

Study report

The local food system, livelihoods and its political economy

**FOOD AND AGRICULTURE IN NEPAL: SITUATION, POLICIES AND
SCOPE**



Prepared by

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ABBREVIATION

AAN	Action Aid Nepal
ADB	Asian Development Bank
AIC	Agriculture Inputs Corporation
APP	Agricultural Perspective Plan
BMI	Body Mass Index
CBS	Central Bureau of Statistics
CE	conservation Economy
CF	Community Forest
CFUG	Community Forestry Users Group
CNP	Chitwan National Park
CSRC	Community Self Reliance Center
DAP	District Agriculture Plan
DDC	District Development Committee
DFID	Department for International Development
DoF	Department of Forest
DSS	Dhanusha Sewa Samiti
EU	European Union
FAO	Food and Agriculture Organization
GDP	Gross Domestic Product
GMO	Genetically Modified Organism
GoN	Government of Nepal
HMG	His Majesty's Government

IFPRI	International Food Policy Research Institute
IMF	International Monetary Fund
INGO	International Non Governmental Organizations
IPs	Indigenous Peoples
MNC	Multi National Cooperation
MoA	Ministry of Agriculture
MoF	Ministry of Forest
MoHP	Ministry of Health and Population
MT	Metric Ton
NAF	Nepal Agro-forestry Foundation
NFC	Nepal Food Cooperation
NGO	Non Governmental Organizations
NIDS	Nepal Institute of Development Studies
NPC	National Planning Commission
NRs	Nepalese Rupees
NSFS	National Strategic Food Reserve
NTFPs	Non-timber Forest Products
NYSC	New Young Star Club
PAF	Poverty Alleviation Fund
PM	Prime Minister
PO	Program Officer
SA	Sustainable Agriculture
SAPL	Second Agricultural Program Loan

TNC	The Nature Conservation
UCPN	United Communist Party Nepal
UNDP	United Nations Development Programme
UNIFEM	United Nations Development Fund for Women
US Aid	United States Agency for International Development
VDC	Village Development Committee
WB	World Bank

PART A

NATIONAL POLICY REVIEW: FOOD AND AGRICULTURE

PART A: NATIONAL CONTEXT

INTRODUCTION

This policy brief analyses the present situation on agriculture and food security in Nepal. It demonstrates the very much intertwined these sectors are declining fast, which could create a socio-economic crisis in the country. This crisis would come in four different forms - lowered income of the ordinary citizens to buy food, potential risk of unavailability of food, decline in quality of food, and decline in farming culture. The present global policies on agriculture and food have also been affecting the values of food production and the technologies. This will invariably make Nepal dependent, especially on the multinational Companies (MNCs) for food. Similarly, the control of agriculture knowledge by external agencies would also make Nepal insecure in production of knowledge including resources such as seeds, making its agriculture more vulnerable as demonstrated by recent maize crop failure in Terai. This was one of the early conditions that led to suicides of farmers in India. This essentially tells us that this situation might arise in Nepal in future. Therefore, proactive planning and actions are required so that agriculture remains sustainable and farmers are in control of the technology they use. Sustainable farming under the rubric of conservation economy has the potential to become sustainable and farmers' friendly and, at the same time, able to secure food for the country.

1. BACKGROUND

There is a growing global concern to improve the production and productivity of agriculture for food security. Many studies reveal that there are more than 1 billion people who lack basic food security or live in poverty. Among these almost all (95 to 97%) of the food insecure and poor now live in two regions of the world, Asia and Sub-Saharan Africa. These areas rank the highest in IFPRI's integrated measure of hunger, child development and child mortality. The situation in the regions is 'alarming' in the context of climate change.(IFPRI 2009)

In Nepal, after about three decades of recess, agriculture and food security are now gaining attention from politicians and policy makers, however, there is no any concern to increase investment in these sectors. Similarly the basic steps to improve production of crops and productivity of land through agrarian reform are not given proper attention. As these steps

require some structural change in ownership of land and other natural resources there is little or no political will from the political leadership. For example, agrarian reform to solve the landlessness problem is the highest political agendas in the manifesto of the political parties. But there has not been much progress in land reform or solving of squatters' (*sukumbasi*¹) problem.

In the 1960s, land reform was a priority agenda some attempts were made and there were a few achievements, especially in tenancy reform. In the 1970s, although investment in agriculture from government side was high, there has not been much concern on these agendas. But since mid 1980s, concern for agriculture and agrarian reform completely faded away. Only for political presence, government has constituted commissions from time to time aiming to solve the landless people's problem through distribution of government owned land. But it was too little and too late. Yet, it is not sure whether the real landless farmers got land from these commissions. As a result, in one hand, access to land for the landless farmers have been a distant cry in Nepal, and in the other, the land-owning class, especially the large landowners who are usually the absentee landlords who do not cultivate land effectively as they depend on other sources of income and own land for land speculation. This was one of the main causes of low production and productivity in the country.

The decline in food production and low productivity of crops in Nepal is also related to the use of technology and the influence of global politics and policies in agriculture. As in other countries, mainly from India, Nepal embarked on 'green revolution' technology, which emphasized mechanized farming technologies, improved seeds and heavy use of chemical fertilizers, pesticides and improved water supply systems, if this technology is to produce result. In one hand, this technology destroyed many locally suitable knowledge and genetic resources. On the other hand, because of the lack of support from the state agencies in terms of research and subsidy on inputs, farmers were not able to use this technology fully. As a result, the environmental condition, soil quality, eco-system got damaged. The ultimate result has been decline in food production as well as productivity of farms. It has been already seen that in short term Nepal could not benefit from it and in the long term, no doubt, this high energy/input farming is not going to be sustainable farming option for Nepal where the majorities are resource poor farmers for their subsistence livelihoods . The toll of wrong use of green revolution technology is seen not only in production sector, but on the whole life system of farmers in Nepal.

The social issues are also at the center of agricultural decline in Nepal. Because of low production and productivity, there is a growing tendency to leave farm. Farming profession as a whole is seen as inferior. Therefore, young people are leaving agriculture for foreign employment, mainly in labor market of India and Gulf states. This could be seen rational from individual economic perspective if it could help in augmenting the total household income. But the decline in overall farming should be the state's concern as it could bring disasters in agriculture and food security situation. This is especially so as production has been declining in many countries, and in India on which Nepal depends on food imports, production has stabilized despite heavy investment on green revolution.

¹Although Landless (*bhumihin*) and *sukumbasi* bear the similar connotations but are different in terms of their relationship with agriculture, farm production and productivity. Landless are primarily the farmers who lost their farmland or did not hold farmland but engaged in farming activities where as *sukumbasis* are anyone who do not have registered land in their disposal.

It is largely because of the above factors that Nepal's food production has been declining since mid 1990s. Nepal is now a food deficit country if the country's self-sufficiency is concerned. It brings more food from outside than it exports. Because of declining food production per capita, Nepal is facing food crisis. This is especially so during the years when there is natural disasters like drought or over-rainfall, epidemic of insect and pest and the like.

Despite decline in agricultural sector as a whole, this sector is still important for livelihood of a majority of rural people. Nearly four fifths of all Nepalese households are essentially farm households² who derive nearly half of income from agricultural sources (both farm income and wage income in farming) (CBS et al, 2006).

The contribution of agricultural sector over GDP is declining consistently and it now contributes about 33 % only, but still absorbs two-thirds of labour force, especially women (MoF, 2008). It is evident that the manufacturing or industrial sector has not grown, which should have absorbed the surplus labor force. This is somewhat different than the path taken by western industrial countries, where the shift from agricultural sector went to industrial sector, and there was synergy between these two sectors. But in Nepal, this has not been so. There is more or less de-link in agricultural and industrial sectors and even a small agri-business and food-industrial sectors bring food from foreign countries. For example, most of the high standard hotels and restaurants bring food from foreign countries to meet their requirements.

Subsistence farming in Nepal is still a dominant mode of production. About 60 % farm households cannot produce food sufficient for more than 6 months (CBS, 2006). The subsistence nature of production has both advantages as well as disadvantages. But improvement in subsistence farm itself has a large potential to improve food security in the country. Subsistence farming has also links with the present pattern of land holding in the country as a large majority has a small land holding of less than 0.5 ha (Adhikari, 2009).

2. AGRARIAN REFORM IN THE RECENT HISTORY

The absence of a successful agrarian reform in Nepal to correct the historical injustices in land distribution as well as for the abolishment of all historical exploitative relationship inherent in a feudal agrarian system is at the core of low production and productivity of natural resources including farm land. Now the issue of agrarian reform has become more contentious in the absence of opportunities to expand land for cultivation and general division of land holdings among the inheritors.

Nepal is a land scarce country. Of the total area of the country (147,181 sq km), only about 21% is cultivable. Of the agricultural land (2,498,000 ha in 2001), 6.8%, 40.4% and 52.9%,

² Of the total 4.25 million households, 3.36 million constitute agricultural holdings.

respectively, is located in the mountainous, hilly and the Terai regions. Of the 23.1 million people of Nepal, 7.3%, 44.3% and 48.4%, respectively, live in these ecological belts. An average land holding size is 0.96 ha, and 32.1% of households are landless (CBS, 2002: 45). Out of the total land holdings, 1.4% landowners own 14% of arable land. Of the total cultivable land, about 9% is under tenancy system (CSRC, 2005).

The distribution of land is very unequal. For example, 47 percent of land-owning households own only 15 percent of the total agricultural land with an average size of less than 0.5 ha, while the top 5 percent occupies more than 37% of land. Inequality in land distribution as measured by Gini Coefficient was 0.544 in 2001 (CBS, 2006). About 29% households do not own any land (UNDP, 2004). About 80% of the indigenous population is marginal landowners, owning only less than 1 acre, or small cultivators (owning 1-2 acres). Most Dalits are landless. The gender dimension of land distribution is even more critical: men own 92% of the land holdings (Adhikari, 2008). Furthermore, the analysis of the trend of change in land ownership in the past four decades (1961-2001) reveals the following points:

- Number of holdings more than doubled in the last 40 years, mainly because of population growth and continuous dependence of people on land.
- Cultivated land area increased very marginally, especially in the last two decades.
- The average land holding has been consistently declining, and it reached 0.8 ha (per family) in 2001, and further declined to 0.6 ha in 2009 (CBS, 2009).
- Land fragmentation is another problem in the country. There are about 3.3 parcels in each land holding, and average size of a parcel was 0.24 ha in 2001. Such a small size of a parcel is also not conducive for the use of modern inputs, especially in building the infrastructure like irrigation facilities.

Land distribution pattern and the unequal access to land for many peasant and landless people are at the heart of widespread poverty. The high rate of poverty is still seen among the marginal and landless farmers.. As access and ownership of land is vital to food production as well as to get other opportunities provided by the market, it is essential that agrarian reform is needed. Therefore, the access to farm land for landless poor is significantly important to reduce their poverty.

The realization of land distribution was seen as early as 1950s. The period of 1950 to 1960 saw a plethora of Land Acts and Policies to bring back the land previously distributed to some elite ruling families. The forest was nationalized, and so were the pasture and some other natural resources. With the aim to reduce inequality in the distribution of agricultural land, a Lands Act, 2021 (1964) is in place since 1964. This act was basically to fix ceilings on the land an individual can own, protects the right of tenants by registering his or her name as tenant, and fix rent on agricultural land. However without any significant progress, this law has been amended six times. Most important among them are the fourth and the fifth amendments. The Fourth Amendment (1997) has made a provision of apportioning 50% of the land hitherto cultivated by a tenant between the tenant and the land owners to ensure that

the tenants become the owners of cultivated land. Then the tenancy right was abolished. This was called an end to dual-ownership of land, which was a constraint for increasing production. A six months' notice was given for the tenants to claim their rights, but it is being argued that a large number of tenants in Nepal are not registered³, and they suffered from this Fourth Amendment. The Fifth Amendment that came into force in 2001 has reduced the ceilings while retaining the provision of the Fourth amendment. But this provision was not implemented for a long time as there was a court case which stopped the program citing that it violated the property rights, which was enshrined in the then constitution. Very recently, court has given an order to the government that this needs to be implemented. In reality, there is not much land (officially registered) that is above the ceiling proposed in 2001.

Realizing the complexity in land ownership systems as well as the dependence of the rural households on forests as well as cultivated land, policies have been made to allocate parts of forest lands as Community and Leasehold Forests for creating opportunities for forest based income and employment. Community forestry in Nepal has become a functional and integrated part of many communities with over 14,000 recognized community forests legally managing over 851,965 ha of forested land or some 18 percent of the forested land. Forest Act 1993 and Forest Policy 2000 recognize the following features regarding community forestry.

- All accessible forests can be handed over to users without limitation on area, geography and time.
- Land ownership is vested in the state while use rights are granted to the CFUGs.
- All management (land and forest management) decisions are taken by the CFUGs.
- Each member in the CFUG has equal right over the resources.
- Each household is recognized as a unit for membership in the CFUG.
- Political boundaries do not affect the CFUGs.
- There are mutually recognized user rights.
- There will be an equitable distribution of forest benefits. The state provides technical assistance and advices.

Leasehold forestry is another management regime, which is targeted specifically in helping the poorer households and individuals, particularly women among them. Some 19,141 ha of degraded forest patches are under the leasehold management system benefiting to 3,520 groups of 29,888 families (DOF, 2007).

These Community Forestry and Leasehold Forestry are examples of how access to land can also be improved, especially in Nepal where cultivable land, as is generally perceived, is scarce. But it is yet to be seen as to how far they have helped in reducing the poverty and food insecurity of the most marginalized populations.

Recently, Government of Nepal has constituted a land reform commission. It is working to formulate suggestions to the government regarding the land reform process and practices. Given the experiences that many such reports and suggestions have been kept in files which

³ The number of these unregistered tenants is assumed to be 0.45 million (CSRC, 2007).

are collecting dust in government ministries, it is doubtful as to whether the commission will submit the recommendation and then the recommendations will be implemented accordingly. In deed, land reform through the acquisition of private land has been very controversial and politically unfeasible. Moreover, this would also require heavy investments, which the government will not be able to shoulder. As a result, relying on reform through soft approaches like community forestry, leasehold forestry, tenancy reform are the best option which will certainly get support from all sector of the society.

3. AGRICULTURAL AND FOOD SECURITY POLICIES

3.1. A PERIOD OF HIGH PRIORITY IN AGRICULTURAL DEVELOPMENT (1950-1985)

Nepal embarked on agricultural development mainly since the 1950. The initial emphasis was on both land distribution and increase in food production. But land reform itself was not that successful, as discussed above. Initially, a major thrust was to use modern technology in the form of improved seeds, fertilizers and pesticides. The extension system in the past was geared to motivate farmers to use modern breeds of animals and these modern inputs. This continued until recently. Government initially got full support for agricultural support from USAID.

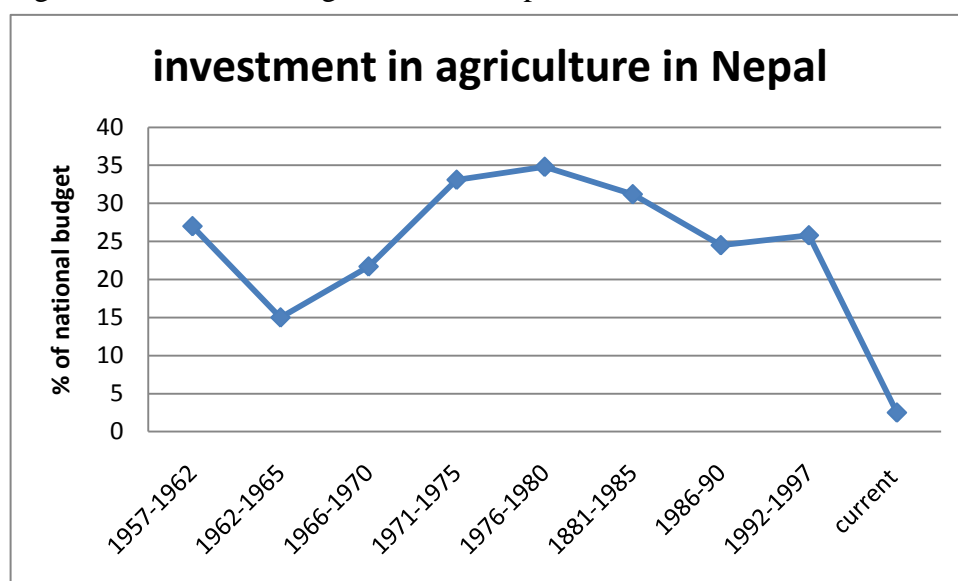
Even though, government had adopted policies to increase agricultural production since 1950, food security policies are recent developments. This is also a result of paradigm shift in development policies as influenced by international development. The concept of food security has been recently introduced in government policies and programs. This lack of emphasis on food security is linked with the assumption held until recently that food production would lead to food security. Accordingly the policies in the past aimed at increasing the production and productivity of crops. Accordingly until 1970s, one cannot see in the government reports and documents the words 'food security'. In the late 1970s Nepal had adopted a policy of providing basic needs to the people. This program just collapsed without much progress. Since 1980s, the concept of food security has gained momentum. It is now increasingly used in development discourse and in practice.

In the 1960s and 1970s, it was believed that technological progress would lead to food for all, as production will be rapidly increased. The green revolution technology developed in developed and in developing countries like India increased production tremendously, and it was hoped that food security problem would be solved. But even in areas where food production grew at a fast rate, food insecurity persisted. This gave a new concept that increase in production is not a sufficient condition for food security though it is a pre-condition.

Nepali policy makers also believed for a long time that increase in production would automatically lead to increase in food security. Accordingly, the policy related to food security (as is understood today) was non-existent until the seventh five years plan period (1985-1990). Until this plan the main emphasis was on increase in production, and

agriculture received priority in government budget allocation⁴. In the 1970s, Nepal was surplus producer, but the problem of malnutrition was rampant. Even though Nepal exported a considerable amount of food, there was chronic food shortage problem within the country.

