not free from problems.

Suggestions

Organic farming practices in Nepal are a recent phenomenon. It has greater prospects in the context of Nepal where large numbers of people are based in agriculture. Organic farming can be an emerging source of healthy livelihood for the people. The position of the farm and the workers can also improve through the following improvements.

A policy frame work for organic agriculture development that supports organic farmers and especially the poor with subsidies is a must. Besides implementation of organic standards and certification programs to promote the standard of Nepalese organic products there is also a need to recognize its quality and ensure sustainable demand in the national and international markets. This can be met by establishing institutions such as a National Accreditation Body to maintain and enforce organic standards and organic certifiers as per the national standard.

There is also a lack of adequate investment in organic agriculture as compared to conventional and biotechnological approaches to agriculture. The major cause may be an inadequate research input into organics that requires more diffused, farm based and participatory approach drawing on local knowledge and tradition. Moreover, difficulties in patenting the resources and techniques utilized in organic farming further substantiate the problem. This explains why governments need to be a pioneer investor that will attract the private sector when adequate policies and infrastructure are in place. There is also a need to separate organic production zones based on commodity and location

so as to encourage producers and ensure marketing mechanisms. It is, therefore, a must to identify the priority programs to be implemented including research, development, coordination and capacity building.

Many farmers are still unaware of the economic and environmental benefits of organic farming practices, the proper balance in the ecosystem it helps to maintain and the series of health benefits that would follow from it. The seemingly profitable conventional farming may be rendered unviable on social grounds. Government has to come forth with the provision of economic incentives to make accessible new varieties of seeds, tax exemptions and subsidies as well as an awareness program to induce private growers to invest in organic farming. Effective participation between the government and private sector may help, promote and utilize local skills and resources, development of cooperatives and information systems to access information regarding market opportunities.

The workers of the farm are deprived from the opportunity to know and exercise their rights; however they are performing their duties regularly and honestly. In this situation trade unions need to intervene to organize the unorganized labour of the farm.

There is also a need to undertake intensive Strength, Weakness, Opportunities and Threats (SWOT) analysis of Nepalese organic sector to assess the current situation and bring clear cut policies and programs to make it commercially viable.

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Case Study 2

Ashok Medicinal and Aromatic Plants Centre, Kavrepalanchowk

The Context

Plant nurseries are established to conserve rare, endangered and threatened plant species. Nurseries can be classified according to different parameters such as on the basis of irrigation facilities (dry and wet nursery). Similarly, it can be divided based on the size of seedlings. A nursery which has only seedling beds, in which seedlings are only raised, no transplanting being done is called a seedling nursery whereas a nursery which has only transplant beds, in which seedlings are transplanted for preparation for forest planting is called transplant nursery. However, in practice, separate seedling and transplant nurseries are seldom establish in Nepal.

There are other ways of categorizing nurseries on the basis of duration of their use like temporary and permanent. A temporary nursery is maintained for supplying stock for a short period after which it is abandoned. Normally, it is constructed in the plantation area and usually small in size. It is suitable for hilly regions. But, a permanent nursery is maintained for supplying nursery plants for a long time on a permanent basis. It is intended to meet the requirements of one or more ranges and it is relatively larger in extent (Yadav, nd).

Ashok Medicinal and Aromatic Plants Centre

Dabur Nepal was established as a joint venture company in 1991. Since its establishment, the company started producing different products. Ashok Medicinal and Aromatic Plants Centre (AMAPC) was established

in 1998, located at Ugratara Village Development Committee, ward no 4, Janagal, of Kavrepalanchwok district. It is 22 km east from Kathmandu. The Centre is one of the nurseries under the Dabur Medicinal and Aromatic Plants Division (MAPs). It was established under the broader theme of corporate social responsibility (CSR) as it has based on the conceptual notion of '*give something to me and I will reciprocate to you as well*' (*Dehi me dadami te*). The plantation area extends over 2.5 hectors of land including an office building.

The MAPs have established nurseries in different locations, divided broadly into three locations - high altitude (Mustang, Manang, Humla, Jumla and Dolakha), middle altitude (Nuwakot, Bhaktapur, Kavre, Sankhuwasbhawa, Kathmandu and Ramechhap) and low altitude (Bara, Parsa, Chitwan, Sarlahi and Jhapa). Besides that in various locations, the MAPs established nurseries under contractual modality with the farmers.

The Centre is a subsidiary company of Dabur Nepal, focused on import substitution and export promotion. The program was launched with a vision of growing *Rare, Endangered and Threatened* herbal and aromatic plant species and conservation of such species. With the passage of time, the Centre distributed varieties of saplings to farmers and cooperatives at the cost price with a modality of buy back as well as contract cultivation. The project turned out to be profitable for local farmers who grow the medicinal plants in their own farm.

This nursery grow and propagate millions of saplings of high value medicinal plants like Akarkara, Padamchal, Lauth Salla, Kuth, among

others (Table 1). Directly or indirectly the Centre covered about 20 districts from east to west of Nepal contributing livelihood of hundreds of families through employment to the thousands of labour force.

Table: 1. List of Priority Species for Cultivation

SN	Scientific Name	Common Name
	High Altitude	
1	Tasus baccata	Lath salla
2	Anacyclus pyrethrum	Akarkara
3	Saussurea costus	Kuth
4	Picrorhiza Kurroa	Kutki
5	Swertia chirayita	Chirayito
6	Nardostachys jathamansi	Jatamansi
7	Rheum emodi	Padamchal
	Mid Altitude	
8	Asparagus racemosus	Satawari
9	Valeriana wallichii	Sugandhwal
10	Rauwolfia serpentina	Sarpanhgandha
11	Rubia cordifolia	Manjistha
	Tarai/Low Hills/Plains	
12	Withania somnifera	Ashwgandha
13	Menthe arvensis	Pudina
14	Zanthoxylum alatum	Timur
15	Coleus forskholii	Pakhanbed
16	Piper pepuloides	Round pipla
17	Embica officinalis	Amla
18	Stevia rebudiana	Sweet leaf
19	Asparagus	Satawari

Source: Dabur Nepal Pvt. Ltd., Brochure.

Among the various types of rare, endangered and threatened herbal and aromatic plant species the most successful are: Akarkara, Chirayita, Satawari, Taxus, Kuth/Padamchal, Stevia and Mentha/Peppermint. A green house facility was also initiated to produce saplings under controlled conditions and regulates the temperature and other geophysical conditions.

Figure: Sapling Growing in Control Condition

Figure: Sapling Growing in Open Field

This is a unique project in South Asia, there is recognition for eco-friendly and conservation-oriented activity. The locally available seeds are also collected and then propagated in the controlled environment. The Centre has its own mission and core objectives.

The MAPs mission statement is to develop sustainable sources of medicinal herbs and protect the ecological balance of the Himalayas. In line with the mission, the MAPs, sets the specific objectives for the Centre are:

- Optimize contract farming of high value herbs as per agro-economic parameters,
- Develop medicinal and aromatic plants (MAPs) through conservation and cultivation,
- Ensure Dabur's long term supply of quality medicinal and aromatic plants,
- Reduce the dependency from wild flora through conservation,
- To supply the saplings of medicinal and aromatic plants to interested farmers and institutions,
- Provide employment and income generation opportunities, and
- To improve the socio-economic condition of rural people.