Figure1: Investment in agriculture in Nepal



The emphasis of the eighth five years plan (1985-1990) was also to increase production and increase income of people by converting subsistence agriculture into commercial agriculture. The objectives set were to meet the growing domestic food demand, increase production and productivity of agriculture-based raw materials, create opportunities for income generating employment and maintain balance between agricultural development and environmental conservation. Policies in this plan were also influenced by liberalization principles. Accordingly, this plan started to sell off the government farms.

3.2. LIBERALIZATION POLICY AND THE AGRICULTURAL SECTOR (1985-2006):

The priority given to agriculture sector, as discussed above, has been reduced after the government pursued liberalization policy. This policy was pursued since the mid 1980s to cope with a severe problem of deficits in 'balance of payment' and budgets, and continued till today even though it is not stated formally in that manner. The initial impetus for this policy came from the profligacy of government expenditure to offset the sluggish growth rates in the

⁴ In the first five year Plan, agriculture sector received 27 % of the total budget. The second (1962-65), third (1966-70), fourth (1970-75) and fifth (1975-80) plans allocated 15 %, 21.7 %, 33.1% and 34.8 % of the budget to the agriculture sector, respectively (HMG 1962; NPC, 1965; NPC, 1970 and 1975). In the sixth five years plan (1980-85) agriculture sector received 31.1 % of the budget with the aim of increasing agricultural production by 3 % per year (NPC 1980). In the seventh plan (1985-90), the government allocated 24.5 % of the budget to agriculture and aimed to increase production 4.3 % per year (NPC, 1985). In the eighth five years plan (1992-1997), this sector was allocated 25.8 % of the budget (NPC, 1992). The target in this plan was to increase production of cereals by 5.4 % and cash crops by 9.1 % per year. Despite dubious data, it is revealed that production per capita declined during these periods. But since the mid 1990, the investment on agriculture sector declined considerably, and at present (2009) government has invested only 2.5 % of its budget on this sector.

period of 1975-80. This was also stated in the budget speech of the then Minister of State for Finance on 10th July 1986:

"The economy is passing through a critical situation due to distortions in the economy. Continuously widening budget deficit has led to excessive pressure on demand, whereas the supply situation did not improve to meet these demands. The overall imbalances in the demand and supply situation resulted in excessive credit expansion, deterioration in the balance of payments and decline in the foreign exchange reserves" (HMG/MoF, 1986: 2-3).

To improve the situation, IMF suggested Nepal to adopt the general principles of liberalization. Liberalization policy had two components – stabilization and structural stabilization. The first deal with the compression of aggregate demand and the later is applied to correct supply side distortions. Stabilization involved devaluation of the currency, control over government expenditure and domestic credit expansion. Structural adjustment policies involve a longer time horizon and deal with issues such as correcting prices, opening up of the economy, civil service reform, changes in various policies and acts and ultimately the reduction in the size of the government.

The earlier policies, which aimed at stabilization of the economy, affected, among others, the agricultural sector and food security. These policies affected food security not only from those policies directly affecting agricultural sector, but also indirectly through other policies affecting the general economy and society. This is so because food security is affected not only by production of food, but also by trade, prices of food, government public expenditure and support, income and its distribution and the like. Therefore, it is often difficult to tell whether food security impacts have been resulted from agricultural policies alone. Chapagain (1999: 115) has summarized the policy changes in overall policies in the initial years (in the mid 1980s).

- | |
|--|
| <ul style="list-style-type: none">• Devaluation of the Nepali Rupees by 14.7 % against all major currencies, including the Indian Rupees on 30 November 1985 and curtailing of HMG's regular and development expenditure from 1985/86 estimated level and imposition of credit ceilings on domestic borrowing. Chapagain (1999:117) argues that inflation could not be controlled from this policy of demand management. As a result, policies were adopted to improve the supply situation. These included: |
| <ul style="list-style-type: none">• increased development expenditure along with improvement in the investment quality.• Emphasis on the operation and maintenance of completed projects.• Provision of adequate resources for quick yielding ongoing projects and implementation of national priority projects.• Maintaining the existing ration of regular expenditure to GDP by restraining regular expenditure.• Special emphasis on domestic resource mobilization. |

- Qualitative and quantitative improvements in foreign aid utilization.
- Containing the budgetary deficit to not more than 2 % of the GDP.
- Reduction in the level of credit ceiling to the government.
- Facilitating the supply of necessary agricultural inputs and raw materials, for increasing the agricultural and industrial production.
- Giving priority to export promotion programs, including negotiation with the major trading partners, to reduce trade deficits.
- Emphasis on increasing the domestic production, together with encouragement to import from cheaper sources, to improve supply; and
- Generation of employment opportunities by increasing national savings and investment vis-à-vis the GDP (HMG/MoF, 1996:3 quoted in Chapagain, 1999:117-118).

After the political change in the 1990, the government vigorously pursued the liberalization policies. These included deregulation of interest rates, liberalization in international trade, removal of a number of restrictions on foreign investments, opening of the financial sector to foreign and private sector investment and privatization of public sector enterprises. Other policies measures adopted include exchange rate adjustment, restraining domestic borrowing, lowering of excise duties and sales tax, increase in direct tax and its decentralized collection of taxes by the enactment of Local Self-Governance Act 2056.

Legal and administrative changes were also made to implement the liberalization policies. Some of these changes in acts and laws were also related to poverty alleviation, which was underpinned by the directive principles of the new constitution formulated in 1990. This constitution aims to make Nepal a 'welfare state', and therefore espoused a variety of equity related guiding principles. This can be seen in Acts related to forestry and agriculture. Some other acts indirectly related to agriculture and food security are: Industrial Policy 1992, Foreign Investment and One Window Policy 1992, Foreign Investment and Technology Transfer Act 2049, Industrial Enterprises Act 2049 and Value Added Tax Act 2052. Legal and administrative initiatives of direct relevance to agriculture include Water Resources Act, 2049; Seeds Act, 2054; Pesticides Act, 2048; Nepal Agricultural Research Council Act, 2048; and the 1996 amendments to the Lands Act, 2001.

The need to channel the benefits of stabilization and liberalization policies to the poor was realized by the middle of the 1990s. This appeared in the budget speech for the financial year 1995/96 which had the objective of continuing the adoption of liberalization policies as a major strategy for economic reform and maintaining macro-economic stability. The economy was formally admitted as having dualism – modern sector being formal and the rural sector being informal, backward and poverty-ridden. To address this situation, the policy was to increase the integration of local economy with the global economy on the basis of competitive strength by encouraging private sector's capital, resources and skills for the development and expansion of the modern sector. The government also aimed to devote public expenditure for the upliftment of the rural sector and to alleviate poverty by increasing production, productivity and income distribution. In view of the large majority of people

living in rural areas, government realized the need to benefit them and announced that reform programs will also be implemented in agriculture, forestry and unorganized sectors. Increase in the access of poor to employment and income opportunities and giving emphasis on social security, social and physical infrastructures and human resources development for the benefit of poor and disadvantaged was also the objective.

In the agricultural sector, the following policies were adopted as a part of liberalization policy:

- To remove subsidies given to agricultural sector. Accordingly the subsidies on fertilizer, irrigation and other agricultural inputs has been slowly been removed.
- To privatize the Agricultural Input Corporation, which has been under the control of the government? Sales of fertilizers, pesticides and seeds will be done through private sector.
- Deregulating the price control on the agricultural inputs and products. Pricing will be left to the market.
- Abolishing government's involvement in the production of agricultural products or in marketing of such products and farm inputs. Such functions will be left to private sector. Accordingly government farms, including tea estates, were handed over to private agencies.
- To privatize the government programs in food production and distribution. Accordingly government farms will be privatized. Nepal Food Corporation will also be privatized.
- To remove the subsidies on the distribution of food and food products.
- To reduce the tariff rates on the imports of food products, so that it can be easily imported or exported.
- To open the agricultural sector to foreign direct investment.

Since 1995, government has implemented Agriculture Perspective Plan (APP), which is a 20 years strategic plan. The basic premise of APP is the overall economic development triggered through high growth rate in agricultural production. The high agricultural growth rate is assumed to bring strong multiplier effects on growth and employment, both in agriculture and non-agriculture sectors. Besides the concern for growth, APP envisages regionally balanced-growth by promoting comparative advantages in each sector and reduction in poverty through employment in agriculture and non-agriculture sector. The increase in agricultural production is assumed to bring employment in towns and regional centers agro-industrial development. APP aimed at accelerating agricultural growth rate by 2 percentage points from 3 % per annum at that time to 5 % per annum. This would mean six times growth in per capita output assuming population growth rate of 2.5 % per annum. This growth is assumed to increase the income of farmers. Farmers will then have the purchasing power to boost the demand for high-value agricultural commodities – particularly milk, vegetables, and fruits – and for nonagricultural goods and services from the small and medium-scale enterprises of villages and market towns. As they are labor intensive, they will help in reducing poverty. By the end of 20 years, the poverty is assumed to be reduced to 14 % from 49 % in 1995. The basic strategy of APP is technology-driven, with the emphasis on ensuring an adequate supply of four critical inputs: shallow tube-well irrigation, fertilizer, agricultural roads and research and extension of services. Some main principles of APP can be summarized below:

1. Agricultural growth-led economic development leading to the achievements of social objectives like food security and poverty reduction.
2. A model of technology-led green revolution like in Punjab, India (for Terai) and Himanchal Pradesh, India (for hills). The high inputs in fertilizers, roads and irrigation is assumed to bring high growth and high multiplier effects. These inputs are largely provided through market mechanism (private sector) rather than government's subsidized programs.
3. Public policy and investment is focused on small number of priority inputs (irrigation, fertilizer, road, power and technology system of research and development) seen to bring major impacts and outputs (livestock, high value crops, agribusiness, and forestry).
4. A package approach to development according to ecological zones and creating complementariness between them, and with private and public sectors.

Implicitly, the APP fully recognizes the importance of a liberal economic policy discussed above. But it also recognizes the fact that there is a strong role for the government to create an environment in which agricultural production can be increased and benefits distributed to the people. The plan states that the benefits of the programs can be reached to the poor and marginal farmers under a land reform and land consolidation schemes. The government's role is also specified in research and extension, and in creating critically required physical and institutional infrastructure. For example, as a part of liberalization process, fertilizer trade was being deregulated and privatized through a gradual removal of subsidies. Subsidies on fertilizers have been removed, and private sector is also entitled to equal subsidy that AIC is entitled to. This was announced in November 1997. Similarly, another development in this context is rationalization of government support to farmer-managed irrigation systems and subsidy on shallow tube-wells (Chapagain 2000).

Regarding food security and poverty, APP clearly states that it will improve food security and poverty in the country. It aims to reduce poverty by 70 % (from 49 % in 1995 to 14 % in 2015) after 20 years of its implementation (2015), and there will be 60 % fewer people under poverty line. APP aims to bring these benefits through:

1. By increasing the income of poor and small farmers through employment creation from agricultural growth and intensification of small farms with high value crops. Increase in income and employment is said to increase the entitlement to food.
2. Removing greatest barriers to participation of poor in the growth process – geographical exclusion that arises from poor physical infrastructure. This barrier means food markets cannot function well which increases the risk of food shortages adversely affecting the poor. Increasing the accessibility of hills and mountains is assumed to increase production and availability of food.
3. Including the women, especially the poor women, in the growth process. Livestock, especially dairy in both rural and urban areas, and small agribusiness opportunities is seen to bring benefits to poor women.

4. Directly related actions to food security includes increasing the capacity to monitor food supplies and nutritional status so that incipient food security problems can be diagnosed.
5. Empowering the poor and needy people. It recommends helping the poor to organize themselves into groups that can press for action to deal with the remaining poverty in the context of the accelerated growth.
6. By implementing supplementary activities for food security – like short-term food aid and distribution through NGOs, public work programs generating employment, and maintaining a 5 % food stock of the gross food production is required to maintain the trend prices and trend production. The stock should be held at several strategic locations so as to minimize the collection and distributional costs. The stock should be maintained keeping in view of the food demand, fluctuations in domestic output and prices and movement of world prices.

From above provisions in APP, it becomes clear that it gives emphasis not only on production, but also on public involvement in food security and through social actions like empowerment of the poor, and their participation in monitoring food insecurity problems. Its emphasis on maintaining 'food stocks' to the extent of 5 % of gross production contradicts the role of Nepal Food Corporation under the liberalization policy. NFC, then, handled only about 3 % of the food required in the country. Therefore, NFC even then handled some lower amount of food than required under APP's 'food stock' to be managed by the public institution.

The major reform package adopted by HMG in the agriculture sector is the one specified in the Second Agricultural Program Loan (SAPL), which among others aimed at promoting agricultural productivity through addressing policy and institutional impediments. The major aspects that SAPL addressed included deregulation of the fertilizer sub-sector, organizational reform of the Agriculture Inputs Corporation and promotion of competitive agriculture produce markets by reform of the Nepal Food Corporation.

In 1997, government deregulated the fertilizer trade by 1. Removing the monopoly of AIC on fertilizer subsidies thereby enabling the private sector to import and distribute fertilizers on an equal basis 2. Decontrolling wholesale and retail prices of fertilizers, 3. Phasing out fertilizer subsidies, and 4. Promulgating the Fertilizer Control Order 1999 by enlisting fertilizer as one of the essential commodities under the Essential Commodities (Control) Order of 1961. Because of this deregulation six companies, in addition to AIS, imported fertilizer. In August 1998 the government discontinued the provision of the transport subsidy for AIC to deliver fertilizers to remote districts and converted this to a General Agriculture Development Fund to be utilized by DDCs. The government also started reorganizing and restructuring AIC. In October 1999, government prepared a report to restructure AIC into two separate companies: one to operate fertilizer related business activities and one to operate the seed related business activities. Provisions are made for private sector participation in both companies.

Reforms have also been made in Nepal Food Corporation to eliminate market distortions in food supply and distribution. The conditions of the SAPL agreements were 1. Withdraw from

the subsidized distribution of food grains to urban and accessible areas including Kathmandu valley (which had been enjoying major share – more than 50 % - of NFC food) and municipalities, 2. Approve reform of NFC to phase out subsidized food grain distribution, and limit NFC's activities to the delivery of food grains to remote areas. The list of districts had been reclassified and annual budget for food distribution limited to not more than Rs 225 million.

A study of future roles of NFC conducted in August 1998, reclassified 38 districts considered until as remote districts into 12 remote, 14 partially remote and 12 non-remote districts. It recommended that 1. Subsidized distribution of food grains should be carried out only in the 12 remote districts, 2. Procurement of food grains be confined to secondary markets only (to reduce cost of procurement) 3. A national strategic food reserve of 27,500 mt. of food grains be maintained at various locations, 4. NFC would continue to manage donated food, and 5. NFC should not engage in commercial operations except rice milling in Bardiya district. On the basis of the above recommendations 107 redundant offices/sales depots (of a total of 255) would be closed and 683 of a total of 1000 permanent staff would be retrenched and 317 retained.

In December 1998, government instituted a task force, which accepted the classification of previous 38 remote districts as 12 remote, 14 partially remote districts and 12 as non-remote districts. It also recommended that NFC would supply food only to remote 12 districts. There would be no intervention in food grain market for price stabilization purpose, and no declaration of the minimum support prices for food grains. The task force also decided that 1. NFC will distribute subsidized (subsidy in transportation) food in remote districts and remote villages of partially remote district 2. NFC will also manage National Strategic Food Reserve (NSFR) of about 30,000 mt of food grains at various locations. 3. NFC is permitted to undertake limited commercial activities as needed to recycle NSFR stocks with minimum cost, and 3. NFC is given responsibility to manage food aid. It is also recommended that 67 of the 135 offices and sales depots were to be phased out, and NFC as a whole will be downsized.

The role of NFC has shrunk in recent times and the volume of food it supplies has been declining. This has happened mainly because of economic liberalization as discussed above. In the 1980s and up to mid 1990, NFC continuously increased its supply of food grains to rural areas, even though there were fluctuations also. It averaged around 50,000 mt per year in this period. During the tenth plan period (2008-2010), it distributed around 31760 MT of food in three years in 30 districts. It maintains an emergency buffer stock of 15,000 mt. In the past NFC was mainly responsible for supplying food to Kathmandu. Only in the later period, emphasis has been shifted to remote and food deficit areas.

Even though, government has been shouldering a large amount of subsidy to NFC for the supply of food to remote areas, the contribution of NFC to meet food deficit is very small. In Kathmandu valley, the contribution of NFC's sales meet only 15.5 % of food deficit as of 1997/98 (Adhikari and Bohle, 1999). But for 2002, the estimate is only 9 % (Pandey, 2002). Overall, NFC's food sales meet only 3 % of the food deficit of the country. The rest of the food deficit is met from the private sector. Pandey argues that main problem with the private

sector is with the quality control. Kathmandu food supplied by private sector has been adulterated and is of poor quality. In various reports and newspaper articles, complains about food quality are common.

Food trends

Distribution of food to remote areas from NFC has also not been very effectively distributed. Even though it has placed a heavy financial burden to supply food to remote areas with no transportation facilities the questions often raised whether the real food insecure households have benefited from the NFC's supply. After Jumla was hit by a famine in 1975, government took steps to send food by air lifting. Since then government has been providing food to Karnali and other food deficit hill districts, and amount has been increasing year after year. But the benefit of food distributed in Karnali, which is considered as the most insecure zone with 5 districts; It also receive about 40-50 % of subsidized food. In terms of total subsidy, proportion invested here might be even more as transportation is costlier here) have been taken either by Helicopters or by Wine makers. In 1998, NFC's 60 % meant for Karnali districts rice was allocated to government people and teachers. Rice supplied by NFC in Karnali is just not sufficient to meet the demand of people (Khadka, 1999: 261). In the late 1990s, government spent Rs 200-250 million in the transportation of food in the Karnali zone only. But in the past two years NFC has been receiving less than Rs 225 million as transportation subsidy for the whole country. But the problem of agricultural production has been deteriorated from this subsidized food supply. As the food supplied by government is cheaper than to produce food locally, people now give less attention to the production of food.

Regarding the impact of liberalization on agriculture, the findings have been mixed. Some reports indicate that liberalization has been helping in improving the agricultural sectors. Some other studies reveal that expected benefits have not been achieved. A study conducted by Shankar Sharma in 1994 indicates that liberalization is having positive impact on agriculture. He concludes:

"However, the limited information available does show that indirect discrimination against agriculture is being reduced. The government is trying to increase the use of price mechanisms instead of discretionary intervention in the agricultural sector. These measures are expected to increase the efficiency of the agricultural system in Nepal... It is interesting to observe that the impact of trade liberalization and the devaluation of the real exchange rate is significant for the production of food grains as well as cash crops, despite the fact that the border between Nepal and India is open and the rate of exchange between the two countries is fixed" (Sharma 1994:25).

Another study which considered the data up to 1997/98 regarded that liberalization did not bring any favorable impact in agriculture. For example, Chapagain (1999) reports:

"The findings indicate that the agriculture and trade sectors could not benefit from liberalization. On the contrary, available evidences suggest that these measures might have contributed to further hurting and strangulating these sectors. The various statements that were introduced over the last decade or so as part of the structural stabilization process and later in the liberalization were designed for those countries and other infra-structure base." (128-129).

But since 1999, things have seen to be improved in terms of growth of agricultural GDP, improved trade, and increased productivity. Various studies also indicate that access to fertilizer market and its availability has improved over the years (Upadhaya, 2001; ANZDEC 2002), even though their actual consumption has declined. Some problems in fertilizer quality have also been seen. But it is argued that once market of fertilizer is well established, the quality control will be taken care of by the market.

During the first part of the 90s, the per capita growth rate in agriculture was -0.5 percent and it improved to an average positive growth rate of 0.7 percent in the second part of the 90s. It is not only that there has been increase in production, but productivity also appears to have improved during the second part of the 90s compared to the first part (ANZEDC 2002). However, the productivity is still low by international standards. As a result of these positive results, the country has again turned into a surplus country in food grain. One of the arguments for the increase in productivity in the second half of 1990s is the increased use and availability of fertilizer due to private sector's involvement (Upadhaya, 2000). This study has reported that as a result of liberalization in fertilizer, an increasing rate of use of fertilizer has been observed even when price increased. Due to deregulation in fertilizer sales, availability of fertilizer for all farmers, especially for the poorest ones has improved. Despite high price, the increased availability has facilitated in high use of fertilizers, even by poor farmers. But this statement lacks statistical support. The official data on sales of fertilizers have been declining drastically (Table 1). But argument for the increase in fertilizer use in recent time is given to the informal import of fertilizer in Terai from India, which does not enter into official recording.

Table 1: Import and consumption of chemical fertilizers in Nepal by type (1997/98 to 2000/01)

Year	Nitrogen		Phosphorus (P2O5)		Potash		Total	
	Import	Consumption	Import	Consumption	Import	Consumption	Import	Consumption
1997/98	51429	32629	5222	13124	-	1442	56651	47195
1998/99	28440	32314	17800	12097	-	1258	46240	45669
1999/00	13800	25034	-	12031	-	185	13800	37250
2000/01	-	16397	-	7191	-	35	-	23623
2001-02	-	10610		8562	-	541	-	19713

2002-03	21838	15332	1780		38950
2003-04	5465	5233	1013	-	11711
2004-05	8118	8941	1399		18458
2005-06	2856	4994	286		8136
2006-07	8781	3970	0		12751
2007-08	1939	1346	0		3285

Source: Statistical Pocket Book, 2002. p. 89. Economic Survey, 2009.

Liberalization in Nepal is also blamed that it has encouraged the businessmen to import food grain from India. How far import of cheap rice produced in India (by government's subsidy on prices of fertilizers, electricity for irrigation) has not been taken favorably by Nepalese farmers and has also discouraged them for production. Based on Customs Department figures, in 1999/2000, Nepal imported 235,740 MT of rice at an average price of NRs. 11.09 per kg. Production of rice in the same year was 2.430 million MT in Nepal. Accordingly about 10 % of rice produced in Nepal was imported from India, where prices were about 12 % lower than that of Nepal (ANZDEC 2002). The same study also reveals that import of cheap rice from India is contributing towards food security of most people in Nepal. It reveals that about 60 % households which are landless, not engaged in agriculture or producing food not sufficient for home consumption have benefited from cheap rice from India, and about 40 % households in Terai which sale some rice have not been benefited. In Nepali papers when this issue of subsidy in India was raised and argued that Nepal also should give subsidy, Resident Representative of Asian Development Bank responded with the argument that providing subsidy is not sustainable on long term and India will not benefit from it.

The liberalization policy was considered beneficial by the government and by some studies (ANZDEC, 2002) considering the situation of the second half of 1990s and early 2000s, when Nepal increased its food balance from its own production. It is interesting to note that this increase in production and productivity of crops came at a time when the country was reeling under a severe armed conflict and when input supply and market mechanisms were disturbed. But again in the last six-seven years (2002-2009), performance of agricultural sector has again become dismal, and as discussed, below food balance of the country is increasingly negative. This negative growth continued even after the peaceful resolution of armed conflict since the 2006, and even after a reintroduction of subsidy to a small extent in shallow irrigation.

3.3. RECENT POLICIES IN AGRICULTURE AND FOOD SECURITY (2006 UNTIL NOW)

Even though APP created a new enthusiasm among the policy makers in agricultural sector, this was not translated into implementation. This enthusiasm was not seen among the donors, as a result this plan did not embark early enough. Until now this plan has been receiving lukewarm response from the donors. In fact, the agriculture sector, as a whole, received less

priority in the period from mid-1990s to 2009. The Government's resource allocation in this sector has been declining, and so has that of donors.

Even though one can question the APP on the ground of the sustainability of this production system, especially in Nepal which is facing shortage of external inputs, its implementation could have increased food production at least for a short period. But there would have been environmental degradation for sure, which has been seen in India in recent times. Using the benefit of hindsight from the experience of India, where green revolution has in recent times not been able to increase yield of crops, questions could also be raised about the sustainability of this the agricultural system promoted in APP.

As APP has not been implemented effectively, government has brought a new policy - Agricultural Policy 2061 (2004). This aims to increase production by replacing the subsistence-based production system with a professional and commercial agricultural system. The main emphasis of the policy is to increase production and productivity, and to make Nepali farmers competitive with farmers of other countries. The Agro-biodiversity Policy 2006 aims to promote local and traditional crops and knowledge.

The main emphasis of policies until now, including the APP and the Agricultural Policy 2004, is to replace traditional subsistence oriented farming with a commercial farming, forgetting the positive elements in the subsistence farming. The integrated, mixed (different crops and livestock) and diversified cropping system produces variety of food that are likely to be available for all times of the year (Adhikari, 2001). If a subsistence farmer produces all required food, he/she is also spared from the problems that arise from imperfect market in developing countries like Nepal. There is enormous benefit in retaining these good elements of subsistence farming (ibid).

At present government has also adopted a policy on organic farming, even though it has no program to promote this. The policy emphasizes organic farming in the country and has taken the concern of certification. Apart from this concern there is no action in reality.

The real impetus in adopting food security policies came from 11th three year plan (2008-2010), which was an interim plan after the political change in 2006. This plan adopted a chapter on food security itself, and this was developed in line with Interim Constitution 2007, which stated that 'food security' is a basic human right. Furthermore, this constitution provides a provision for 'food sovereign right', which is more inclined towards food production through indigenous means and in empowering the farmers to formulate agricultural policies. But despite these improvements in policies, government has not done significantly different to improve food security.

Agricultural production and food security, even though are not the same things, are intertwined closely. Food security depends to a large extent on how food is produced and distributed within the country and whether many people who produce food have access to means of production like land and other resources. Therefore, the decline in food security that we have witnessed and discussed further in the following section is also a result of the agricultural policies adopted by the government.

4. THE DECLINE IN THE PERFORMANCE OF AGRICULTURAL SECTOR AND FOOD SECURITY IN NEPAL

There are many evidences that suggest that there is decline in the performance of agricultural sector. These are seen in the decline in the production of food and productivity of land, shortage of food, and decline in the contribution of agricultural sector to the economy as a whole (together with other sectors within the country) and environmental pollution in agriculture affecting the health of people adversely.

4.1. DECLINE IN PRODUCTION AND PRODUCTIVITY

Performance of agricultural sector has not been impressive in recent years. The growth rate in agriculture sector remained 2.7 % in the 1980s and 2.7 % in the 2001 to 2008 (MoF, 1998, 2001, 2008). Growth rate of cereal crops was low, even though there was some improvement in the production of cash crops. Yields of the major crops like paddy, maize and wheat has remained stagnated even though there is some improvement but this was not at par with population growth rates. As a result, Nepal is facing food crisis in recent times, which has been discussed later on in detail.

One major reason for low growth rates in food production is the stagnation in agricultural productivity. Most of the crops, except wheat, showed stagnating or marginally increasing yield in the period from 1985-86 to 1998-99 (NPC 2001). A study conducted by WFP (2001:12) [as quoted by Sharma, 2002] has shown that during 1978/79 – 1997/98, estimated the annual growth rate of production of three major food crops, paddy, maize and wheat as 2.5, 4.0 and 5.9 percent, respectively. During the same period, the area under cultivation for these crops increased by 1.0, 3.8 and 4.0 percent, respectively. The gain in production is therefore mainly due to increase in area under cultivation rather than productivity growth and the productivity increase for those crops was only 1.5 percent for paddy, 0.2 percent for maize and 1.9 percent for wheat.

Sharma (2002) compares the yield trend of main crops in Nepal with that of other countries in South Asia. She reveals that yield of crops was far higher in Nepal as compared to other countries in the past (in the 1960s). But now it is just the reverse. Nepal's yield of crops is now lowest in South Asia. She demonstrates that during the early sixties crop yields in Nepal were 198 percent higher than in India, 111 percent higher than in Bangladesh, 212 percent higher than in Pakistan and 108 percent higher than in Sri Lanka. But by the 1990s, as she demonstrates, crop yields in Nepal were only 46.7 percent of yields in India, 87 percent of Bangladesh, 46.3 percent of Pakistan and 64.9 percent of Sri Lanka. This shows that Nepal lagged behind its neighbors in terms of crop productivity performance. In terms of long term growth rates in crop yields, Nepal lagged behind all of its neighbors. For crops considered for comparison, yield in Nepal grew by about 1.25 percent per annum while growth rates in India, Bangladesh, Pakistan and Sri Lanka grew 5.28 percent, 1.92 percent, 5.5 percent and 2.7 percent, respectively (Sharma 2002).

The situation of late 1990s and early 2000s has continued till now. Nepal has not brought significant change since 2001. Rather its productivity has increased marginally. But if the population growth rate is also taken into account, the yield rate seems declining. This has been demonstrated in the following Table (Table 2; Figs. 1 and 2).

Table 2: Yield trend (productivity) of various crops in Nepal. Yield in MT/ha.

Year	Cereal Crops					Cash Crops				
	Rice	Maize	Wheat	Barley	Millet	Sugarcane	Oilseeds	Tobacco	Potato	Jute
1988/89	2.09	1.34	1.25	0.84	0.92	27.52	0.62	0.69	7.06	1.07
1989/90	2.26	1.49	1.38	0.92	1.00	30.54	0.64	0.74	7.57	1.29
1990/91	2.36	1.60	1.42	0.93	1.16	31.71	0.64	0.87	8.04	1.23
1991/92	2.41	1.63	1.41	0.94	1.17	33.52	0.59	0.96	8.82	1.14
1992/93	2.28	1.59	1.36	0.93	1.15	34.52	0.57	0.92	8.59	1.27
1993/94	2.05	1.67	1.25	0.93	1.17	35.95	0.57	0.86	8.43	1.11
1994/95	2.40	1.60	1.41	0.96	1.08	35.49	0.59	0.90	8.76	1.21
1994/95	2.06	1.65	1.44	0.96	1.07	35.99	0.60	0.91	8.62	1.2
1995/96	2.39	1.68	1.55	0.95	1.09	35.00	0.63	0.90	8.48	1.34
1996/97	2.46	1.65	1.59	1.00	1.11	35.30	0.65	0.83	8.74	1.27
1997/98	2.42	1.71	1.55	1.00	1.09	35.13	0.61	0.80	8.39	1.26
1998/99	2.45	1.68	1.69	1.00	1.10	36.58	0.63	0.88	9.24	1.33
1999/00	2.59	1.76	1.79	1.10	1.12	36.18	0.65	0.89	9.64	1.04
2000/01	2.70	1.80	1.80	1.10	1.09	37.49	0.70	1.00	10.18	1.45
2001/02	2.74	1.83	1.88	1.11	1.10	38.10	0.72	1.00	10.53	1.45
2002/03	2.67	1.88	2.01	1.15	1.09	38.78	0.70	0.96	10.92	1.44
2003/04	2.86	1.91	2.09	1.09	1.09	38.80	0.71	0.97	11.49	1.43
2004/05	2.78	2.02	2.13	1.10	1.12	40.21	0.76	1.00	11.85	1.45
2005/06	2.72	2.04	2.07	1.06	1.11	39.68	0.74	1.00	13.09	1.43
2006/07	2.56	2.09	2.16	1.06	1.07	40.61	0.74	0.97	12.66	1.43
2007/08	2.77	2.16	2.22	1.07	1.09	39.47	0.74	0.97	13.11	1.46
2008/09	2.90	2.20	1.93	0.90	1.10	40.52	0.75	0.98	13.20	1.38

Source: Economic Survey, 2001 and 2009.

Figure 1: Yield of different cereal crops in Nepal (Mt/Ha)

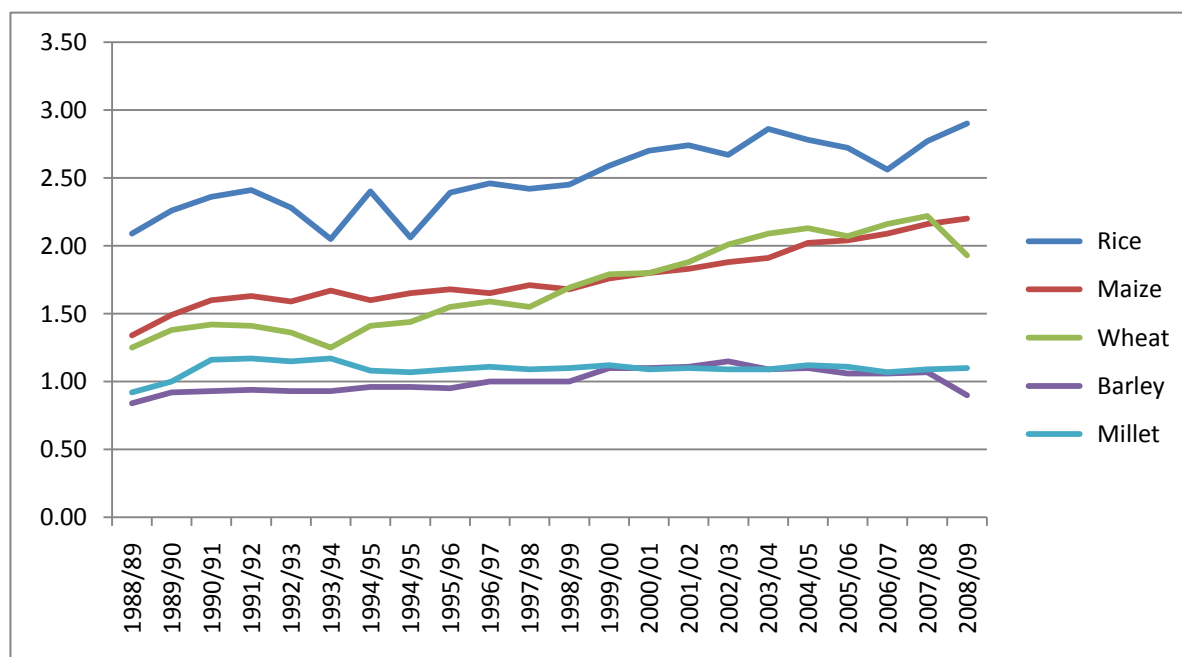
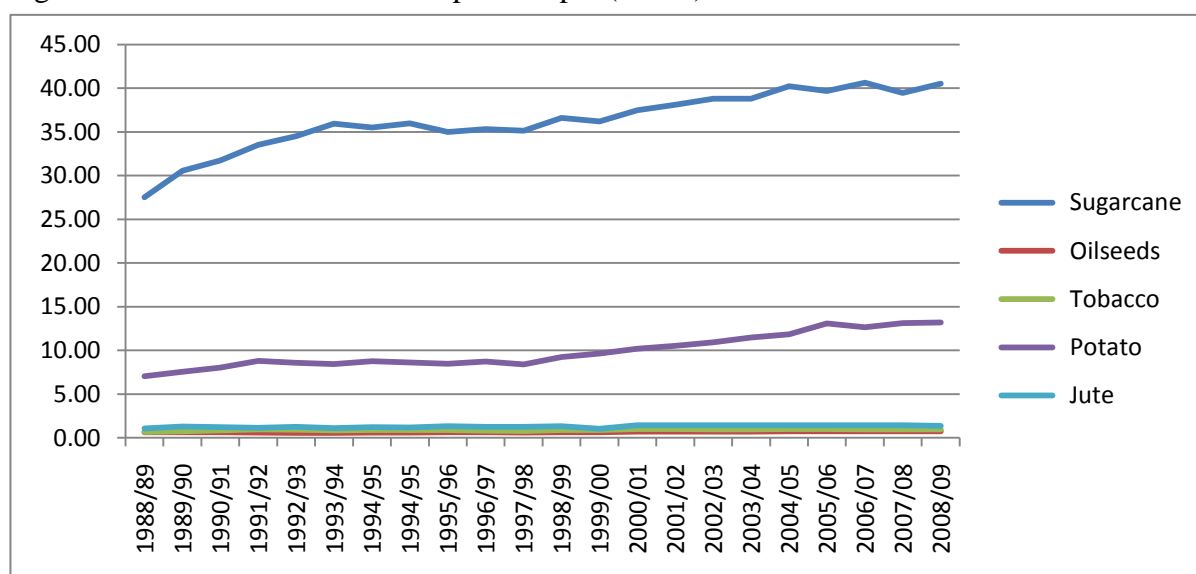


Figure 2. Yield of various cash crops in Nepal (Mt/ha)



In Figure 1, we see that there is some increase in the yield of paddy. It has increased by about 1.5 times. But considering that population in this period has also almost doubled means that yield rate in relation to population growth rate has been declining. In case of cash crops, we see the same trend in sugar (figure 2).