Major Highlights

- Sapling propagation has been done in greenhouse and shade houses and demonstration of the successful plots as well.
- Production capacity exceeded 3-4 million saplings per annum.
- Provides in house-training to operators, farmers, institutions and other interested.
- It has all women workforce and work for women empowerment under CSR.

Major Milestones Achieved

- Identified the most important medicinal plants for cultivation in Nepal.
- Identified the most suitable agro-climatic areas for cultivation.
- Established protocols and procedures for Greenhouse propagation and field cultivation,
- Utilization of marginal and unutilized land for cultivation of MAPs.
- Employment/income generation opportunities through skill enhancement programs,
- Improved socio-economic conditions- poverty alleviation program.
- Production of value added products.
- Import substitution and generation of foreign exchange.
- Assured supply of quality raw materials which are used to make various Aryuvedic products.

- As Dabur's prime CSR propjet, it played a vital role in the strategic operations of the organization.

Many collaborative projects were completed with different agencies like UNDP, ICIMOD, IFAD, etc., for conducting trials and demonstration of the preferential cultivation of medicinal plants in different altitude zones of Nepal. The centre is recognized for providing non- timber forest product (NTFP) training (Dabur Nepal Pvt. Ltd., nd.)

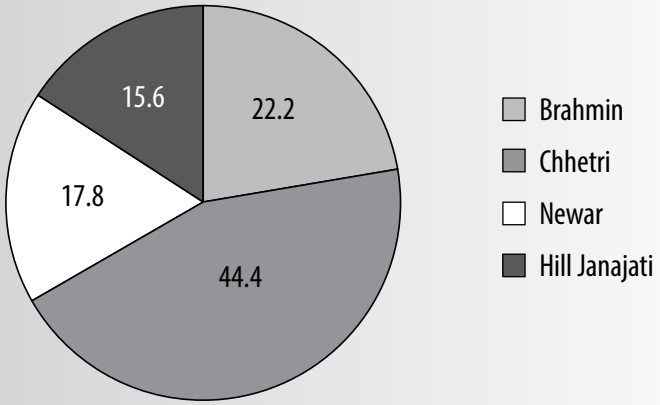
Decent Work

The Center employs 90 persons in total; of them 80 are women, who are involved in different works like nursery bed preparation, seeding, transplanting, weeding, harvesting and administrative work. They belong to the most productive age (25-39 years). Among them majority belongs to the age 35-39. As mentioned above, most of the workers are from the surrounding areas having been working in the Centre more than 10 years. The inhabitants of these areas are mostly Chhetri and Brahmin, which is reflected in the workers composition too. However, there are few workers from other districts. There is no discrimination on wage and employment on the basis of caste/ethnicity and gender. Management wants to use labour power productively and empower them in the context of 21st century.

The main causes behind the involvement of the workers in the Centre were to use their extra time to earn some income, to support the family and create their space in the society. The working women are more

empowered and have greater say in household and community level decision making because of employment opportunity provided by the Centre. They also elected in the executive position in some community based organizations. But, one cannot say it is the only one factor. Employment opportunity *inter alia*, is one of the vital factors in this connection.

Figure: Situation of Caste Ethnicity



When the Centre established, all the workers were employed on the daily wage basis. But later on, all the initially joined workers became permanent in a lot. There are no temporary and seasonal workers at present. Official working time starts from 9 to 17 hours, in between there is half an hour lunch break.

Figure: Workers' Weeding Saplings

The Centre provides wages according to the government rules and regulations. The permanent workers agreed with the management to use their extra time as and when the need arises in the Centre. The Centre provides overtime payment for their extra hour work.

All Saturdays are holidays in the Centre, but other entitlement of workers' leave is somewhat different, in the Centre. Public holiday is provided 13 days to all the workers, which is less then the government institutions. Similarly, sick leave is provided 7.5 days, maternity leave is given 52 days and no paternity leave is known due to the reason that no such incident happened yet. Mostly, funeral leave is used to be provided to male workers but in this Centre women workers are also entitled to get this leave 13 days in the death of father and mother-in-law and 5 to 7 (according to the culture and custom) days when her own father and mother died.

The working environment is not different than that of their own field, so most of the workers feel the working environment is not difficult. They work inside and outside as well. The nature of work is considered less risky from the occupational safety and health (OSH) perspective. While handling the load bearing work, the women did not lift heavy loads, they only carry up to15-20 kg per person at a time. Some time, while using pesticides, workers felt giddy and had headaches. Workers also felt minor skin problems while handling the chemical fertilizer. They did not know about the long term effects or occupational hazards caused by using the chemicals.

In connection with the personal protection equipment, the Centre provides rain coat, gumboot, apron and glove to the workers while working. Those who are involved in using insecticide use masks to protect their health. Workers are also conscious on their health and safety and using available PPEs regularly.

For minor injuries, the Centre provides First Aid treatment at the establishment, but if the patient needs more than First Aid treatment, the centre takes the worker to the hospital for treatment and bears all the cost of the treatment.

The authentic trade union submits a charter of demand to the management every two years as per the provision of the labour laws and is involved in discussions with the management. After discussions, both parties: workers' representative (Trade union) and employers' representative (management) agree on some points and both of them abide by the decision, at least for the coming two years.

Both of them reported that the relationship between them is good. Of course, there are some issues, so both of them sit together and settle them in CBA process with amicable manner. The Centre has its own regulation process but there is no Labour Relation Committee in the establishment yet as indicated in the Labour Laws.

There is a provision of provident funding and gratuity as a social security scheme. In addition to that, workers are contributing one per cent of their salary to the Social Security Fund for their future benefit. However,

the policy and procedure of utilizing the fund is yet to be finalized by the state.

Workers in general have basic knowledge on the broader provisions of labour laws, but they did not know about the conventions advocated by the International Labour Organization (ILO) with regard to the workers. In general, the Centre is abiding the workers 'rights, formation of trade union, some leave facilities, First Aid treatment at the establishment and other treatment at an appropriate health facility. It also provided PPEs.

Though there are good labour-management relations in this Centre, workers have put some complaints to the management which is not solved yet. The workers have to work in the roof making activity as well which is more risky. In the accident case there should be the provision of compensation along with the medical treatment where workers of the Centre are deprived from it. Likewise, at present the management deducts accumulated leave of the victim when they could not attend at work, but in case of those who did not have such accumulated paid leave, they gets full payment which is not fair. Provided equal knowledge and skill, all the workers should be assigned in the rotational basis without favoritism. Workers also felt, evaluation is not done on the basis of work performance but based on the political favoritism.

Environmental Conservation

Environmental sustainability is directly linked with the living standards of the people and economic growth. As climate change has advanced

on the international priority agenda, environmental protection and conservation have gained more importance in Nepal. Climate change issues are a high priority in government plans, policy and programs (NPC, 2011).

Management and workers clearly explained that they are aware of the issue of environmental protection. In connection with the conservation effort, some of the women workers are also in the executive committee of the community forestry group in their village. They planted various types of sapling in their surroundings, in order to protect the environment. Due to the massive community reforestation campaign and program in this district, they felt the overall environment is getting better compared with 15/20 years ago.