However, there is slight improvement in dairy and poultry production. Also, Nepal has been able to reduce import of vegetables and poultry products. In Table 3, the trend of production of livestock products is shown, which shows that there is some significant increase in various livestock products.

Table 3: Livestock production trend in Nepal (in '000 mt)

Year	Meat	Milk and Milk Products	Egg (in million)	Fish
1993/94	153.52	885.36	375.10	15.52
1994/95	159.24	903.64	412.11	17.58
1995/96	161.52	961.56	396.40	21.88
1996/97	174.27	1012.16	421.50	23.20
1997/98	180.67	1048.04	440.90	24.86
1998/99	185.03	1072.94	460.62	25.75
1999/00	189.16	1097.02	480.80	31.72
2000/01	194.26	1124.13	507.32	33.27
2001/02	198.64	1158.79	538.42	35.00
2002/03	203.89	1195.93	557.36	36.57
2003/04	208.41	1231.85	575.56	39.95
2004/05	214.80	1274.20	590.13	42.46
2005/06	219.20	1312.14	600.80	45.42
2006/07	227.11	1351.39	614.85	46.78
2007/08	233.90	1388.73	631.25	48.75
2008/09	241.69	1445.41	629.93	46.87

Source: Economic Survey, 2009.

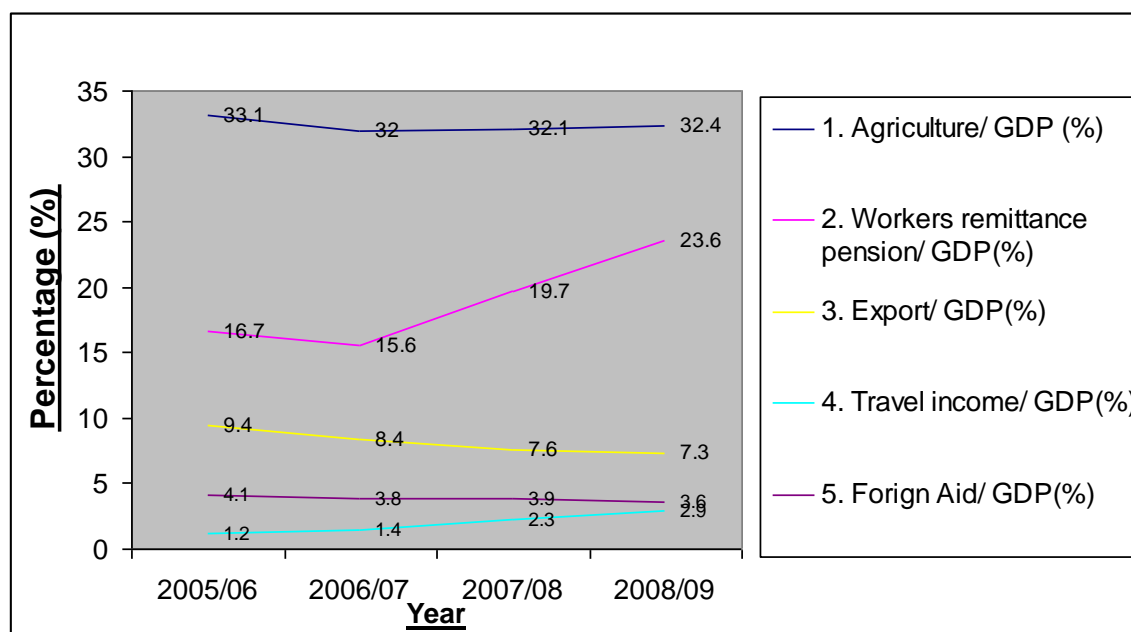
4.2. DECLINE IN CONTRIBUTION OF AGRICULTURE TO GDP

The relative contribution of agricultural sector on national income (GDP) has been declining consistently. This decline is not a worry if the absolute contribution has increased and other sectors of the national economy are growing. But as seen in Fig. 3, the contributions of internal sectors like industry and trade (export) have also been declining. The contribution of remittances has increased significantly. At present, agriculture sector contributes to only about 32.4 % of the GDP.

The contribution of remittance to national income presents its own challenges. At present, it appears that there is increase in the contribution of remittances at the cost of agricultural sector. People from rural areas are increasingly migrating to foreign countries. There is shortage of labor in the farming sector. At present, farming sector is seen as left for children, women and elderly, as young persons are migrating to urban areas and to foreign countries for work. On an average, about 215,000 to 250,000 Nepali youth migrate to foreign countries every year taking the official permission (NIDS and NCCR, 2008). This does not include people who go to India and those going to overseas through informal channel. This means that a large number of young people go abroad for work. How far this has impact on agriculture has not been studied fully.

The total dependence on remittance, which has been the case of Nepal, may be risky at some time in future if the agricultural sector is not developed. There are questions as to the sustainability of remittances. If employment opportunities in foreign countries decline due to certain reasons, then the economy of Nepal could be destabilized. On the other hand, the decline in agriculture and food insufficiency in food production could be a problem when other countries face food shortages and stop exporting food to other countries. Therefore, Nepal needs to meet the basic requirements in food.

Figure 3. Contribution of different economic sectors to GDP



Source: Economic Survey, 2009.

4.3 HIGH POVERTY IN AGRICULTURAL SECTOR

Even though growth in agricultural sector has been characterized by the potential to reduce poverty (see World Bank 2008), this has not been so in Nepal. On the other hand, poverty is concentrated in the farm sector, especially among the marginal and landless farmers, who are dependent on land (CBS, World Bank, DFID and ADB, 2006: 12). This study shows that the poorest households are those headed by agricultural wage labourers. The incidence of poverty among this group was almost 56 % in 1995-96, and it remained high in 2003-04 at 54 % (nationally the poverty rate declined from 42 % in 1995/96 to 31 % in 2003/04). This group is a small and declining share of population. It is made of 6 % of the population and 11 % of the poor in 2003-04. The second poorest group comprises the households headed by 'self-employed in agriculture'. Poverty in this group declined from 43 % in 1995-96 to 33 % in 2003-04. Two-thirds of poor are in this group. The incidence of poverty is low and rapidly declined in the groups engaged in trade and professional skills. The study has also revealed that land ownership reduces the probability of being poor in rural areas. The incidence of poverty among households that own 1 ha or less of land (two-thirds of rural households) is close to 50 %. The proportion of households with smaller land holding increased over time,

while the proportion with larger land holdings (2 or more hectare) declined substantially, from 16 % to 11 %. Poverty declined more for the households with larger land holdings, indicating increasing returns to land (CBS, World Bank, DFID and ADB, 2006: 14). This means that poverty is high among the smaller holdings as they cannot derive large benefits of land and they also do not have access to other opportunities. On of the reasons for large land holder to be able to reduce poverty is due to the fact that they derive more benefits from other opportunities like education, which enabled them to derive benefits from new opportunities in the market.

Table 4: Poverty measurement by land ownership in Nepal, 1995-96 and 2003-04 (rural areas only).

Landholding (ha)	Poverty head count rate			Distribution of poor*			Distribution of population		
	1995-96	2003-04	Change (%)	1995-96	2003-04	Change (%)	1995-96	2003-04	Change (%)
Less than 0.2	48	39	-17	23	25	10	21	22	7
0.2 to 1	45	38	-15	44	51	17	42	47	11
1 to 2	39	27	-29	19	16	-14	21	20	-3
More than 2	39	24	-39	15	8	-49	16	11	-32
Total	43.3	34.6	-20	100	100	-	100	100	-

+(CBS, World Bank, DFID and ADB, 2006: 14). * indicates distribution of total poor population of the country in different land-size categories, which needs to be compared with distribution of population in each land-size category in order to have a relative view of poverty.

4.4 FOOD INSECURITY PROBLEM

Nepal was considered as a food secure country until the mid 1980s. This assumption was made as the policy making and planning in the past had the assumption that food self-sufficiency at the national level meant that it would lead to a food secure situation. And Nepal was food self-sufficient in the past. It even exported a larger part of its production.

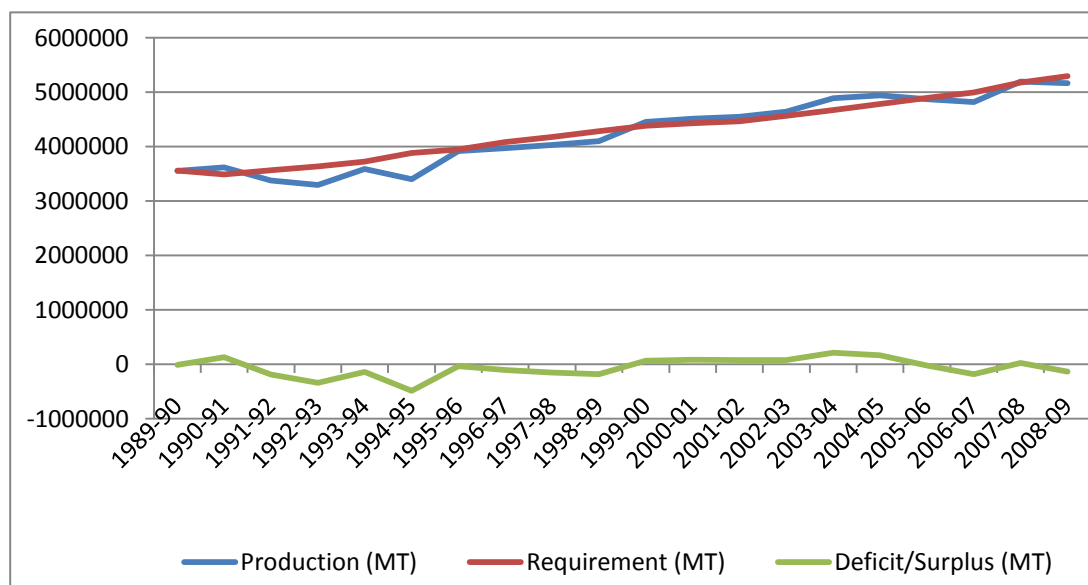
It is extremely difficult to tell objectively how much food is produced in Nepal and how much is imported. There is also large variation from year to year because production depends on rainfall and other production conditions. But, in general, country is facing problems in meeting the local food needs. At present, it is estimated by World Food Programme (WFP) that the country can meet only about 80 % of its food requirements. But government's estimates that the country food production can meet the basic requirements of food for its population (see discussion below). Food production fluctuates depending upon the weather situation, and it has become a cause for concern. Lately increased incidence of drought is leading to severe food insecurity. In early 2009, it was estimated by World Food Programme (WFP) that about 2.2 million people of Nepal, particularly Far Western and Mid Western Regions, will face food problem, mainly because of the drought. Agricultural productivity has also been declining because of the unbalanced use of chemical inputs. On top of this, the conflict has exacerbated food insecurity in villages as it adversely impacted on both the production and distribution of food.

The data available for 20 years (1989/90 – 2008/09) indicate that the country was marginally self-sufficient in 8 years, especially in the second half of 1990s and early 2000s.

In the other 12 years, there was deficit in food production⁵ (See Fig. 4 and Annex Table 1). The surplus ranged from 0.21 million Mt to 0.02 million MT. The deficit peaked at 0.5 million MT (in 1994/95). In 2006/07, there was also a deficit of 0.2 million MT, which was basically due to drought. It is estimated by WFP, GoN (MoA) and FAO that food deficit in this 2008-09 will increase because of decline in production of wheat and barley. This report further writes:

- 66 % households in Nepal are experiencing food shortages.
- 43 % households are skipping or reducing meal.
- 30 % households in hills and mountain are forced to consume seed stock.
- 23 % households took children out of school.
- 73 % households in Mountain region send at least one member out (out-migration) for work.

Figure 4: Production, requirement and balance of food in Nepal 1989/90-2008/09.



A large number of districts in Nepal are deficit food producers. Depending upon the situation, especially the weather conditions, 43 to 50 districts of the country (out of 75 districts) are food deficit. Food deficits are high in mountain districts and the mid and far west regions. These regions are also the traditionally food deficit districts. Out of 16 districts in mountainous regions, 13 districts are usually food deficit. In the hilly region, there are 39 districts, and usually 24-25 districts are food deficit. In Terai there are 20 districts, and usually six are food deficit. This shows that food deficit is most severe in mountain region, which occupies about 7 % of the population. In 2008-09, it faced a deficit of 69,188 MT food. The hill region contains about 45 % of the population, but faced a deficit of 345,610 MT food in 2008-09. But in Terai, the food was produced in surplus (281889 MT) in that year. Cases of food insecurity (hunger deaths) had been observed in remote districts, especially in Karnali zone. It is mainly due to inaccessibility that the food prices are much higher, normal marketing channel non-existent and transportation often extremely difficult in

⁵ Government makes calculation of food balance sheet assuming that per capita food requirement is about 190 kg per year. This is assumed to provide daily calorie requirement of about 2247 cal.

these remote districts. Conflict has further deteriorated the food security situation as it has obstructed the food availability due to restriction in food transportation and distribution.

One of the important measures of food security is the nutritional status of the population, especially children and women. For this, surveys like health surveys, nutritional surveys or even food consumption surveys are conducted. The analysis of food consumption (or nutritional status) is more important than the analysis of food availability, as households not producing food may be consuming sufficient food through other exchange systems like purchase, exchange of food through labour or other assets/property, by becoming a member of a kinship group or other social groups having access to food, or by borrowing food or money to purchase food.

Various nutritional surveys conducted in Nepal reveal that the nutritional status of people, usually of children, has been deteriorating, even though in recent times there is some progress in certain sectors of nutrition. A national survey conducted in 1975 revealed that 48.1 per cent children had suffered from chronic malnutrition and 6.6 per cent children had suffered from acute malnutrition. A survey conducted in 1995 revealed that 63.5 per cent of children suffered from chronic malnutrition and 6 per cent from acute malnutrition. The recent surveys that worth mentioning are Nepal Living Standard Survey (2003-04) and Demographic and Health Survey, 2006. These have identified the groups of people suffering from various food insecurity (mainly nutritional factors) problems. It shows that about 40 % people consume less than the required energy (2240 Calorie) in 2003-04. Stunting among the children (below 5 years) has remained more or less same in the period from 2001 to 2006. But during this period, the incidence of underweight has declined significantly, from 45 % to about 37 %. On the other hand, incidence of wasting has grown significantly in this period. There is also variation in the type of malnutrition according to ecological regions and development regions. In terms of calorie intake and stunting, Himal and Hill regions suffer more. But in terms of wasting, Terai seems to have severe problem. Similarly, the problem in Mid Western and Far Western Regions is far more serious than in other regions (Table 5).

Table 5: Poverty and food (nutritional) insecurity according to ecological and development regions.

Region	Poverty Rate (%) in 2003-04	Population not consuming minimum calorie (%) in 2003-04	Stunting among children below 5 years (low height for age) (%)		Underweight among children below 5 years (low weight for age) (%)		Wasting (low weight for height) among children under 5 years (%)	
			2001	2006	2001	2006	2001	2006
Nepal	30.8	39.9	50.4	49.3	45.2	38.6	9.6	12.6
Ecological zone								

Himal	32.6	45.2	61.4	62.3	45.1	42.4	5.3	9.4
Hill	34.5	41.8	52.4	50.3	41.4	33.2	5.9	8.4
Tarai	27.6	37.4	47.3	46.3	48.4	42.3	13.3	16.6
Development Region								
Eastern	29.3	37.6	47.6	40.3	43.4	32.9	9.1	10.1
Central	27.1	39.9	50.0	50.0	44.7	38.2	10.8	13.8
Western	27.1	37.2	50.1	50.4	43.4	38.5	8.9	10.9
Mid-Western	44.8	44.3	53.9	57.9	49.0	43.4	8.8	11.6
Far Western	41.0	44.9	54.0	52.5	48.9	43.7	8.8	16.7

Source: CBS, WFP & WB. 2006; USAID, New Era, MoHP, 2007

The nutritional security or the status of nutrition among children is also dependent on many social factors, including the status of women and girls in society. This status is the accumulated effects of various other factors like violence against women and illiteracy, which in turn affect access to health and sanitation knowledge, the decision-making role of women, intra-household food distribution practices and fertility rates. The cultural practices that put women in a lower position reduce their empowerment within the family. Thus, they have less access to food and other resources. This leads to low health and food security for women. The children of such mothers also suffer from health and food insecurity. This is more common in Terai caste society, where women's health condition is poor because of gender discriminations. The gender discrimination index in Terai districts is very low.

Another study has shown that a combination of low quality food and less productive asset has resulted food insecurity. Food insecure households are generally engaged in small retail trade, labor jobs and collection of products of natural resources like forest and pasture. In this group that the children have the problem of low weight, wasting and stunting. According to the region, this problem is chronic in far and mid western regions, hills and western Terai. Most households having less than 0.6 ha land holding also face this problem. Terai women have generally low BMI (Body Mass Index) – about 43 % of them have less than 18.5 kg/sq meter (WFP and EU, 2005).