The Centre has been promoting conservation through farming the rare, endangered and threatened herbal and aromatic plant species. At the micro level, it is a commendable effort to protect the invaluable plant species. It is aimed at promoting the idea of import substitution and export promotion.

All the participants are experienced with climate change and its impact on human beings, migration of birds, cropping pattern of paddy, fruits, vegetables and flowers over the years. Temperature is increasing gradually where rainfall is erratic.

Sustainability

The nursery is expanding gradually and now covers 20 districts of Nepal out of 75. Not only that, individuals and communities have been drawn towards herbal farming due to its profitability as compared to the food grain production. All the products are purchased by the Company because they are producing and distributing saplings of the herbs which they need for the Dabur products. Thus market is not the problem for the farmers. This sector is labour intensive thus generates more and more employment in the rural and remote areas of the country on the one and on the other helps to solve the livelihood problem generating income through herbal farming. In such a situation herbal farming and the production of nurseries in the country may be sustainable whatever may be the problems faced by this Centre.

Lesson Learned

- Empowerment of women through the involvement of income generation activities as an employee of the Centre or farmers or cooperative member.
- Economic status of large numbers of Nepalese people has increased either providing direct employment or supporting the farmers motivation towards the cultivation of herbal species providing saplings as well as technical knowledge and buys back their production.
- Good labour-management relations helped to increase production and productivity.

- Little knowledge on decent work through trade union. Workers feel the importance of trade union in the enterprise to protect their rights.
- The Centre has contributed to environmental conservation through the cultivation and conservation of rare, endangered and threatened herbal and aromatic plant species.
- Level of family income is increasing through farming different plant species instead of paddy or with paddy that ultimately helps to the sustainable development of the locality in particular and the country in general.

Suggestions

A trade union is present in the centre, but all the workers are still not aware on the provisions of national labour act, regulations and international conventions as well as declarations and programmes related to the welfare of the workers. Thus needs to organize awareness campaign on the relevant issues.

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Case Study 3

Herbs Production and Processing Company Limited, Tikapur, Kailali

Herbal Products in Nepal

Traditionally, Nepali people are depended on herbal production to cure any kind of disease/s in the absence of the introduction of modern medicine. Many people in the rural and remote areas and a reasonable share of urban elites are using herbal products from ayurvedic and homeopathic medicine. In this connection, Herbs Production and Processing Company Limited (HPPCL) was established in 1981 with the aim to conserve valuable species of medicinal and aromatic plants available in the country. It also cultivates and processes medicinal and aromatic plants in various centres. Tikapur is one among them.

The demand for herbal products (raw as well as finished) is increasing gradually because people have become more aware of herbal products. However, the company has not been able to fulfil the demand due to inefficient management and political intervention. Recently, the company is seeking efficient management as well as proper and effective policies and programmes for its development. This sector is eco-friendly and creates huge employment being labour intensive. At the same time, industries in this sector can be sustainable because of the availability of raw materials at the domestic market and a high demand for products in the domestic as well as foreign market.

Herbs Production and Processing Company Limited, Tikapur

As a branch or site office of the HPPCL Tikapur, the centre was established in 1981 as a government institution to promote herbal plantations and

medicinal and aromatic products in Nepal. The establishment is located at Tikapur Municipality Ward no 9, Kailali District. The centre was initially started to collect the medicinal and aromatic herbal raw materials available in the forest area of Kailali and adjoining districts. Later on, it was also involved in the production and processing of herbs. This centre is also working to promote herbal farming in communities as well as in the private sector. According to the booklet of District Office of Medicinal Plant, Kailali (2011) 52 major herbs are available in the district.

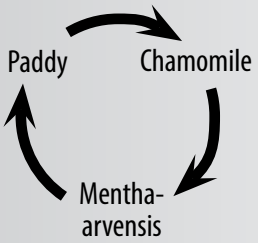
This company owns 43.68 hectare land area of which 93 per cent is used for the cultivation of herbs, 6.2 per cent for seed production and rest 0.8 per cent is covered by office buildings and the processing plant. This company normally produces 2,200 kg of processed Chamomile, Menthe, Lemon Grass, Tamaroza, Citronella and Eucalyptus oils. The processed herbal products are sent directly to the central office at Kathmandu. The Kathmandu office supplies different oil products in domestic as well international market as either raw or finished products.

Besides perfumed oil, the company is producing and exporting seeds of herbal and aromatic plants to the cooperatives, community forest users' group and individual farmers. Interest in herbal products is increasing as the company is providing seeds, saplings and technical support to the farmers and buys back their production at reasonable prices.

Figure: Processing Plant and Workers involved in the Process of Aromatic Plants

From discussions with officials at the centre, it is known that among the different varieties of herbs available and produced in the district, better-off farmers are interested to Bahubarsiya (multi-years) herbs farming such as citronella, lemon grass, pamaroza. Small farmers (poorer and middle income group) are interested in seasonal herbs such as chamomile, French basil, mentha that provide a quick return without disturbing paddy production for their livelihood. For example, mentha and chamomile can grow after harvesting the main crop (paddy) in December. It is also known that one *bigha* (0.677246 hectare) of land can generate employment to about five people all year round. For paddy production, families work only three to six months; the rest of their time is spent without having gainful work. By cultivating seasonal herbs a moderate family can earn about Rs. 65 to 80 thousand from mentha and chamomile a season.

Figure: Cycle of plantation



Now about 200 families in Tikapur, Kailali area are involving in various herbal farming in their land. To support their preference, many respondents cited the example of cropping cereal and herb in a cycle indicating the economic importance of herbal products.

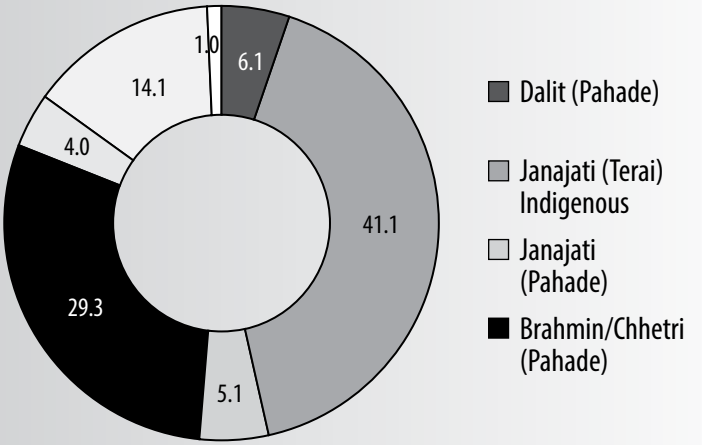
The company introduced exotic verities of herbs particularly aromatic plants through small farmers. The farmers planted these aromatic plants as cash crops to increase their income. The first is multi years harvesting and the second is seasonal harvesting.

Some varieties of herbs may become extinct unless due care is placed on them. Hence protection, promotion of scientific farming and harvesting are the present day demand. Botanical gardens could be set up in accessible locations so that students, researchers, practitioners and eco-friendly tourists can get benefits out of the botanical gardens.

Decent Work

The centre provides employment to 38 persons (13 male and 25 female) regularly as permanent 7, temporary 6 and daily wage basis 25. However, the centre hires daily wage workers as and when necessary especially during showing, weeding and harvesting seasons. Most of the workers are between 20 to 45 years and they are involved in this sector because of easily availability of work at their door steps. Besides that about 200 families are associated with herbal production under the technical support of the company. Based on the given figure, it is estimated that about 1,000 additional employment days are generated by the effort of this company which is increasing year after year.

Figure: Distribution of Workers by Caste/Ethnicity



The employer, workers and their leaders said that there is no discrimination on the basis of gender, caste/ethnicity and age on providing employment, wage, benefits and nature of work. The centre hires permanent workers through advertisements whereas workers on daily wage are recruited on the recommendation of the experienced workers and personal contact. As a nature of work, almost all workers are locals. The workers are attracted to this job mainly because: i) not complicated training needed, ii) easy availability of jobs, and iii) they do not bother to find other job. Their working duration at this centre ranges from less than one a year to more than 15 years. All the permanent and temporary workers have received appointment letter from the institution but the daily wage workers are deprived from it.

In general, the work environment is considered good. They have to work in the open field like their own field. Nevertheless, the enterprise has no provision of canteen and rest rooms. The workers have the right to organize in their trade unions. However, at present there is no trade union in the establishment mainly because of a lack of knowledge of all workers. Moreover, the permanent workers never feel the necessity of forming trade union. Most of the women workers are unaware about the importance of the union and some of the daily wage workers revealed that they were restricted to form trade unions by the management saying daily wage workers have no right to form union which is against the law.

Almost all workers of this institution are involved in collective bargaining processes to fulfil their demands without knowing the correct term.

Permanent and temporary workers enjoy the wage/salary and benefits for their regular and overtime work as per the governments' rule while the daily wage workers are even deprived from the minimum wage fixed by the government. The daily wage workers get Rs. 160 instead of Rs. 231 as per the minimum wage declared by the government. This indicates that the government itself is violating the government decisions. Sadly, the daily wage workers were unaware of the declaration of minimum wage so far. They were not only exploited by providing low wages, but also deprived from other benefits including leave facilities due to lack of laws to protect the right of such workers. The permanent workers were benefited from leave facility as per the government rule.

In the establishment, both the employer and employees have little knowledge regarding occupational safety and health (OSH). Neither the workers nor the management suffered from occupational disease/s in this enterprise. Regarding accidents few workers suffered from minor misfortune at their work place. The factory does not have medical facility/treatment, compensation, accident insurance, etc., to cover the cost of occupational disease/s or accidents except first aid, nor does it provide the personal protection equipments (PPEs). Permanent workers are entitled to get provident fund, grade, pension, medical insurance and social security schemes as per the rule of the Government of Nepal.

The management and a few workers have little knowledge on the national labour laws and international conventions, declarations and programs. Most of the workers are unaware of such provisions. It has its own regulations, but there is no Labour Relation Committee. Despite the

situation, of late, few workers have demanded to trade union education and campaign.

Conservation

The processing plant at this centre is operated using by-products of the herbs as a fuel. However, initially and occasionally a small amount of firewood is also used to fulfil the gap which is declining gradually. Considering the present situation, one can say that this institution is environmentally friendly. Ultimately, herbal products have positive effect on environment and climate change, at the micro level.

The employer and workers were fully aware of the importance of protecting forest products. Thus, they are involved in various activities such as protection, promotion of environment through awareness campaign. The employer suggested some extensive awareness programs should be launched to preserve and promote the environment in and around the factory, district as well as at the national level. Such initiatives should be backed by law, mobilizing communities and other stakeholders. Furthermore, at the individual family level, they should orient towards using alternative energy with the view to preserving the forest. This is possible with coordination among stakeholders.

Figure: Field of the Company with Varieties of Herbs

Formulation of strict legal provisions and effective implementation are the preconditions for a successful conservation program. The major cause of deforestation is not the enterprise but the rapidly growing population, haphazard settlement, increasing lawlessness and impunity.

Sustainability

Whatever may be the problems associated to the herbal production and processing in this enterprise, it is one of the prominent industries to generate employment and reduce poverty through income generation. The enterprise would be sustainable because it attracts farmers to produce herbal products in large quantities and introduces varieties of herbal products without hampering their regular crop cycle. As well as traditional herbs, new varieties can grow in the community forest.

Thus, this industry is viable from the point of view of raw materials at present and will be sustainable which can have a positive impact on environmental preservation. Self and paid employment can also increase being a labuor intensive work.

Lessons Learned

- People of the area are attracted to herbal farming as the product has a high yield compared to other crops. However, the nature of production normally differs among the large and small farmers.
- Women especially from local areas have been empowered as the enterprise preferred women workers for herbal farming in its field.
- The institution does not have a workers' union nor does it provide wages as fixed by the government itself to its daily wage workers. However, permanent and temporary employees do receive wages as per the government pay scale. Wage workers of this institution do not receive personal protection equipment (PPEs) to protect them from probable occupational disease/s and accident.
- Workers and employers are fully aware about environmental degradation and climate change and are involved to protect and promote it individually or collectively.

Suggestions

The government policy should be consistent providing priority for national development whoever comes to the government. Necessary investment in this sector, market guarantees to protect the investment and maintain good industrial relations from all stakeholders are the major issues for the sustainability of this sector.

National level trade unions have to intervene in this institution for the formation of union to protect and preserve the workers' rights.

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Case Study 4

Tokla Tea Estate, Jhapa

Background

Tea is an aromatic beverage prepared by pouring boiling hot water over cured leaves of the *Camellia sinensis* plant. Leaves from this evergreen shrub have been consumed for over 4,000 years and that they have always been known for health. Tea is the most widely consumed beverage in the world. It has a cooling, slightly bitter, astringent flavor which many people enjoy in drinking.

Most Tea varieties tolerate temperatures down to 20 degrees F, and some varieties can survive with protection up to -5^0 F. Tea plants prefers a wet humid summer and a cool but not very frosty, dry winter with freezing soil. Tea leaves are harvested every 6 to 14 days from April to August which is the plucking season. On average, each bush produces about a quarter-pound of tea leaves a year and can continue producing for 25 to 50 years, and even up to 100 years (Tea Development Alliance, 2008).

Growth of the tea sector in the country has several advantages. It substitutes imports and earns foreign currency exporting different varieties of finished tea. Tea production generates employment as it is labour intensive, decreases labour migration, protects the environment and ultimately contributes to national development (Thapa and Shakya, 2006) and promotes a green economy as well as green jobs in Nepal.

According to the available information it is known that both the area of plantation and quantity of production has increased gradually over the years. During the last 12 years, the area of tea plantations has increased by nearly fifth fold (3502 Ha. in 1996 to 16718 Ha. In 2009) while production increased by about 83 fold (2,905,942 Kg. in 1996 to 16,208,127 Kg in 2009) reflecting improvement in the production system of Nepalese tea farmers.