4.5 OUTSIDE DEPENDENCE FOR FOOD

To match the food deficit within the country (as discussed above), large amount of food is also imported. In 1998, Nepal exported food and live animals worth Rs 5.3 billion. But on the same year, it has imported food and live animals worth Rs 7.7 billion. The trade deficit on food trade is growing, which means that Nepal imports more food than its exports. In 2007, Nepal exported Rs 9.1 billion worth of food, but imported Rs 18.6 billion worth of food. This is shown in Table 6.

Table 6: Food and Agriculture Trade Pattern in Nepal (in Rs. Million)

	1998	2001	2005	2006	2007
Total Food Trade	13036.60	21445.90	28948.00	36079.90	27698.80
Food Export	5282.30	8956.20	12095.40	11422.80	9121.70
Food Import	7754.30	12489.70	16852.60	24657.10	18577.10
Gross Domestic Product	289798	394052	508651	557869	
Agriculture Gross Domestic	112495	151059	194363	212827	
Share of Food Trade in Total Trade (%)	11.19	12.52	13.91	15.42	15.25
Share of Food Export in Total	19.20	16.09	20.60	18.96	20.17
Share in Food Import in Total	8.71	10.80	11.27	14.19	13.62

Source: Ministry of Finance, 2007.

Nepal's leading food exports are vegetable ghee and pulses followed by live animal, cardamom, tea, sugar and ginger. Vegetable ghee and live animal are major exports to India. Ginger has come out as one of the major food exports to India in the recent years. Pulses and Cardamom are also the major food exports to India along with Pakistan and Bangladesh. Tea appears as major export item to overseas countries outside South Asia region. Sugar, which was less traded item in the past, turned out as a major export item in the recent few years. These seven major export items share above 55 percent of Nepal's food trade. Nepal also export the major cereal products (particularly high quality basmati rice) but the major cereal are not country's export potential since country has to high trade deficit in these crop and there is significant food aids.

Above data shows that Nepal's dependence on food from other countries has grown. These trade data however do not include the food purchase by donor agencies like WFP. WFP's has also become a main player in providing food to people. In total it provides yearly about 28,000 MT of food. Other INGOs and donors also provide a small amount of food as food-aid.

The quality of food distributed through food aid program came to a center stage when about 300 people in Jajarkot died of cholera (in 2009). A small section of non-profit organizations blamed the quality of food distributed by WFP. The food distributed there was considered rotten and full of molds. This food was blamed for cholera epidemic. Even though food quality is not responsible for cholera (as WFP confirmed), but concerns about quality needs to be looked at seriously. In many events of food distribution by NFC, quality is also poor. Moreover, mainly rice is supplied in these food-aid operations. Distribution of rice alone may also cause many problems. Only the supply of rice may cause malnutrition, if it is not combined with other foods available locally. There is growing evidence that food habits are changing in food-deficit regions in favor of imported food supplied through food-aid operations. This is seen in Karnali also, where rice-culture is growing, but rice is not produced locally in sufficient amount. This culture does not consider locally produced minor food and uncultivated food as food. This is also considered as a source of malnutrition (Adhikari, 2008).

Improving the production of food locally, emphasis on local foods for consumption and good food habits are important for the sustainability in food and nutritional security. This is particularly so in remote and food deficit regions of Nepal. Nutritional supplements on local foods could be improved through proper planning. But the present system of supplying nutrients through imported foods like instant noodles and biscuits may not solve the problem. These products are expensive and poor and malnourished people may not have access to them. Government may subsidize them, but who gets the benefit and whether this can be sustainable in long run is also questioned.

Green revolution in Nepal is also saturating, and it has not been able to increase yield rates now. Because of this India has sensed food crisis and thus has bought a large amount of food as buffer stock. Therefore, there is a need to critically examine this method of food production also. There is damage to environment in India because of green revolution technology. Salinity, desertification, depletion of ground water and the like are the problems.

Food security also encompasses other aspects like access to food, food utilization and vulnerability context. The green revolution technology that is presently emphasized reduces the access of poor people to food as they could be displaced from farming and have access to low quality food. The quality of food presently produced and supplied in market is not that good and it could lead to various health problems. As a result, utilization aspect will also be poor. Similarly, vulnerabilities of different kind like market fluctuations, disasters, and the like are high in present system of food production. As a result, conservation economy would be better.

5. FACTORS AFFECTING FOOD AND AGRICULTURAL SECTOR

From above discussions it is clear that there is general decline in agricultural sector, even though in a few areas, there is also some significant progress. The area which have improved include poultry, dairy and vegetable production. In some cash crop area like coffee and NTFPs, there is also some progress. But in terms of food production, the performance of agriculture sector has been deteriorating. There are several reasons for the decline of agricultural sector. The most important of this is the 'approach of agricultural development', the followed strategies and action plans. The agriculture development planning based on industrial economic model, which emphasized high input of energy in farming, was not sustainable. Moreover, this was costly. The cost of fertilizers, pesticides and modern/improved seeds was low initially, but later on it increased significantly. As a result, a major benefit or income obtained in farming was spent on modern inputs and this did not stay in farm families. This is especially so in areas which do not receive perennial irrigation. Research to this effect has not been done in Nepal. But the research done in India suggest that farmers actually get more benefit from less use of modern imported inputs if they could use local manure and locally made insecticides⁶. The other reasons for less production could be listed as below:

⁶ For example, in India where conventional farming system is followed (i.e. green revolution technology), about 46 % of the total investment goes in seed (11 %), pesticides (14 %) and fertilizer (21 %). The cost of production

- fragmentation of land resulting in inadequate holdings for many farmers;
- lack of infrastructure such as year-round irrigation;
- out-migration of labour;
- shortage of labour in farming despite increase in population;
- political instability/conflict;
- land degradation;
- lack of a crop insurance system or price supports or minimum price system;
- social issues of agricultural work being perceived as having low status;
- climate change compound these systemic problems;
- no concern for farmers' welfare, and farming being a risky and less remunerative enterprise;
- low social status in farming;
- youths fleeing from farming;
- lack of opportunities or incentives to invest in farming (eg remittances do not go to farming at all);
- growth of agri-business and agri.-industries is low;
- lack of job creation because of no industrial activities in agriculture;
- low linkage between agriculture and industrial sector
- lack of support in terms of subsidies for farmers which means that they cannot compete with other farmers in developed countries and India.

Another important reason for declining agricultural production is the government's policy of reducing its involvement in developing infrastructures needed for agricultural production. At present, agricultural production is constrained by the lack of irrigation, availability and access to inputs like fertilizers and seeds, and mechanisms to control the quality of these inputs. Prior to the mid-1990s, the government contributed some of these inputs. The government subsidized some of these inputs, including deep tube-wells. Once these subsidies were stopped, production started to decline. In the 1970s, government's main priority was agriculture and about one third of the budget was invested in agriculture. In the 1980s, it was reduced to about 16 % of the total annual budget. In the 1990s, the allocation of budget in agriculture ranged from 10 to 12 %. In 2008, government allocated about Rs 5.9 billion in agriculture out of total budget of 285.9 billion, which is about 2.5 %. Regarding donors' investment, it has also been declining in agriculture sector. For example, from 1990-1995, about 10 % of the foreign aid was allocated in agricultural sector. This figure was reduced to 4.7 % in a period 1995-2000. In the early 2000s, this figure was again reduced to 4.1 %. In

of rice in an acre was 280 \$. But with sustainable farming method using the local inputs, the cost per acre was only 180 \$. Moreover, there was more net saving and more food security in sustainable farming called Community Managed Sustainable Agriculture (ECOLOGICALLY SOUND,ECONOMICALLY VIABLE COMMUNITY MANAGED SUSTAINABLE AGRICULTURE IN ANDHRA PRADESH, INDIA. By T. Vijay Kumar, D.V. Raidu, Jayaram Killi, Madhavi Pillai, Parmesh Shah, Vijaysekar Kalavadonda, and Smriti Lakhey. 2009.

the last two years, there seems some resurgence of interest in agriculture, but resource allocation has not increased substantially⁷

Globalization has made the food production and food security a complex problem. Its consequences can be seen in many different forms. Firstly, the recent globalization aided by information technology and bio-technology has led to the corporatization (i.e., increased control of corporate sector) of agriculture, which means the whole food chain has been increasingly controlled by the corporate sector. This has also slowly destroyed the local food systems. Firstly, because of globalization, food system has been increasingly controlled by TNCs through their direct control on resources like seeds and inputs and through their farming (direct or through contract) in developing countries. In this process they seem to control valuable resources like productive land and water. This production is targeted mainly for export and cash income, which is often seen to compromise the local food security. Secondly, the vulnerability of local farmers in developing countries is increasing as they are more exposed to or affected by the decisions taken in the world city centers, which control the information, finance and political power and which are also the seats for the international organizations and TNCs. These agencies are not accountable to the adverse impact they create through their decisions as they themselves do not bear the burden of their decisions (Adhikari and Ghimire, 2006). Different features of globalization like changes in food habit, media and advertisement, development of technology that favors the wealthier, state subsidies that supports wealthier farmers and corporate sector in a hidden manner, fashions and fads discouraging the local products and the like are also linked with food insecurity of poorer people. As a result of all these changes, the 'terms of trade' of products from agricultural sector in developing countries is declining as compared to those products from developed countries. In general, developing countries, including Nepal, have become increasingly dependent on developed countries for food. Particularly, Nepal's dependency on India for food is growing. As the food brought from India is cheaper because of subsidy, it is also argued that it has been helping the food security of the poorer people. But this paper argues that such a dependency is detrimental to food security in the long run. When the food price increased in the world in early 2008, India imposed restriction of food export to Nepal. The restriction was imposed because of declining production and shortages of food in India itself. This clearly shows that dependency for food on other countries is not beneficial on the long run.

The new technology (hybrid seeds and GMOs) developed by MNCs/TNCs and the provision of intellectual property rights in organic products, especially seeds, could impact developing countries differently. Control of modern seeds by corporate sector has now been clearly seen in developing countries like India and Nepal. These seeds either do not produce seeds in the next generation or the productivity of seeds declines drastically in the subsequent generations. As a result, farmers need to buy these seeds regularly from the producers itself. As the cost of production of these seeds is high, developing countries are not generally able to do so. Once farmers use these seeds, their own traditionally grown open-pollinated seeds get destroyed in a year or two, and thus the local seeds are wiped out easily. This could make

⁷Source: computed from 'economic survey' of 1995, 2001 and 2007; published by Ministry of Finance, Government of Nepal).

the farmers seed-insecure and depend fully on corporate sector. In Nepal, this has become less visible as commercial farming has not been that extensive in major crops. In India, a recent report stated that more than 600 farmers in one district (Vidarbha) of Maharashtra state committed suicide in a year (June 2005-June 2006) because of loan and use of modern GMO cotton seeds from Monsanto Company. In Maharashtra state alone 4,100 farmer's committed suicide in 2004, while government officials reported that more than 8,900 farmers did so in four states since 2001⁸. The basic reason is that farmers were encouraged to grow GMO cotton using seed from Monsanto. But the seed price this year increased four times. Other costs also increased. Farmers had taken loans from banks and private sources to meet their expenses. But the price of cotton declined in the market, which caused a heavy indebtedness. This was considered as the main problem for the farmers. In Nepal, use of hybrid seeds is growing mainly in vegetable, paddy and maize. With these hybrid seeds, farmers have to buy many other inputs like fertilizers and pesticides. As a result the cost of production becomes high. If the seed prices increase, which is also very likely, the scenario seen in India could also be repeated in Nepal. Very recently, farmers of Bara, Parsa and Mahottari (in 2010) used hybrid maize seed produced in India by Pioneer company. The crop was very good, but did not produce any grain. As the cost of production was high, farmers suffered a heavy loss. It was estimated that they suffered a total loss of Rs 2 billion. These incidences will be very common in future unless government does not check the quality of seeds and induce farmers in adopting sustainable agricultural system.

⁸ The Himalayan Times. July 21, 2006. 'Farmer suicides reach decade-high in India' (AFP): page 8.

PART B

LOCAL FOOD SYSTEM, LIVELIHOODS AND ITS POLITICAL ECONOMY

Case study report

PART B: CASE STUDIES REPORT

6. BACKGROUND ON CASE STUDIES

This reports the context mapping exercise carried out in the Action Aid Nepal's (AAN) working areas on local food system, livelihoods and its political economy it was carried out in 7 different VDCs of the 7 districts covering terai, hills and mountains.

6.1 THE OBJECTIVE OF THE STUDY

The objective of this study was to assess the local food system, livelihoods and economy at VDC level to understand the practical problems and potentials of conservation economy⁹ to solve these problems. This was hoped the understanding developed through this study will enable AAN, partners and other stakeholders to identify and implement locally suitable agriculture practices for food security activities following the recommendations of this report.

6.2 METHODS OF STUDY AND ACTIVITIES UNDERTAKEN

Within the proposed framework of study, guide questionnaires (see annex 1.) were developed and send to respective partners and asked them to develop an agriculture profile of the selected village. This exercise was aimed at to develop analytical perspective on agriculture and other related issues. At the same time, it will help to identify the areas of further exploration during the visit of research team. Following this exercise, research team visited the field site from first week of March to end of June 2010.

In the first week of March the researchers visited the piloting site in Nawalparasi. The piloting was done in Tamsaria VDC - the working area of SAHAMATI which is partner of AAN. The steps followed in piloting were as follows a) a brief discussion with partners in all study sites at their office on the objective of the study, selection of case study site and plan for village level activities, b) w/s with different categories of farmers in the village including other stakeholders c) visit and focus group discussions/interviews with male and female farmers and field observations d) sharing meeting with partners and other stakeholders.

⁹ It is an economic system, which takes into account, not only the welfare of the people, but also the health of the ecosystem. It aims to meet the human needs while regenerating the natural system at the same time. Conservation economy helps to redesign all kinds of economic arrangements so that they restore, rather than deplete, natural and social capitals.

While selecting the site for the case studies partners were suggested to use the following criteria; current or potential working area in future, the presence of landless and marginal people who would be the target people and the availability of public land and other resources like community forestry that can be utilize to promote livelihoods of poor and marginalized communities. The aim was to see whether these resources would be useful for these small and marginal farmers to improve their access to resources and their capacity to undertake conservation economy.

6.3 PILOTING OF THE STUDY: METHODOLOGICAL CHANGES IN ORIGINAL PLAN

In the design of the study, there were two steps in information collection; a) data collection by partners, and its analysis by researchers and b) field visit by the researchers. During the piloting, the prior information collection was not possible as the details on information collection were not ready by the time of piloting. The earlier assumption was that there is updated village profile at the VDC as well as detail context mapping from the partner organization. While during the field visit it was revealed that there was no VDC profile at all. Some projects have done social and resource mapping, but were not much relevant to the study context, and they were also not accessible. Only the information about population size by wards was available. Information contained in district profile was useful, but there was not much information on resources like land, forest, and agricultural practice. SAHAMATI had developed a context mapping in which only the information about the socio-economic status of very poor households, especially those displaced by flood and resettled in that VDC, was available. This was surely relevant, but our concern was to develop an over-view of the VDC's natural and social system and to place the marginalized groups (as identified in the context mapping) on the overall position of VDC. Similarly, developing alternative farming practices to improve local food system and livelihood certainly needed information about the natural resources and their present use and condition.

In general, the earlier activity plan for the information collection was followed with some modification. The reviewing of the information collected by the partners was not possible in this pilot study. However, it is relevant exercise to update the profile of the village.

During the field visit, a half day workshop with the partner organization (SAHAMATI) was organized a) to discuss the purpose of the research, method, their participation in the research process, and the implication of the research and b) the methods of generating useful information and verification (triangulation) of information and c) plan for detail field study and team building. This discussion clarified the objective of the study and expectations of the partner and other related individuals. Following the plan, a meeting with farmers' representatives, field observation and interviews with individual farmers, focus group discussions and finally a debriefing meeting was organized with SAHAMATI.

6.4 STEPS FOLLOWED IN CASE STUDIES

6.4.1 MEETING WITH PARTNER ORGANISATION

In each case study sites, an introductory meeting was held to discuss the objective, process of case studies and plan field visit. Researchers explained the background on food and

agriculture followed by the importance of field studies, role of partner organization and the expectation from the field studies. In all sites, partners are involved in rights to food activities, except in Dhanusha, yet they have not directly supporting the agriculture activities. However, there is realization for the need of integrating agriculture with rights to food, land right movement, women rights, community forestry and NTFP promotion.

The focused discussion on the agenda of sustainable agriculture and people's livelihoods highlighted various problems, issues and challenges faced by farming populations, agriculture services as well as policy gaps. Since the field staffs of the partners involve in facilitating reflect centres and other group activities they have good knowledge on the problem faced by the farmers as well as the potentials of promoting regenerative agriculture in the farmers' field.

6.4.2 WORKSHOP WITH FARMERS AND THEIR REPRESENTATIVES

The next step of the case study was to discussion with farmers of various categories, local representatives of the service providers and local leaders. These meetings were held in the villages where partners are willing to promote sustainable food and agriculture activities in future. In these meeting, with brief introduction to the objectives of the meeting discussion on farmer's experiences on ongoing food and agriculture was carried out. These discussions were focused mainly on;

- Existing farming practice and how it differs in different location within VDCs.
- Farmers response on their experiences with the present farming practices, especially the practice of using high inputs.
- Different types of innovations done by farmers and their experiences on these innovations
- Finding the locations or farm households where we can go for discussing and observing different alternatives on CE that people are practicing.
- Preparation a Social map- A detailed resource map of the VDC (farms, agro-forest farms, organic farms, chemical farms, forest, CF, irrigation, cropping pattern, pastures, water sources, waste lands, uncultivated food sources - locations).
- Potential areas where food can be produced using different methods like farming, agro-forestry, and horticulture.
- Existence of public land, community forests, and their use.
- Location of poor and resource poor farmers.
- Case studies (innovative farmers using CE practices).