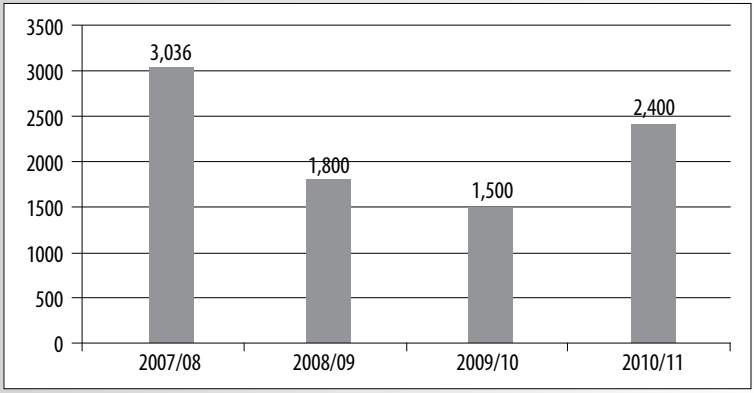
An extensive study has been done by scientists regarding tea diseases and use of several agro-chemicals including pesticides (Koirala, et al., nd). Disease and insects are generally different according to the agro-climatic zones. In the hilly areas of Ilam (Fikkal and Kanyam), Dhankutta (Hile) and Terathum (Solma) districts, blister blight and red rust are found the most common diseases of tea that caused significant yield and quality loss. Whereas in Jhapa district the most destructive and wide spread diseases are grey blight, black rot and red rust. As these diseases usually take place both in young and old leaves, they are known as leaf diseases. These insects are not only causing yield and quality loss but also increasing cost of cultivation as well (NARC, 2002).

Tokla Tea Estate

The Tea Estate was established in 1973 in the north eastern part of Jhapa district. However, the history of tea plantation in the country begins in 1863 by Gajaraj Singh Thapa at Illam. This is one of the major tea estates of Nepal having 336.38 hectors of land area leased out to the Tokla Group by the government since 2000 where actual tea plantation at present is

only in 258.70 hector. This is 1.55 percent of the total tea plantation area in Nepal. Nevertheless, this tea estate contributes 11 percent in total tea production of Nepal which was 16,208,127 kg in 2009. It is known that the production of the estate is erratic because of a number of factors (harmful pests and diseases, precipitation except pick rainy season or during the winter months of year, availability of human resources, relationship between management and workers, demand for tea, etc.) that could play positive or negative roles in tea production.

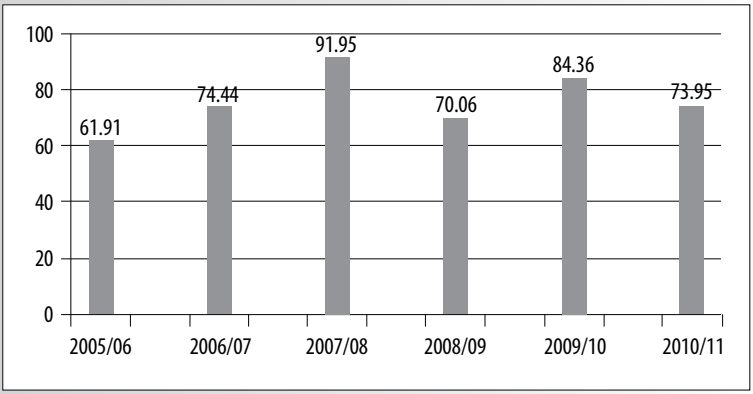
Figure: Annual Tea Production of Tokla Tea Garden (in '000 kg)



Source: Tokla Tea Estate, 2012.

According to the management, this tea estate is located at the rain shadow area, thus it has a low level of yearly rainfall than that of the district average. It affects to the quality of the tea leaf and ultimately to the finished tea.

Figure: 1 Rainfall data of Tokla Tea Garden, 2012 (in Inch)

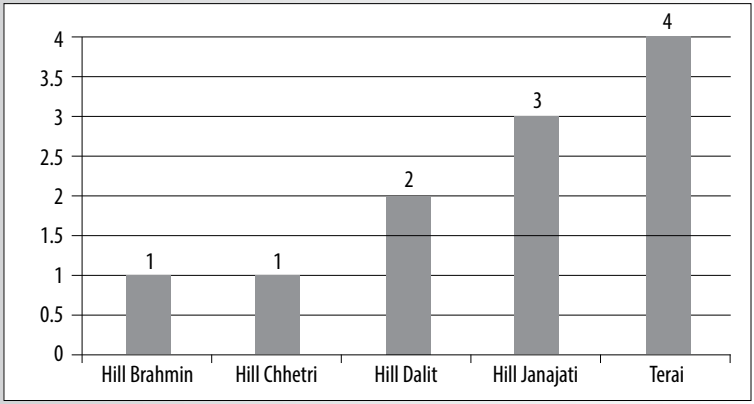


Source: Tokla Tea Estate, 2012.

Decent Work

Tokla Tea Estate provides employment to 384 permanent workers from different caste/ethnic groups, females (68%) outnumber males. In addition, this estate hires temporary and daily wage workers especially during the peak season. Among the workers (both male and female), hill origin people shared 64 percent of the total work force, but in different caste/ethnic groups Terai castes exceed other groups. Almost all workers are Nepalese from local areas and from neighboring districts.

Figure: Distribution of Workers by Caste/Ethnicity



Traditionally, in the tea estate four category of workers were prevalent such as *Marda* (male) *Aurat* (female) *Chokada* (youth above 14 years) *Lokada* (children below the age of 14 years), (GEFONT, 1997). The traditional workers category has been changed these days. In this tea estate, no one can get an initial permanent status. It is a kind of on the job training and skill improvement system. Those who enter into the tea estate as workers should first work as casual or daily workers. There is no discrimination of employing a person as a worker on the basis of caste, ethnicity, gender and religious faiths. The management has yet to adopt the system of advertisement while recruiting the workers. It is all the recommendation of the existing trade unions and experience workers. Shortage of male workers has been experienced at present.

Thus, there are more women and it is reflected in the permanent status of the workers as well.

All the 384 permanent workers (261female & 123 male) have got appointment letters. But temporary as well as daily wage workers have no any formal or legal contracts with the management.

All workers can join trade unions and exercise their rights. At present, formally and informally, there exist four different trade unions in this company. Due to the fluid political situation, there is no authentic union as per the Trade Union Act 1992. In any case, management calls all the four unions for any dialogue, negotiations and collective bargaining agreement (CBA) is the practice in use.

The monthly salary of the permanent workers has been fixed equivalent to government decided monthly minimum wage. Regarding the wage and salary of other categories of workers is based on Rs. 158 and Rs.170 per day respectively for tea garden and factory workers which are equal to the minimum wage fixed by the government.

Overtime is paid equivalent to a normal rate which is less than that of the rate mentioned in the Labour Act 1992. In addition, according to the tea garden situation and seasonality, management fixes a quota of plucking tea leaf per day. Those who pluck more than that quota can get from Rs. 2 to 5 per kg of green leaf. Besides monthly salary, the company pays one month salary to the permanent workers as a festival (Dasai) bonus, and Rs. 200 on the annual basis as medical facility, though it is just an

indicative amount in the present context. Each worker whatever their status can get 300 grams of tea dust per month if they regularly work in the tea estate.

Public holidays, maternity leave (52 days), sick leave (13 days) and home leave (13 days) is available in this estate to the permanent workers as their right however, mass workers other than permanent status are deprived from leave facilities.

Figure: Workers' Involved in Discussion in the Factory Compound

The workers, trade union leaders and management agreed that the tasks in this company are not very risky and considered environment friendly. The nature of work inside the factory and in the tea garden is

different. In the final production section a bit higher temperature has to be kept to maintain tea quality. Except that section, other working areas are good from the perspective of occupational safety and health criteria although there may happen some minor accident/injury. In such a case, the company fully supports the workers by providing medical services and expenses at an appropriate health care institution as well as reasonable compensation. The company provides personal protection equipment (PPEs) such as umbrellas, aprons, masks, goggles, etc. to the concerned workers. The workers are also using such equipments regularly as and when needed showing their health consciousness. Medical as well as accident insurance schemes do not exist, however workers are demanding it.

Almost all workers and management are more or less aware on the labour laws related to the plantation workers, though the degree of understanding differs vastly. But many of them are unaware of the ILO conventions, international declarations and programmes directly or indirectly related to the workers' right and dignity.

Environmental Conservation

Environmental sustainability is directly linked with living standards and the economic growth. Climate change issues have got high priority in government plans, policies and programs (NPC, 2011).

All the stakeholders of the enterprise are aware on the importance of environmental protection, though the level of understanding differs

among them. Realizing the fact, few general level programs for school student on the protection of the environment were organized jointly by the management and trade unions. Nevertheless, there is not much specific work done so far focusing on environmental protection. In this connection, neither the management nor trade unions or workers have strongly launched the environmental conservation program. They all considered tea gardens to protect the environment itself.

Figure: Different Views of Tokla Tea Garden, Jhapa

However, a few years back rice husks were used to dry tea leaves and the chimney was short in size. The trade unions and the management of the estate realized the negative health impacts of the short size of chimney. Thus, the height of the chimney was increased. Then, smoke and dust pollution decreased considerably.

Figure: Different Views of Tokla Tea Garden, Jhapa

After 30 years, the government of Nepal leased out this tea estate to Tokla Group. Since then the new management has installed new fuel efficient machinery. The manager claimed that the present plant and machinery produced less carbon emissions due to the low voltage and load shading the management is compelled to use fossil fuels that could emit more carbon emission than that of the hydropower.

All the participants are experienced with climate change and its impact on human beings, migration of birds, cropping pattern of paddy, fruits and vegetables over the years. Temperature is increasing gradually where rainfall is erratic.

Sustainability

From the discussions with the concerned stakeholders it is clearly known that the tea industry is sustainable in the following grounds and produces large number of employment especially women being labour intensive industry.

Once tea saplings are planted, in worst conditions it can survive at least 25 years and at best condition it survives up to 100 years. When something happens to any tea sapling within the garden one can easily substitute another one.

Growing popularity of Tea culture among all socio-economic category of Nepali people and people around the world, one can easily claimed that tea farming is sustainable. Different research studies proved that organic green tea is very beneficial and its demand is increasing gradually while people become more conscious on their health on the one and on the other test of the tea. (http://www.greenteaplants.com/Tea_Facts.html)

Tea growing is a labour intensive industry, technologically it is simple and agro-climatically Nepal is one of the best tea growing locations in the world.

The National Tea Policy of 2000 has envisioned setting up a tea research and training centre and cooperation among the public and private, national and international institutions.

Tea plantations now extend to many districts such as Terhathum, Dhankuta, Bhojpur, Sankhuwasabha, Solokhumbu, Dolakha, Ramechhap, Sindhupalchowk, Nuwakot, Gorkha and Kaski (Thapa, 2005). To make tea more sustainable by cultivating and exporting abroad, the initiatives taken by the National Tea and Coffee Development Board (NTCDB) Nepal are clearly leading to its sustainability (National Tea Policy, 2000).

Problems Encountered

This enterprise is facing various problems in different forms. The major problems which hinder the promotion and development of the enterprise in relation to national development include;

The quality and quantity of production; tea gardens need sufficient rainfall but this garden is located at rain shadow area. It is also known that annual average rainfall of the adjoining area of Doors Tea Estate of India is 125 inches. Even Barne and Kanyam Tea Estates (Nepal) located in the north of the Tokla Tea Garden have higher average annual rainfall than this Tea Estate, although data is not available.

Since its establishment in 1973nearly 4 decades have passed. In this period settlements at its periphery have increased rapidly. As the time passed, the settlers raised small ruminants to mitigate their expenses and to support their meagre income with the free grazing. Such ruminants' population damaged bark of the tea plant due to its salty tests which caused infection. Consequently, decreased tea production, productivity and test.

Because of densely populated areas, human activities and an increased number of motorized vehicles have produced CO_2 (carbon dioxide), smoke, dust, etc., causing pollution. These activities impact negatively to the growth of tea plants and their production qualitatively and quantitatively.

The estate is located near the border town of Kakarbhitta with India. Many people who could be an aspirant tea estate worker, engage in informal/illegal trading businesses (though risky) that can earn more than the per day wage than the estate can pay for them. Many of the male workers have a tendency to go to foreign lands for employment. Due to these reasons there is a lack of required number of workers in the tea estate for its productive and maintenance activities.

Many types of diseases and pests attack tea samplings. Sap sucking pests like Psyllids and leaf eating caterpillars are the main pests of young shade trees in the field. Young shade trees are also very prone to Red rust disease. More often, the disease travels from the nursery with the saplings in many tea gardens (http://www.tocklai.net/Cultivation/shadetrees.aspx). In addition the various diseases and pests spread through the shade trees. One type of looper eats old tea leaves and other type of loopers eat young tender leaves. The manager suspected that these shade trees- Derris robust (*Sirish*), would be a good habitat for these different types of loopers as spraying insecticide may not reach at the top of these Derris robust (*Sirish*) trees, to destroy these pests. At the same time, tea mosquitoes bite tea leaves and tender buds considerably damaging tea saplings, decrease productivity and reduce

tea production. Red spiders are another common disease found in this tea garden which bites matured leaves.

Different types of pests and diseases have posed negative impacts on the productivity of the tea estate and its overall production capacity. So far research, technical support and advisory services have not been available to combat these pests and diseases.

Lesson Learned

Women are empowered economically and socially as large numbers of women have got employment in the tea estate because of a shortage of male workers. Likewise, there is no discrimination on employment based on caste/ethnicity.

Multiple unions have existed in the Estate due to over politicization among the workers. As a result no authentic trade union election could be successful and weakens the trade union movement.
Generally, the Estate has set its wages and benefits, leave facilities, occupational safety and health, social protection issues as well as right to organization as per the labour laws though there is some lacking in the implementation part.

Labour laws related to the plantation workers are known more or less by the management and almost all workers though the degree of understanding differs vastly. But many of them are not aware on the

ILO international conventions, declarations and programmes directly or indirectly related to the workers' right and dignity.

Management and the workers are aware of conservation and climate change and its impact on the health of the people. The tea estate has positive impacts on environmental conservation.

Tea plants are a multiyear crop that produces tea leaf for between 25-100 years. The tea market is increasing in domestic as well as foreign countries as the tea culture has increased among the people all over the world. As a result, this industry will be sustainable if managed correctly.