6.4.3 FIELD VISIT

Following the workshop with representatives, farmer's field visit was planned and carried out. The following were the major activities of the field visit. The aim of the field visit was to observe field situation, interview with farmers at HH level and discuss in small group on the various aspects of the food and agriculture. The visit was done with the field staffs so that all team members could internalize and reflect on the overall situation of farming practice. The following activities carried out in all case study sites, as far as possible;

- Transact walk with partners, farmers etc (multi-disciplinary team)

- Visiting the farms (using different alternative CE as well as a few chemical farms)
- Case studies on livelihood situation, food system and security situation
- Visiting offices of local institutions (co-operative, CF, saving-credit groups, veterinary office, etc)
- Interviews with different categories of farmers (big farmers, small farmers, Dalits, Women, IPs etc – main concern is about present farm practices, food security, livelihood, how food can be produced more, present problems in food quality, feasibility of alternatives etc).

6.4.4 DEBRIEFING WITH PARTNERS

Finally, in each case study sites, a debriefing meeting was organized with partners to share general impressions on the field situation, observations and findings of the case study. The researchers also shared the preliminary analysis of the observation and findings of the case studies during the meeting.

7 FOODS AND AGRICULTURE: CHANGING LANDSCAPE AT VILLAGE LEVEL

The field observation confirmed many of the issues raised in earlier sections. However, the food and agriculture landscape have changed dramatically, which is not informed from the previous data set. We do not know yet what the actual figures are but the national statistics presented with the references of past as well as recent reports, do not corresponds the field reality. Therefore we need to have fresh information, dataset and figures. For example, national figures show us, in agriculture there is 80% population involvement, 65% labour force, 32 GDP and so on but the discussions held in villages by no means, supports these figures.

7.1 CLIMATE CHANGE EFFECTS AND AGRICULTURE

Climate change effects are apparently visible to farmers. Most noted is the change in rainfall cycle, temperature and other micro climate. The change in rainfall cycle is being noticed from 8-10 years. Farmers of Tehrathum claimed that there was 60 days late in maize seeding this year. Similar was in other cases too. Farmers of Nawalpur believe that disappearance of mustard from Chitwan valley is the cause of increased temperature, destruction of forest and increased use of chemicals and pesticides. Farmer's have slowly developing resilience over these changes and started adapting agriculture accordingly. While in discussion, they said that we cannot fight with the nature therefore we have to adapt as nature changes [a women farmer from Tehrathum]. Also, there is drastic reduction of water recharge during the monsoon. From last 5-6 years there is no full recharge into the soil, it is because there is very short rainfall, which run off quickly, therefore there are few springs seen after the rainy season.

7.2 FOOD SECURITY SITUATION IN THE VILLAGE

The food and agriculture in the villages is at worse stage of its history. The farmers themselves and concerned stakeholders all collectively reflected that farmers are most deprived communities in terms of their identities, they feel disadvantaged, not adequately recognized their contributions from all sides. Whilst changing national as well local economy, earlier subsistence agriculture economy no more supportive to run households. Simply, income from the ordinary farm is not enough to meet the expenses at household level. This situation is pushing them out of the farming occupation for basic survival.

This is leading irreversible effect on food and agriculture production. Farming population moving into off farm activities factored by migration, change in the family structure, land holding, climate effects, technologies, markets and input facilities including agriculture loans are some prominent issues for the downfall of agriculture. The lack of political commitment and policy support in favor of food and sustainable agriculture is clearly visible at local level. The reduced public expenditure and service provisions in the agriculture sector indicate that the state either do not understand the extent of problem or simply ignoring it.

7.3 CHANGING SUBSISTENCE AGRO-ECONOMY

Subsistence agro-economy is changing rapidly. The agriculture is dependent on external inputs such as chemical fertilizers, pesticides and hybrid seeds. However, the case studies suggest that there is lack of appropriate technologies, services and innovations in adapting agriculture in local context. Similarly, production and productivity is declining day by day. No single village of the case studies found to be food secure.

Majorities of resource poor farmers, who have no other choice for their livelihoods, they are forced to continue the production activities though it is not profitable at all. Many of these poor farmers lack enough lands for their subsistence; they either go for share cropping or for leasing. However, these days there is increasing trends of keeping lands fallow as there is no any strict rules and regulations to reinforce cultivation in agriculture lands. Some land lords claim that share cropper or the lease holders do not care about maintaining quality of soil. They tend to put chemicals as much as possible and get harvests for short run. Also, the price of land has increased and it has made difficult for the poor to buy or hire the cultivating land, this is especially so near the market.

Many farmers claim that they did not get return of investments if calculated the cost of labour force. Also, these farmers have no ability/interest to invest resources in the agriculture. In many cases, farmers are not able to recover their investment on inputs, time and other resources. A very simple reason they explain is that the vegetable farmer buy a cabbage seedling at 1 NRs /seedling and now have to sale his/her product @3 NRs /kg . This is the situation in every agriculture and livestock product.

7.4 ECOLOGICAL HEALTH AND SOIL FERTILITY

Another, the soil fertility is decreasing day by day. There is continuous destruction and degradation of forestlands which is lowering the soil fertility and water sources. There is no natural replenishment as well as necessary arrangements of organic substance to top up nutrients into the soil which is causing imbalance in nutrient composition in the soil. The situation is that the farmers put chemical fertilizers without knowing what element is lacking in the soil. While in discussions farmers shared the experiences that after putting urea in the soil instead of becoming healthier the crop, it became further yellowish. Ajay from Bara, shared his experiences that he had planted cauliflowers he supplemented urea but there was no improvement, later he consulted technicians and revealed that there was sulfur deficiency in this field. Later he put sulfur, which helped to regain the growth of the cauliflowers. Villagers also believe, the increased pests and diseases are associated with the health of soil as well as the health of the plant itself.

There is increasing trends of use of chemical fertilizers, pesticides and terminated hybrid seeds in all case study sites, except in some villages of Dhanusha and Dolakha. Mainly, farmers in Terai districts have been heavily using these chemical fertilizers and pesticides. They see little scope of moving out from it to maintain their subsistence livelihoods. Farmers claim that all agriculture inputs are duplicate (seed, fertilizer, pesticide), these duplicate inputs not only damaging the soil quality but farmers have to lose their investment. At worst, only 10 % of the fertilizer used is pure, and this has destroyed the soil. This is the biggest problem in all areas. From the 300 sample soil test conducted by Agricultural Service Centre, above 90% found very high pH in soil (6-6.5), which needs to apply agriculture lime to reclaim the soil condition.

Farmers are using these chemicals and pesticides without knowing much about the doses, methods of use and its effects on soil and human health. In some cases farmers know the effects by their experiences, but have no choice to use these chemicals to get higher yield from the given piece of land. The farmers shared that they increase the dose of the chemical every year as they find there will be less or no production if they do not increase the doses of chemical fertilizers, no or less effect of pesticides. The use of terminated seeds brought from the market has a very depressing story to tell. Increasingly, farmers are facing the problem of not seeding or fruiting; low quality production. This also makes them dependent on a market, which is not reliable, there is no any mechanism of monitoring regulation and mechanism in place. Very often, seed companies buy the seed from villagers and sell as 'seed'.

7.5 SUPPORTS AND SERVICES TO FARMERS

There is decreasing services and facilities to the farmers. There is very limited or no agriculture services - a sub-centre that covers 11 VDCs have only two technical staffs [Tamsaria, Nawalparasi]. Earlier there used to be extension workers in the villages conducting some demonstrative as well as capacity building activities in the farmer's field. However these days, there is no such activities carried out, except in some project areas run by development projects, if their activities are related to the agriculture.

None of the village is food secure, poor and marginalised people are making their livelihoods through off farm activities; mainly in construction works, seasonal migration. The local food

system is detached from the local production systems. Similarly, the food culture as well as food habits are changing rapidly with the influence of growing market economy all over the country. To some extent the economically poor farmers still rely on their product for the food items but it is considered as poor state rather a choice by the individuals. The food habit and culture of local food item use is deteriorating day by day with the influence of market economy at all level. This is one of the reasons of food deficit in the villages.

7.6 FARM PRODUCTS AND MARKETING

Farmers have to sell their products under duress. For example, they sell rice at 700 Rs per quintal and buy later on at Rs 1200 per quintal. The cost of production has increased and therefore, farmers have to sell their produce early and pay the debt. This also has implication on food economy at household level. The agriculture products such as cash crops, grains, beans and vegetables are sold at the harvesting season and re-purchased food items from the same market during off season. This is partly conditioned by the farmers' economic position. Their daily economic transactions depend mainly on agriculture products, the formal/informal loans, investment in inputs and household finance are made through selling the agriculture products during harvesting season.

7.6 FARMING PRACTICES

Although various cereals are grown, the main food is rice. The wheat in terai and maize in the hills are the second staple foods. The rice is heavily dominating food culture. Traditional, local such as yam, potato, sweet potato, are not considered as foods. These have been replaced by the rice and other readymade snacks. It is at the level that people feel deprived if they have to take foods other than rice. This replacement was possible because of the cash flow in the household economy, particularly come from the foreign employments, wage in cash and selling their product in cash in the local market. Another reason to move 'rice' or readymade food is that there is no further processing of the foods. The diversified food consumptions in the urban and peri urban areas suggests that if the local food items were processed, people would not have moved to rice culture.

Since, there is little use of the food items other than rice, farmers are started cultivating profitable monoculture species aiming to sold in market. For them, this is efficient as well as manageable; farmers need not to bother for post harvest management and storage of diversified products, which is becoming a major challenge in the context of changing farm labour as well as family composition. For example, farmers who grow diversified food products, needs to go for multiple tasks in post harvest processing and arrange various storage facilities.

7.7 FARMING: CHANGING VALUE AND PERCEPTION

Another, youths are moving out of the village; in search of employments, study in urban areas and abroad. Such migration is largely happening to avoid the farming occupation which is perceived as marginalised. Many of the farmers themselves are encouraging their family members to do so as their own experience of agriculture based livelihoods is not sustainable

in the context of changing household economy, where cash is necessary to run the household. Generally, there are disabled, old and poor people remained in the villages who do not have confidence and resources to move out. As it evident, in the village interest rates are very high 36% in all villages, up to 60% in Bara and Rasuwa. Positively group saving is contributing to reduce the interest rates as the group mostly invest in 12- 18%. It is also building awareness and self confidence among the participating women.

The agriculture is at its worse stage from all corner, land degradation, excessive use of chemicals fertilizers, pesticides, and terminated seed varieties is creating heavy dependence to external agriculture market for inputs. The extension services to the farmer field are negligible. For example, there is huge reduction in junior technical staffs at agriculture service centres, high interest rates of agriculture loan, lack of market infrastructures are some of the very important factors causing low production and productivity.

Farming occupation is not regarded well by people, and as a result, youths would not like to work in farming. They consider farming as (laborious, not profitable, high expectation to go for foreign or local job market in urban area and view urban lifestyle as superior. The main concern of all farmers and other people was that agriculture has suffered because of the lack of human resources to work in the agriculture field. With raised awareness and values to educations all children go to schools, where as 16-45 year old male population deserted their home and moved into urban areas and foreign lands in search of employments. In an average, one member per household has been flown to Arab from the case study sites. At worse, agriculture is solely depends on the female members and old people. As a result, there is shortage of labour and interest in farming. Its implication in farming is that there is high labour wages, for example, NRs 200/day, NRs 600/oxen plough in the Terai and bit lower in hills and mountains. It is one of the reasons for the use of new inputs like fertilizers to maximize the production from small land size.

There is also reduction in the number of live stocks – both cows and buffaloes. Bullocks have become so expensive that it is not worthwhile to use manual hoe. As a result, people are using tractor more and more. This has implications in soil quality. Production and use of animal manure has declined. There is also no compost making practices in the villages leaving soil to receive organic manures.

Small farmers are interested in farming and animal production. They are interested in goats and in keeping a few cows. But for them the problem is fodder and feed. Therefore, if small farmers are given a small piece of land, say half a Bigha, they can improve their farming. In recent time, dairy and poultry has flourished in the urban and peri urban areas. However, the high price of cow and buffalos (10-15000 for a jersey cow and 50,000 of a buffalo) as well as unavailability of good quality breeds are the problem of dairy farmers. There is no provision of livestock insurance. The community level livestock insurance is being piloted in some areas, but it needs to be seen how far this is successful.

7.8 KNOWLEDGE: A CRITICAL GAP

Experts and agriculture specialist only think of high input technology, they see resource poor farmers are 'barrier to agriculture development' in Nepal. They believe that the 65.21% human resource involvement in agriculture should cut down at least to 20%, for the better agriculture performance. This idea of bringing out farmers to non-farm sector in developed country was based on the industrial as well as other sector development but our assumption to cut down farming population without any plan would result more crisis not the solutions.

The agriculture in the village is not homogeneous. There are multiple layers of agriculture interventions in the village ranging from high input cash crop production to traditionally followed agriculture for subsistence. Categorically, there are four domains of agriculture practices in the villages, although these are not exclusive as well as not in a similar fashion in all case study sites;

1. Cash crop with high chemical inputs –sugarcane, jute, coffee, tea and others,
2. Intensive grain production with chemical inputs,
3. Vegetable, poultry and dairy production- in urban and peri urban areas, and
4. Subsistence agriculture of indigenous communities

Demands of inputs, supports and services in these domains are distinctively varies. In general, the resource poor farmers are adopting 3rd and 4th domains of agriculture to sustain their livelihoods, which needs greater inputs and services. Promoting SA in farmer's field demands effective planning for the capacity building, skill development and greater motivation towards bringing new generations in agriculture. For this, detail participatory planning and service delivery/demonstration mechanism need to be worked out in these domains. However it was not possible to do during the case study period as there were limited time resources as well as in some cases, no clear commitment from the partner organisation for the future work in this area.

In summary, farmers in case study villages are facing the multiple problems in terms of promoting agriculture and livestock in their farm, these include:

- Lack of ownership of lands, increased cost of land hire and leasing.
- Changing family structure, household economy, labour force availability.
- Change in climate, seasons and forest-agriculture landscape.
- No technical services and inputs including finances to improve agriculture
- No individual/collective effort to secure seeds, foods and soil fertility.
- Unavailability of labour force, costly to use wage labour, migrated family members

8 SCOPES OF PROMOTING SUSTAINABLE AGRICULTURE

There are not only the problems that farmers shared with the team. The research team also exposed with various positive experiences of the farmers who are practicing the agriculture, livestock management, agro-forestry, organic pesticides that are helpful to reclaim the soil fertility, production and productivity in a sustainable manner. While in discussions, we observed many people are receptive for new ideas as their experience with the current agriculture practice is negative.

8.1 FARMER'S EXPERIENCES ON SUSTAINABLE FARMING

In all case study sites, adult farmers have their own lifelong experiences on how the agriculture is changing over time. Memories on traditional farming practices where wood and food were produced together within the interface between farm and forest in a sustainable manner, diversified food culture and cooperative arrangements [parma] in farm management in particular were recalled while in group discussions. People believe that such arrangements can be reinvigorated adapting the emerging socio-economic realities. This can be demonstrated by 'can do' attitudes of the political leaderships and encouragements through wider recognition of the farming communities as respectable citizens.

Farmer's experiences and the extent of problems of modern agriculture as they are facing today give an opportunity to explore the potentials of other alternative practices. At the same time, There are mosaics of sustainable agriculture practices all over the places but are scattered and isolated, needs to bring into wider social connectivity so that these will have greater demonstrative effects.

8.2 TECHNOLOGICAL INNOVATIONS BY FARMERS

In all case study sites, some farmers are trying to apply alternative approaches to address the recurrent problems. These are primarily related with innovations an adaptation of organic farming solutions; increased use of organic manures such as compost, cow/buffalo dung, green manures, use of urine, herbals for insect pest control and collection and storage of good quality seeds from own as well as other neighboring farmers.

In specific, in Dhanusha, Dhanusha Sewa samitee, Manekor society and NAF in Rasuwa, and ECARDS Dolalha are working with farmers groups to promote organic farming, off season vegetables and NTFPs. In other case study sites, AAN partners are organizing farmers and creating awareness on the strengths and scope of sustainable agriculture.

8.3 CHALLENGES OF SUSTAINABLE AGRICULTURE PRACTICE

There are many constraints while promoting sustainable agriculture. Firstly, there are doubts whether farmers will get the level of yields as they are getting today. It is very important them to produce the volume of food grains to feed the family. Secondly, there is lack of technologies and appropriate services to promote SA in the areas. Many of the farmers expressed their unawareness about the possible alternative to chemical fertilizers, pesticides and hybrid seed; however, some farmers are using the alternatives in same locations. It

suggests that we need to put efforts for both; to help them to learn from each others as well as technical support for knowledge and skill development. Thirdly, farmers of Dhanusha shared their experiences that the consumers are looking for green solid products, but organic products at the initial stage of soil recovery; this does not look like as chemical used. Very often local consumers asked in low process where other urban people pay higher price for the same.

Another prominent issue we found is that some youths are increasingly interested in farming. They are mainly interested in vegetable and animal husbandry for specialized rather than subsistence farming. It is an opportunity if they can be supported for improved understanding of the issues of current agriculture and imparts knowledge and skills of SA.

There is a need to maximize the food production in a sustainable manner. There is potential to use public land and marginal forest lands for food production [some time creates confusion to those who think grains are only the food]. Use of common land and forest land not only increase the productivity of the resources, but also institutionalize the collective farming culture and conservation based economy in long. The promotion of NTFPs in leaseholds and community forestry are some good examples.