Suggestions

Tea is one of the popular non-alcoholic beverages and is growing popularity in Nepal. It is environmentally friendly and is an import substitute. Organic tea is gaining popularity among other edibles. Promotion of organic tea is urgent.

Capacitate the Tea Research and Training Centre as envisaged in the National Tea Policy 2000, in order to protect and promote tea farming as well as production.

Prioritize the setting up of a tea Research and Training Centre in collaboration with the public and private, national and international institutions.

The centre could work to investigate the pest and diseases problems and prepare various qualities of human resources.

Conduct training that emphasizes the existing national legal provisions and international conventions, programs etc., related to the rights of the workers.

Conduct awareness campaigns for the community people in the surrounding area of the tea estate on the benefits of stall feeding of livestock raising rather than free grazing.

In order to promote tea farming the government has to address the pest and disease prevalent in the tea farming.

Encourage the existing tea gardeners' aspirants to produce organic tea, as many other organic productions are in priority of the buyers.

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Case Study 5

Green Road: Jiri-Dharapni Road

Green Road in Nepal

Current poverty reduction programs in Nepal concentrate on the millennium development goals. This has widened the concern about infrastructure investment, particularly for remote areas where pockets of poverty have formed. Road investments can end geographical isolation and economic and social marginalization for the poor through greater mobility and social service accessibility in rural areas. Contrasting mobility patterns between settlements of different degree of remoteness in Nepal as well as mobility of different strata within settlements on the road network enhances mobility and accessibility to reduce poverty on a number of specific circumstances and conditions. The construction of roads in the mountains is a difficult and costly task. Building roads in a conventional manner with the use of heavy equipment leads to severe environmental degradation that takes decades for re-stabilization. While road construction GHG emissions only represent 5-10% of total GHG emissions in the sector, they are growing rapidly, especially in Nepal due to major ongoing road programs to support economic development. The Himalayan environment is extremely hostile to road building (Ramsay 1986) because of intensive fractures of rock masses, thrusts, faults and a number of major discontinuities. The common resulting effects are landslides and slope failures across the whole Himalayan range (Kanungo and others 1993). Additional human activities in the fragile mountain region further degrade the whole ecosystem.

ILO Nepal has implemented a project called "Employment Creation and Peace Building through Local Economic Development (EmpLED) that

aimed at food products value chain upgrading in Ramechhap as well as considerable business growth prospects. The Ramechhap Employment-Intensive Infrastructure Development (EIID) Programme demonstrated green road construction, upgrading and repair techniques. The objective was to create employment opportunities for vulnerable men and women, to create 33,400 green workdays and to earn an average of NR11,200/each during the project. The EIID intervention was designed and implemented to strengthen capacities to design large, medium and micro infrastructure projects at the district and grassroots levels and to encourage policy changes regarding investments in mobilization of increased resources for employment intensive infrastructure development. The project demonstrated the benefits of labour-based approaches to infrastructure development and maintenance including the creation of: (1) green jobs; and (2) quality productive assets supporting economic recovery and growth, especially for agricultural value chain upgrading.

Jiri-Dharapani Green Road

Rural roads are the base for social and economic activities in different parts of a country. Ramechhap district is situated in the central region of Nepal. There is widespread poverty and under-employment in Ramechhap, a very poor hill district, where only a small proportion of the workforce is in paid employment. Economically the district ranks one of the underdeveloped poor districts in Nepal, even though it has lot of natural resources such as water, forests, Non-timber Forest Products

(NTFPs) and matu re forests. Three main rivers Tamakoshi, Sunkoshi, and Likhu are in the district.

Figure: Green road construction

The Jiri-Dharapani agricultural road (9.65 kms) is the only access road to regional markets and services for an estimated population of 43,000 (2008) people from the town of Jiri in neighboring Dolakha District to the Kimti Kola river bridge at Dharapani in northern Ramechhap District.

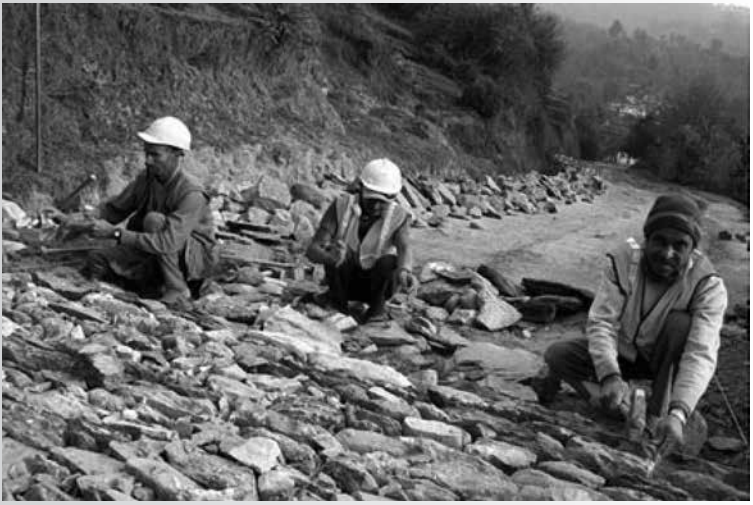
A tarmac road connects Jiri in neighboring Dolakha District to important markets in Charikot (the Dolakha District Headquarters) and to the Nepali capital, Kathmandu. A decade ago, Jiri was an important starting point for the classic Jiri-Everest Base Camp trek, but today over 80% of Jiri's tourism business has transferred to Lukla, the new starting point for the Everest Base Camp trek. Over the past few years and due to lack of maintenance, the condition of this road had deteriorated significantly to the point where it was not navigational during the annual monsoon rains (June-September), and only accessible with difficulty and danger at other times (the road has claimed several lives through vehicles going over the step drop edge at dangerous muddy stretches). One of the major cash crops for poor farmers in North Ramechhap is potato which is harvested during the monsoon season when farmers are forced to carry their crop to traders in Jiri, limiting marketable volumes and the opportunities to take advantage of the better early harvest prices that accrue before seasonal gluts flood the market forcing prices downward. The poor state of the road was also a constraint to growth and job creation in important local economic sectors such as tourism, plum, tea, cheese and natural forest products. The Ramechhap LED Forum implemented priority LED value chain upgrading interventions to create and improve jobs in the tourism and potato sectors in North Ramechhap.

Figure: Green road construction

While the road is crucial for access to markets and other services for the population of North Ramechhap, it lies entirely in neighbouring Dolakha District where it was low investment priority for the Dolakha DTO due to the small population in this area of Dolakha, and because of limited resources for investment in road maintenance. To resolve this problem, the Ramechhap and Dolakha have signed a memo of understanding supported by the Ramechhap LED Forum to invest as a priority in the repair and upgrading of the road in support of improved access to inputs, markets and services for the population of North Ramechhap including future operations and maintenance planning. In

addition to improved access and relief from isolation, the intervention demonstrated employment-intensive approaches to the provision of productive infrastructure for value chain upgrading for the benefit of ultimate District LED beneficiary groups.