Also these are the potential areas to begin with promoting low input agriculture. There is opportunity to promote alternative (low input, organic) agriculture, increase food security through food diversity but need very live engagement through demonstration at field level. The field observation suggests that in all case study sites there is potentials for promoting sustainable agriculture though are at different stages and diversified scope of product promotion. Here the summary of the observation and discussions carried out in the case study sites:

1. There is potential to increase through farming, especially through vegetable farming [all sites].
2. In each case study sites, there are still organic agriculture practice in place –except in Bara, however, with the reach of market the extension agents are promoting green revolution technology, the practice of using chemicals has started recently [Rasuwa], especially in road areas growing vegetables.
3. There is decline of manure production by the result of scarcity of lands as well as labour force at household level- need to plan for promoting small scale organic manure factories.
4. In the up hills and mountains land is not a constraint for cultivation even for the poor people [although ownership is another issue] but it is highly scared in the Terai for poor and marginalised farmers. However, there are common lands and degraded forests lands. Moreover, community forestry can be used by poor people for agro-ecological farming.
5. Promotion of sustainable farming should go together with innovations in technologies, institutions and marketing. Developing some demonstration farms and farmers networks for sharing knowledge and skills are very important issues.
6. Policy and political willingness and commitment are very important factors for promoting organic farming for which effective policy dialogue and mass advocacy is very important prerequisite.

7. As a missed opportunity, the resource poor farmers are not getting much income from traditional farming itself, and they are also in the state of food deficit to a large extent, therefore they will have no hesitancy in converting to organic farming for the market provided it is guaranteed.
8. Comparative study on the costs and benefits of the various dimensions of the agriculture systems are important to develop arguments.

9 CONCLUSION AND WAY FORWARD

The problem that we see in villages is that the erosion of natural as well as social capitals and that has led to food insecurity. Farm and forest lands are degrading and decreasing soil fertility is causing low production and productivity. At the same time, the social capital is eroding rapidly as the youth farmers are moving away in search of employment opportunities in urban areas, India and Gulf countries. There are no policies to improve food and agriculture devised with the ground realities rather these are based on the quick-fix approach of supplying agriculture inputs from outside including foods. However, its continuation for a long time has not solved the problem of agriculture and food crisis. It has rather aggravated many problems. The livelihoods in many places in the country, particularly in the Karnali region, were so vulnerable and precarious that the problem of food insecurity continues to occur.

The present situation calls for a different approach of intervention, especially in Nepal, where demographic pressure on land is high despite growing migration and increased demand for land in a relatively land scarce situation. As a result, land use is in conflicts. In one hand, there is increased intrusion on forestland, land grabbing and speculation.

Building a locally-based and diverse food production system, which is adaptable and resilient to climate change, and sustainable ecosystem management are some of the most effective way forward to sustainable livelihoods. Agro-ecology, perma-culture, organic farming, whole systems design or sustainable technologies conceptualised in the rubric of “sustainable livelihoods through conservation economy” and their promotion and practice at household, bioregion and national scale need to be opted for solutions to the problems of food insecurity, environmental degradation and monopolistic control of technology beyond the local capacity.

It is important to improve the livelihoods of the people on a sustainable basis. As livelihoods depend on both natural and social capitals of various types, conservation economy plays an important role in this regard. The improved and sustainable livelihoods mean that people have ability to cope with food crisis if it happens at all. Conservation economy will help increase productivity while at the same time nurture bio-cultural diversity. Such practices will have demonstrated results in increasing bio-mass and other natural capital. These natural capitals could be: improved soil vitality, high soil fertility, less land degradation, maintaining local bio-diversity, good stock of forest managed sustainably, restored watersheds, wetlands, and pastures and production and use of clean energy. Enhancement of these natural capitals through conservation economy based practices helps increase household income and meaningful employment for its members. It is seen in India that Community Managed Sustainable Agriculture which uses local organic inputs and bio-mass instead of imported

chemicals in the form of pesticides and fertilizers, the cost of production is low and most benefits are retained within the local society. In conventional agriculture which uses high energy inputs like inorganic pesticides and fertilizers, as much as 46 % of the cost is incurred in seeds, fertilizers and pesticides. But in local sustainable agriculture, these costs are not incurred as they are produced at home. As a result, savings are also more in such farming system. This has already been discussed above.

One of the important tasks ahead is to promote local organizations as stewards of sustainable agro-ecosystem. These organizations are of the people struggling to improving livelihoods and at the same time following the sustainable agro-ecological system and time-tested indigenous practices. These organizations are to be strengthened in a way that they become able to reclaim autonomous food system and thereby enhancing their food sovereignty and maintain their diversity forms, functions and structures. Mutual support and co-operation and local democracy will strengthen through these organizations. It is seen that disempowering of the local communities by the state bureaucracies have led to a situation where rural communities are not in charge of their local food system. This resulted in the erosion of local food system (including food culture) and mutual help and greater penetration of corporate agriculture. Accordingly, local organizations are crucial for the adaptive and sustainable management of food producing environments as they have intimate knowledge of their environment. They are well placed to monitor and respond adaptively to environmental/ climate change (i.e., ecological system) and to human society (social system), initiate collective action by bringing all related stakeholders at one platform.

In Nepal also different forms of sustainable agriculture which also takes into account the forest and pastures and other natural resources are also initiated, even though they are not named in that way. These practices are commonly known as organic farming. This reversal to traditional eco-friendly practices utilizing the modern knowledge have come up in response to various problems seen in chemical agriculture. For example, in Danusha district, pesticide was seen to destroy bee farming, and thus farmers knew that increase in production using pesticide does not add value to the total household income or livelihood.

Similarly, in some other places where this organic or ecological farming has been done, total income and benefits have also increased. As a result, there is a growing tendency towards this type of agriculture, which will help in food security as it helps to build local production and food system. This technology is also under the control of farmers and thus reduces dependency for technology to other countries or companies. The practice of sustainable farming does not mean to discard various knowledge systems, but it simply is strengthening of the local food and production system, so that agriculture remains under the control of farmers and farmers can lead an independent life.

All these reflection from the review of national context and the field observation suggests that it is high time to engage in promoting food and agriculture building on the perspective of sustainable agriculture. In order to promote sustainable agriculture, we must engage in policy processes to arenas of field practice through innovations, create awareness and strengthen the capabilities of local farmers, front-liners in finding ways to scale the beneficial ones through the networking and organization as well as build evidences to inform policy makers.

Towards this, a team of agriculture professionals at ForestAction, Nepal initiating an innovative approach of farming community mobilisation and knowledge based policy advocacy dreaming to build alliances of community of farm practitioners and to create critical knowledge for public debate on food and agriculture by beginning with establishment of a resource centre and context mapping exercise.

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ANNEXES:

ANNEX 1: CHECKLIST FOR FIELD STUDIES

Detail information collection from VDCs

General information

Disaggregated Population data by age sex and caste/ethnicity

Resource map on land use; like area under farms, forest, pasture, other non-cultivated land and its type and area.

Land distribution: Land holdings, land distribution, land less households, land tenure patterns (renting etc)

Social structure

Wellbeing ranks: Wealth condition and distribution, different caste and indigenous groups and their population and ownership of land and other resources, Dalit population (including bonded and semi-bonded laborers also) and their ownership of land and other resources, women's condition and their socio-economic condition.

Social institutions: Social groups/community groups and management of common resources like forest, water, pasture and the like (community forestry, users groups, informal groups, co-operatives etc) – ANALYSIS OF WHO ARE INVOLVED AND WHAT ROLES THEY HAVE, WHAT BENEFITS THEY GET, PRESENT CONFLICTS IN THE DISTRIBUTION OF BENEFITS.

Agricultural practices

Crop production patterns, crop cycles, use of inputs and chemicals; fertilizers and pesticides, trend of its use, trend of using the new chemicals, its impacts observed by the farmers; (on soil, water and people's health), what people feel about its impact, incidences, how man and women see the balance in the advantages and disadvantages in the use of chemical inputs.

Women, children's role in agriculture; how the migration, employments affecting their role in agriculture, food security

How many (%) farmers are using these inputs, who are these farmers in terms of their wealth status, land ownership and caste or indigenous/ethnic groups?

Has there been an effort to seek alternatives to the chemical farming, who are involved, what have been their experiences. (FIND THE LIST OF THESE FARMERS WITH WHOM WE WILL HAVE DETAIL INTERVIEWS) during field visit.

Livestock (and poultry) production, what types, population, general production and productivity of animals, income from livestock, problem associated with livestock like pasture, diseases, vet services, market,

Cottage, village and household industries/enterprises – number, types, employment opportunities.

Total HHs adopting organic agriculture: use of technology, nutrients replenishment, pest control, use of seeds

Food security

Food situation in the area, average deficit, how it is covered, what type of food imported from where, trends of food deficit, what are the activities of reducing food deficit

What is the dependence of people on forest and pastures (i.e. non-cultivated lands) for food security, i.e., obtaining food of different types? What type of food they obtain.

What is the consumption priority in terms of basic staples (like whether people like rice or maize or what; whether people consume non-cultivated forest food). Annual ratio of the staple and other food consumption.

What is the overall situation regarding food production and its sufficiency? Is food brought from outside? If yes, what type of food and how much? Is there any way to produce more food locally and replace the importation of food? If this is so, what food could be produced in more quantity?

Migration and livelihood, and its impact on farming

How many people or % of population go outside the VDC, district and to foreign countries for work? Where do they go in foreign countries for work? What they do there? Are farmers have also gone out for the work?

What income they send back where these income sources are utilized (schooling of children or paying loans? Investment on farming?)

Overall impact on farming and its long-term impact.

Other social and political implications of migrations (leadership, social cohesion, social problems and the like).

ANNEX 2: SCHEDULE OF THE FIELD STUDY

Field visit (date)	District/VDC/Village	Participatory meeting and reflection
Piloting 4-8 March 2010	Nawalparasi/ Tamsaria	a) Sahamati b) farmers group w/s c) interview with individual farmers
April 2-6	Bara/Srinagar Bairia/Bhatta tole	a) NYSC team b) w/s with farmers group c) women group at Bhatta tole d) agri. labour group at ram nagar
April 30-3 May	Kapilvastu/Shivapur	a) Sahaj Nepal b) farmers group w/s c) interview with individual farmers
21-24, May, 2010	Tehrathum/dobate	a) DAS b) w/s with farmers of Dobate c) interview with individual farmers d) meeting with reflect centre
25-28, May, 2010	Dhanusha/Dhalkebar/Kem alipur	a) DSS b) meeting with farmers of Kemalipur c) interview with individual farmers d) meeting with reflect centre
4-7 June 2010	Dolakha/Jiri	a) Ecards Team b) w/s with farmers group at Jiri VDC
28-30 June, 2010	Rasuwa/Chilime	a) Manekor society b) w/s with farmers of Chilime c) interview with individual farmers d) meeting with NAF

ANNEX 3: CASE STUDIES REPORT

Draft Case studies report

Introduction:

In this brief case studies note, the context, process and the outcome of the case study has been presented. This highlights the field observation by study team; reflection over the farmers experiences as well as identifies emerging issues and challenges of ongoing agriculture practice at village level. The study team also explored the future scope of the food security and sustainable farming practices in the case study sites.

While presenting the cases, processes, observation, stories and evidences, many common issues and problems captured in the case study sites have been omitted from other cases as not to repeat telling the same stories by other cases, only different cases, stories, experiences and evidences have been highlighted. Also, the process of the study and general contexts of the sites are presented in some cases where there is distinction, but not in all, to avoid the duplication of the information.

Piloting a case: Tamsaria, Nawalparasi

Background

A case study piloting exercise was carried in Nawalparasi district. Researchers visited the field site from 4th of March to 8th of March 2010. With the brief discussion with SAHAMATI at their office on the objective of the study, the Tamsarisa VDC was selected for the piloting. This selection was done based on several criteria which was discussed with the SAHAMATI team; firstly, the presence of landless and marginal people who would be the target people. Secondly, we were also interested to see the availability of public land and other resources like community forestry. The aim was to see whether these resources would be useful for these small and marginal farmers to improve their access to resources and their capacity to undertake conservation economy. A workshop of the farmers in the agriculture sub-centre was organized with the farmers and other stakeholders. Various wards within the VDC were also visited and individual discussions were held with a cross-section of farmers. At the end focus group discussion was held with a women's group called Jagriti Mahila Samuha, which was responsible for initiating new activities for agricultural production.

Methodological observation: changes in original plan

In the design of the study, there were two steps in information collection; a) data collection by partners, and its analysis by researchers and b) field visit by the researchers. The prior information collection was not done because of time constraints. Regarding these data there was high expectation of the study team. The earlier assumption was that there is updated village profile at the VDC as well as detail context

mapping from the partner organization. While during the field visit it was revealed that there was no VDC profile at all. . Some projects have done social and resource mapping, but were not much relevant to the study context, and they were also not accessible, only the information about population size by wards was available. Information contained in district profile was useful, but there was not much information on resources like land, forest, and agricultural practice. SAHAMATI had developed a context mapping in which only the information about the socio-economic status of very poor households, especially those displaced by flood and resettled in that VDC, was available. This was surely relevant, but our concern was to develop an over-view of the VDC natural and social system and to place the marginalized groups (as identified in the context mapping) on the overall position of VDC. Similarly, developing alternative farming practices to improve local food system and livelihood certainly needed information about the natural resources and their present use and condition.

In general, the earlier activity plan for the information collection was followed with some modification. The reviewing of the information collected by the partners was not possible in this pilot study. However, it is relevant exercise to update the profile of the village. A half day workshop with the partner organization (SAHAMATI) was organized a) to discuss the purpose of the research, method, their participation in the research process, and the implication of the research and b) the methods of generating useful information and verification (triangulation) of information and c) plan for detail field study and team building. This discussion clarified the objective of the study and expectations of the partner and other related individuals.

Workshop with farmers and their representatives

The discussion was held at Agriculture Service Centre in the VDC. The discussion was focused mainly on;

- Existing farming practice and how it differs in different location within VDCs.
- Farmers response on their experiences with the present farming practices, especially the practice of using high inputs.
- Different types of innovations done by farmers and their experiences on these innovations
- Finding the locations or farm households where we can go for discussing and observing different alternatives on CE that people are practicing.
- Preparation a Social map- A detailed resource map of the VDC (farms, agro-forest farms, organic farms, chemical farms, forest, CF, irrigation, cropping pattern, pastures, water sources, waste lands, uncultivated food sources - locations).
- Potential areas where food can be produced using different methods like farming, agro-forestry, and horticulture.
- Existence of public land, community forests, and their use.
- Location of poor and resource poor farmers.

- Case studies (innovative farmers using CE practices).

Field visit

Based on the discussions with the representative farmers a day long field visit was carried out.

- ✓ Transact walk with partners, farmers etc (multi-disciplinary team)
- ✓ Visiting the farms (using different alternative CE as well as a few chemical farms)
- ✓ Case studies on livelihood situation, food system and security situation
- ✓ Visiting offices of local institutions (co-operative, CF, saving-credit groups, veterinary office, etc)
- ✓ Interviews with different categories of farmers (big farmers, small farmers, Dalits, Women, IPs etc – main concern is about present farm practices, food security, livelihood, how food can be produced more, present problems in food quality, feasibility of alternatives etc).

A debriefing meeting with SAHAMATI was organized in their office to share the impressions, observations finding (both methodological changes and case).

Discussion & Finding

The main concern of all farmers and other people was that agriculture has suffered because of migration of youths to work in overseas countries for work¹⁰. As a result, there is shortage of labour and interest in farming. It is one of the reasons for the use of new inputs like fertilizers to maximize the production from small land size. .

There is also reduction in the number of cattle – both cows and buffaloes. Bullocks have become so expensive that it is not worthwhile to use manual hoe. As a result, people are using tractor more and more. This has implications in soil quality also. Farmers felt that hoe is much better in terms of soil conservation. Production and use of animal manure has declined. There is also no scientific compost making. Goth improvement for effective compost making is also necessary.

Farming occupation is not regarded well by people, and as a result, youths would not like to work in farming. They consider farming as (laborious, not profitable, high expectation to go for foreign or local job market in urban area and view urban lifestyle as superior

In recent time, dairy has flourished. This is linked with establishment of a chilling centre in the market. For example, milk production has increased to 2500 lit per day (i.e. that comes to the chilling centre), from about 1000 lit per day last year.

¹⁰ The agriculture is at its worse stage from all corner, 20 lakh farmers (youth) are in Arab (Marubhumi), other young people hate agriculture

Small farmers are interested in farming and animal production. They are interested in goats and in keeping a few cows. But for them the problem is fodder and feed. Therefore, if small farmers are given a small piece of land, say half a Bigha, they can improve their farming.

Farmers claim that all agriculture inputs are duplicate (seed, fertilizer, pesticide), these duplicate inputs not only damaging the soil quality but farmers have to loose their investment. From the 300 sample soil test conducted by Agricultural Service Centre, above 90% found very high ph in soil (6-6.5), which needs to apply agriculture lime to reclaim the soil condition.

Limited or no agriculture services - one sub-centre officer for 11 VDC with other tow technical staffs. There is lack of support services. Farmers have to rely on market for the inputs and services. The fertilizer and seed are very expensive now. Only 10 % of the fertilizer used is pure, and this has destroyed the soil. Seed is also a problem. The seed they buy in market is not of good quality. Seed companies buy the seed from villagers and sell as 'seed'.

Experts and agriculture specialist only think of high input technology, they see resource poor farmers are 'barrier to agriculture development' in Nepal. They believe that the 65.21% human resource involvement in agriculture should cut down at least to 20%, for the better agriculture performance. This idea of bringing out farmers to non-farm sector in developed country was based on the industrial as well as other sector development but our assumption to cut down farming population without any plan would result more crisis not the solutions.