Figure: Green road construction



A small portion of North Ramechhap (Shivalaya/Those-Deurali/Bampti-Bhandar) retains reduced trekking traffic benefit on the classis trail. After Dharapani, rural road construction in recent years in North Ramechhap now connects several VDCs and important agricultural products in the area to the Jiri-Dharapani road and the important external markets and

services of Jiri, Charikot and Kathmandu. With daily express bus services to/from Kathmandu during the dry season (mid-November to mid June), Shivalaya, Those and Bamti-Bhandar villages in North Ramechhap have become important local market centres with some small but gradually increasing services for tourist trekking in areas around the Rowaling Himalayas (tourism has sizeable expansion potential in North Ramechhap).

Decent Work

The project created 14,500 green workdays while contributing a productive asset that provides improved access to inputs, markets and services for value chain upgrading stakeholders among the 43,000 people in North Ramechhap. Approximately 300 workers from needy local households in the four participating VDCs will earn an average of NRs 10,000 each during works implementation which will generate NRs 3,022,575 in total wage earnings for injection into the local economy and reinvestment in the project, and up to NRs 4,266,500 in local and regional procurement. The project also contributed to a portfolio of EIIP case studies for demonstrating the benefits of labour-based approaches to infrastructure development and maintenance for up-scaling and replication including: (1) the creation of green jobs; and, (2) provision of quality productive assets supporting economic recovery and growth, especially for poor households.

Jobs created under the employment intensive environmentally sustainable ILO EmpLED project would principally fall under the green

jobs and group insurance, meeting standards of Occupational Safety and Health (OSH) and gender inclusion have an economic and social function, which are linked with the broader sustainable development agenda.

The choice of works executed under the EmPLED Project fits well into the green jobs initiative as majority of its work contributes to soil conservation through bio-engineering, regeneration of bio-mass and natural resource management.

Environmental Conservation

Most road construction and maintenance procurement emphasis in the District to date has been on private contracting and the use of machinery (bulldozer). This is not always appropriate in environmentally-sensitive road areas and opportunities for increased job creation by optimizing the use of labour based technologies are not being maximized. Moreover, and as in the case of the Jiri-Dharapani agriculture road, construction was partially completed by machinery, maintenance investments were neglected and a 9.5 km-portion of the existing rural road repaired and upgraded. The road had a narrower width at several sections with lesser radius than minimum requirement, while the gradient at some road sections is steeper than the maximum limit. There was also very poor drainage, and substantial erosion in places. The road section newly constructed was carried out using of labour-based technologies so as to create maximum employment opportunities for needy local people.

Participatory environmental impact assessments were conducted leading to stakeholder consensus on the following: (1) the risk of soil erosion and landslides arising from the works are adequately minimized by the works design and forward maintenance planning; (2) the loss of some minor vegetation in the road path was adequately compensated for by tree and slopes planting incorporated in the works (while any services and economic benefits from cut vegetation passed to local communities and CFUGs; (3) there was very limited loss of productive land; (4) the traditional economies and culture of indigenous peoples in the area are not adversely affected by the project; and (5) the project contributed to improving the socio-economic status of the beneficiary population through improving access to services and markets.

Sustainability

Road access to north Ramechhap including express daily bus services to Kathmandu, Shivalaya are now available. Those villages have established start and finish points for the new "Numbur Cheese Circuit", a 14-day tourism trekking course developed by LED stakeholders in North Ramechhap with ILO support. The tourism products were built around the extraordinary natural beauty of the foothills, glacier lakes, glaciers and wildlife of the Rowaling Himalaya, and the artisanal food products, hospitality, culture and monastic experiences of indigenous communities in Gumdel, Chuchure, Bampti. The road helped to facilitate the sustainable competitive advantages arising from favourable climatic conditions and an abundance of natural forest resources and arable land that created new and improved jobs through value chain upgrading in

non-timber forest products, cheese products, and potato, tea and fruit products.

The green road brought together the technical offices of two Districts and road stakeholders of four VDCs in two Districts, and demonstrated the flexibility of LED to promote social capital cooperation beyond territorial borders where green jobs interventions are important to developing competitive advantages that would create long-term jobs in the target territory. At a time when the road construction and maintenance investment strategy of the two District DDCs/DTOs placed most emphasis on the use of private contractors and machinery, the project demonstrated how quality green roads can be repaired and upgraded in a cost-effective manner through community contracting that optimizes the use of labour-based technologies. The green road provides a platform for several District line agencies as well as other LED stakeholders to work together to create jobs and reduce poverty, isolation and exclusion. While small, the financial contribution of local North Ramechhap traders to the project budget was a significant step forward in leveraging the direct involvement of private sector stakeholders in LED asset building. Finally, the green road intervention provided Dolakha DDC with a first exposure to LED for potential future application in the District.

Various skills (including good labour practices, project management, technical works skills, tools for transparency and record keeping, operations and maintenance, public audit, participatory assessment for self evaluation) were transferred to the implementation stakeholders

and partners through complimentary EIIP trainings as well as on-the-job training. The project contributed to raising the awareness of VDC officials as to how employment-intensive infrastructure projects that create jobs while providing productive assets for the development of economic opportunities are designed and implemented.

Lesson Learned

- The Ramechhap authorities and LED stakeholders used the knowledge gained from the portfolio of ILO-supported demonstration employment-intensive road projects as well as other relevant aspects of the overall LED programme to review policies on road construction and maintenance investments in favour of increased investments (especially in regular maintenance) in the use of labour-based technologies and community contracting. The increased use of technologies such as the Green Road, IRAP and other factors that determine and contribute to local competitive advantages (e.g. opportunities for value chain upgrading) helped better systemize the planning and prioritization of specific road and other infrastructure investments. The situation is similar in many other Nepali Districts.

- The Jiri-Dharapani Road Maintenance Committee members had over 5 years work experience in rural road construction in their operating area of Ramechhap and Dolakha Districts using labour-based and machinery approaches. This includes construction of

the original Jiri-Dharapani-Chuchure and Dharapani-Rasnalu-Betali roads followed by spot repairs and upgrading in parts of this area.

- Under pressure to meet targets for connecting rural areas of the District to the headquarters in Manthali, the Ramechhap District authorities have made most investments in recent years in new road construction. However, road construction has not yet reached some remote parts of the District with inherent limited access to services and markets for affected populations. As the steep hill slopes of Ramechhap District are prone to soil erosion and landslides, environmentally-friendly ('green road') construction and maintenance approaches that cause minimum disturbance to natural soil structure are desirable.

- The interventions that demonstrated how quality infrastructure could provide and maintain optimized labour-based technologies, and utilized to improve the socio-economic situation of local populations.

- The construction of this road creates opportunities for competitive farming expansion and diversification of crop products with the cultivation of sweet oranges, and other seasonal and off-season fruit and vegetable production, as well as encouraging increased livestock and animal products production, and increased sustainable harvesting and collection on non-timber forest products. The other issues addressed by the intervention are limited availability of productive employment and economic opportunities in the target

area, and fragile local economies in need of cash injections. In addition to improved access to markets in Jiri and beyond, the road works would also improve access to important services centers and facilities.

- The Green Road fulfilled most critical ideas of sustainability includes: (i) Environmental and economic decision-making; (ii) Public engagement; (iii) Decision-making for long-term environmental performance; (iv) Construction planning; and (v) Planning for lifetime monitoring and maintenance through road user committees.

- The green road increased job opportunities and opened up new sources of revenue, leading to more diversified income structure, which helped to reduce household vulnerability to economic shocks.