Villagers of the Tamsaria are facing the multiple problems in terms of promoting agriculture and livestock in their farm, these include:

- Wild life damage of the agriculture crops around the CNP
- Animal disease particularly Namle. About 80 % animals suffer from this disease.
- High price of cow and buffalos (10-15000 for a jersey cow and 50,000 of a buffalo) as well as unavailability of good quality breeds
- There is no provision of livestock insurance. The community level livestock insurance is being piloted, but it needs to be seen how far this is successful.
- High labour wages 200/day, 600/oxen plough
- Degraded forestlands lowering the soil fertility and water sources
- About 1500 youth have been flown to Arab from the VDC

Some youths are also interested in farming. They are interested in vegetable and animal husbandry. They are for specialized rather than mixed farming. They need support for improved cattle shed (Goth) and in buying feed and fodder. There is potential to use

public land. There is interest in farming in areas where there is irrigation facilities. In such areas, cash crops are grown. Now sugarcane is getting popular. In distant areas, away from market, there is interest in goat rearing.

Farmers have to sell their products under duress. They sell rice at 700 Rs per quintal and buy later on at Rs 1200 per quintal. The cost of production has increased and therefore, farmers have to sell their produce early and pay the debt. On the other hand, the expenses at household level have increased, and as a result, there is no savings at all.

Government has also given training on Integrated Pest Management. There is training in every month and give vegetable seeds.

Price of land has increased and it has made difficult for the poor to buy land, this is especially so near the market. Resource poor farmers have no ability/interest to invest resources in the agriculture. A vegetable farmer bought a seedling 1 NRs /seedling and now selling cabbage @3 NRs /kg . There is no recover of his/her investment of time and resources spent for 3 month. This is the situation in both agriculture and livestock.

However there is opportunity to promote alternative (low input, organic) agriculture, increase food security through food diversity BUT need very live engagement through demonstration at field level. We realised many people are receptive for new ideas as their experience with the current agriculture system is bitter. This demands effective village level planning for the capacity building, skill development and greater motivation towards bringing new generations in agriculture.

The agriculture in the village is not homogeneous. There are multiple layers of interventions in the village ranging from high input cash crop production to subsistence agriculture. Categorically, there are four domains of agriculture practices in the villages;

1. Cash crop with high chemical inputs –sugarcane in ward no. 9
2. Mix cropping with medium chemical inputs-ward no. 6 and 8
3. Vegetable, poultry and dairy production- in urban area ward no. 7 and 5
4. Subsistence agriculture of indigenous communities – Tharu, Kumal and Magar in ward no. 1,2,3, and 4

These are the tentative domains of agriculture in all case study sites. Detail strategic planning and service delivery/demonstration mechanism need to be worked out in these domains. However, it was not possible to do this exercise in this short period of time, however, partners have been suggested to work out detail strategic plans for the future work in this area.

Conclusion and way forward

The piloting experience was valuable in terms of refining the methodology of field interaction and observation. Although there was limited preparation for the field work, it was an exciting experience for both the researchers as well as participating partners. The uncertainty over the continuity of the partnership, a basis of partner's commitment on follow up action limited the enthusiasm to further engage with local communities to explore more on the scope of promoting sustainable farming practices at the village level.

Sahamati, a local NGO with dedicated leadership and committed team members, is very potential organisation to raise the local issues including food and agriculture. They are at very strategic position in terms of location, local ownership and organisational capability. Their engagement with poor and marginalised communities in various community development and rights campaigns could be an asset to engage in promoting sustainable farming communities. At the same time, their strategic strength could be to engage in the issue of agriculture product and inputs marketing in the centrally located and ever rising market place of central region.

Case study: Kapilbastu

Background

The study of Kapilbastu was done through Sahaj Nepal located in Chanauta. A village study was also carried out. But the discussion at the district headquarters could not take place because of national wide Bandh organized by UCPN (Maoist) when talks for resignation of PM Madhav Nepal did not materialize on 31th April. There was a general strike for a week since 1 May, which ended after a week.

Kavilbastu district is well known for its flat land and ethnic diversity. It is also one of the highly populated districts. According to 2001 census, the major ethnic groups in this district are: Muslim 19.4 %, Tharu 12.6%, Brahmin Hill 8.4% and Yadav 9.2%. The district situated at the height of 93 to 1491 meters from sea level. Geographically, the district can be divided into Terai and low Chure hills. There are 77 VDCs and 1 Municipality in the district.

The main crops grown in this district are paddy, wheat and Musuro. The other crops grown here are sugarcane, Chana/Arhar/Pea, and Tori and potato. The crop rotation followed generally is: paddy – wheat, paddy – Musuro, and paddy – Alas. The intensity of cultivation could come as much as 200 %, as at least two crops are grown here. With irrigation, the crop intensity could go up to 400 %, as four crops can be grown easily here. Therefore, the prospects of producing more food are there.

Land distribution in the district is very unequal. There are landlords with 12000 ha land, and there are people without a single piece of land. Landlords are from both Madhesi group as well as Pahade groups.

Sahaj Nepal has demonstrated here banana cultivation, vegetable cultivation and river bed cultivation, which are targeted at landless people. Whatever farming is done, it is done with chemical fertilizer and pesticides. Almost all farmers use these inputs. Organic farming is not heard here, and farmers also do not have a faith in the saying that food production can be increased without these inputs.

Foreign employment is very high in this district also. Some go to India for work and this is a seasonal migration. People return after about 6 months to work in the farm. Now the trend of going to Gulf States and Malaysia is very high. Muslim population generally goes to Gulf States. This has an adverse impact on the availability of farm labourers. Generally farming is not liked by young people, who generally try to migrate.

Use of hybrid seed and its comparative analysis:

Use of hybrid seeds is very wide spread here. This is mainly in paddy. Most farmers now grow hybrid paddy. All seeds come from India. The varieties of hybrid rice generally used here are: 64-44, 62-01, Loknath 505, Gorakhnath, Mayur, and Manisha. These seeds produce twice the production of Sabitri rice, which is promoted by Nepal

government. AS the production is low, people now do not cultivate Sabitri. Instead, they get hybrid seeds from local agro-vet and grow it.

In case of hybrid rice, the cost of seed is high. 1 kg hybrid rice seed costs about Indian Rs 300 to 500, and about 1 kg seed is required for three Kattha. This seed can produce up to 40 branches or shoot from a plant. The cost for a Bigha for hybrid seed would be about Rs 3300, but the cost for local improved seed like Radha-4 or Sabitri would be about Rs 2000. The hybrid seed required a high dose of Nitrogen, Phosphorous and Potash. But farmers here do not use the required amount of fertilizer. The production of hybrid rice here is generally about 60 quintal per Bigha, but that of local rice would be about 30 to 40 quintal. Therefore, there is a difference of about 20 – 30 quintal of production of rice, and this makes a great difference. This is also an attraction for many small farmers. Small farmers who are not able to produce enough for the family can have enough production with hybrid rice. Therefore, it is very popular. But there are other disadvantages also – like it required more seed and it is costly. Moreover, it required more inorganic inputs, and its long consequences are generally adverse. The straw of hybrid rice is not palatable to animals. The great problem is the dependency on Indian seed producer and the government's inability to check the quality of these seeds. The adverse impact of dependence on seed to a commercial and foreign company is well documented. Moreover, the production from hybrid seed is uncertain as they are adjusted in the local climate and in the place where it is meant. Hybrid seed is also common in other crops like maize and wheat, but it is not popular as in paddy. Pioneer maize is becoming popular here. Government has not done anything in dealing with these imported seeds.

Use of chemicals and soil quality:

It is revealed from discussions with farmers that soil quality has been deteriorated to such an extent that they cannot grow anything without inorganic fertilizer. Similarly, the productivity has been declining, and it seems that only the use of hybrid seed has helped in increasing the production. The soil has not been tested here. But it must be very acidic as told by Lekhnath Pandey, who is an agricultural expert with Sahaj Nepal.

STUDY OF SHIVAPUR VDC, AND HARATI VILLAGE:

This village has been suffering from landlessness and low production. Almost all people of the village are Tharus, and they have been living in the lands of Jimidars or Madeshi background. Because of lack of irrigation, they just transplant rice, but there would not be the production. The drought for the last two years has made their life miserable.

The practice of growing vegetables has been introduced in the village. This has been only in selected households. This has not been a practice in others, except for the demonstrated plots. But growing of vegetables has increased income of the experimental households. For example, in one household onion, Brinjal, and cabbage and cauliflower was introduced. Irrigation facilities were provided through tube well.

This was done by Sahaj Nepal. But farmers are encouraged to use DAP and other fertilizers. Similarly, incidence of insect and pest is high. As a result, farmers use insecticides. The insecticides which are common here are: Nuvan (low), Super killer (cypermethane), Roger and Metacid. In the training, farmers were taught the organic pesticides making, but it is not practiced. The income from vegetables was Rs 7,000 in three months from a small plot of land.

Most households in the village are Sukumbasis. But there is some land as common land. In one experiment, these Sukumbasis, who are Tharu and work in brick factory for livelihood, are given some land for the cultivation of banana. The land belongs to the VDC. Even though the bananas are not in a stage of production, this shows a way out for helping the poor and landless households. These landless households do have skill in farming as they cultivate other's land on a contract. They pay Rs 6000 for a Bigha of land for cultivation for a year. Again as they get land for a short period, they have got no incentive for sustainable soil management or sustainable production.

There is an experiment with river bed cultivation. Farmers who were affected by religious riots were helped. These households were given a small plot of land for house construction. But they lack land for cultivation. The river that passes through the village leaves a large space during six months of winter. It is filled with sand. This land was divided to farmers and they were provided support for the cultivation of various crops, of which water melon is common. Other crops are also grown here. It is a nice way of using the spare land for the purpose of supporting landless households.

4. Conclusion:

1. Absence of village profile has made it difficult to get information – especially data on various aspects of life in the village. Therefore, only qualitative information was obtained.
2. Previous religious riots made it difficult to enter the Muslim village and there was a lack of trust for us. This also made it difficult to conduct field study. For this prior consent and information would have been necessary. Political strike also made it difficult to contact people and get more information.
3. Rapid study of this Tarai district shows that farming here has moving towards unsustainable agriculture. It is very difficult to convince marginal farmer having less than 1 Bigha not to use hybrid seed, as using that seed would make food sufficient. Similarly, all use chemicals for the production. This trend is common not only in this district, but also in other Tarai district.
4. In case of hybrid seeds, we need to find the way to develop hybrid seed internally that suits the climate. This can reduce the international dependency. Similarly, the only way to convince farmers not to use chemicals is through the demonstration of farms that can

produce good crops even without chemicals. Otherwise, it would be very difficult to convince farmers.

5. Land distribution is very unequal. This is one reason why hybrid seed and fertilizer is popular, as many marginal farmers want to increase production. On the other hand, large land owners do not cultivate land carefully, and some of their land has also remained fallow. Therefore, movement to improve the access of people to land is necessary.

6. Experiment like use of common land for the purpose of farming by landless indigenous people, and river bed cultivation by displaced people show that opportunities to utilize unused resources need to be explored. In the context of Kapilvastu, there is a huge amount of land. The river beds of other rivers are also dry and are very vast as it appears from casual survey. How much of these lands are available and how can they be used for the purpose of livelihood of landless and marginal farmers through sustainable farming need to be explored. But it seems that there are huge tracts of such unused land.

3. Case Study: Bara

Introduction:

New young star club Bara (NYSC): this is a local NGO established in 1995 by the local youths aiming at to raise awareness and organise local people for their socio-economic development. Currently AAN partner working in 5 southern VDCs in the district. It is also carrying various project activities in 15 VDCs in collaboration with PAF (poverty alleviation Fund), UNICEF, UNDP, US Aid and water aid.

Research team (Ganga Praajuli, Dr. Krishna paudel, Kopila Dangole and Ajay Kumar) visited shreenagar Bariya VDC of Bara district for know about the actual practices of rights holders in agriculture and food rights. The main objective of the research was to know the illusion on agriculture, population demography, distribution pattern of agriculture land, natural resource management practices, know the access & control over the land, types of farming and its culture, market system and availability of common land to find out the recent issues of food rights of rights holders. In addition, how the PO can support in food rights field. During the field visit the team visited field sites and discussions were made with various categories of farming communities.

In the field group meetings as well individual interviews were organised to discuss the ongoing issues and challenges of farming with members of reflect centres, Dalit Network, Executive members of NYSC and its staffs, and farmers of various categories

The field study was designed as a context mapping exercise to understand local food system, local livelihoods and its political economy. It is hoped that it would help communities and supporting partners to understand ongoing issues challenges of conventional farming and find opportunities and scope for organic farming for healthy food and food security.

The partner organisation is engaged with communities in promoting various activities of sustainable agriculture which were as follows:

- Organize coordination and introductive meeting with stakeholders on "Context Analysis of Food Availability" to identify the current situation.
- Conduct orientation on food security and identify the Fore- Farmers to choose the farming process & methods of agriculture transformation.
- Collect the participation of fore-farmers to promote organic farming process, area of land for model farming to control the land's fertilizing digression.
- Implement Action Research to analyze psychological diversity of farmers on agro-based farming and result of fore-farmer initiations.
- Organize "organic farming, pasture management and vermin fertilizer promotion training" to 45 fore-farmers of three VDCs.
- Lease base cooperative farming in the initiation of NYSC as model learning centre.

The observation:

Most of the community people have limited farming land . many of them own very small arable land, hardly enough for food security with high input and intensive farming

Higher density of population and settlement, the community people are facing the problems of scarcity of fertile land and food. Therefore, they press their effort to get more benefits to fulfill the food availability by using chemical fertilizers and pesticide in crops and vegetable farming. This type of farming trend degrading the nutrient in soil and effecting human life through poisonous foods.

Many farmers hardly believe that there are other option for farming without chemicals pesticides and hybrid seeds from market. It was obvious that the young farmers have only known the current high input farming practices.

in the village more than 80% farmers are small holders with less than 3 Katha of farming fields. There is very intensive agriculture practice with high input of chemical fertilizers and pesticides. Farmers are dependent on Indian agriculture market for the inputs. There is no legal arrangements to facilitate the marketing of these inputs therefore farmers are marketing these inputs illegally.

In the maize season last year, there was big problem of pollination in the maize, farmers organised and raised voices demanding compensation. There was problem of pollination in other crops such as lentil, peas and beans too but was highlighted as it was in small scale.

Farmer's experiences in high input agriculture are generally negative; it is damaging their soil, its productivity, affecting health and hygiene. The highly priced input is making agriculture less and less profitable. However, many farmers have no choice to continue use of these inorganic inputs. They believe that if they do not continue putting these chemicals there will be no yield. Not only that they are increasing inputs every year hoping to sustain their level of yield. Farmers reflected that they used to put small amount of urea and DAP in early days but now doubled and some time tripled the amount.

There is growing realisation that the current agriculture system is not going to be sustainable.

The ongoing issues and challenges:

Farmers in the village do not believe on organic farming because of the threat of low production, rate and branding system. However, the detail discussions revealed that there are few practices around and by the innovative farmers to escape from the overwhelming use of costly chemical fertilizers and pesticides. There is also realisation

that the farming practice is not sustainable and cannot go longer if the current situation is persisting.

Whilst exploring the options for sustainable farming, it is also noticed that there is limited knowledge and skills available on organic technologies including organic manures, herbal pesticides. Also the farmer feel threatened they might lose the production level by practicing organic farming.

Chemical fertilizers, pesticide and seed are not available in Nepal these all are import items, they may not get in time of farming. At the same time, these have to buy from Indian market illegally.

Not market facility to sell and buy of product lack of market management system.

There are limited agriculture services and facilities to promote the agriculture in these areas.

Findings:

- The real situations of field, which field research team find as facts are given bellow:
- Injustice land distribution system,
- Depending farming
- Inadequate irrigation facilities,
- The actual farmers who are involved in agriculture have take high interest based loan for seed and fertilizer purchasing.
- Most of the youth population migrated India and other country for searching job.
- Farmers' of Bara district are getting low interest in farming.
- Farmers of Bara district are practicing traditional methods in farming.
- Because of the using high quantity of chemical fertilizers and poison in farming the fertilizer power of land is degrading.
- Because of seed insufficiency, the farmers are facing the problems of seed scarcity.
- Most of our rights holders are involved in farming, labor, seasonal migrate labor.
- The farmers of Bara district are beyond of information about the government act and policies.

Government has not certain policy to secure the food rights of civilian. The policy of Nepal government is only stand for curative action but because of unstable government, the bureaucracy system is not accountable responding to small farmer.

Conclusion

The case study site is a good example of high inputs and intensive farming of Terai region. Since in this area there is enough water sources [both irrigation by canals and underground water sources] is high potential for vegetable production. The small holding farmers of the areas can follow the sustainable agriculture methods and organic vegetable production. However, needs supports and services to start up.

The partner organisation and its team members have very good relations with the farmers in this area, they can be influential facilitators. They also have good public relations and networks with service providers at district level, only need some focused promotional activities. Also, having a nationally observed case of non pollination of maize and other legumes, the organisation and mobilisation of farming populations for rights campaign on these issues to sensitise policy makers to service provider is equally important.

4. Case Study : Dolakha

Introduction:

Dolkha district is one of the districts where sustainable agricultural programs have been implemented since a long time ago. The involvement of Swiss Development Agencies spans more than 50 years. Even now they have projects in the district on sustainable soil management, community forestry and the like. Therefore, the study of this district could shed light the impacts of such program and the current status on agricultural production and organic farming.

The district is located in Janakpur district and covers a wide altitudinal variation. The altitudinal range varies from 732 m to 7148 m (Gaurishankar Himal). The distance to Kathmandu market is about 132 km. The transportation facilities to link to Terai market is developing through Manthali of Ramechhap. It is expected that within a few years this would be completed. This could change the agricultural production pattern also. Total area of the district is about 146,787 hectare. There are 51 VDCs and 1 Municipality in the district.

1. Population and social development:

The total population of the district is about 217218 as of 2008 (male – 109048 and female 108170). Population in the district is growing at a rate of 2.5 % per year. About 67.2 % of the population depend on agriculture, 17.04 % on industries and businesses, and 12.5 % on other occupations.

The district has a good development of road, and is connected to Kathmandu and Tarai Nepal. Gravel road are being opened in different parts of the district. On average, 51 % of the population is literate (64 % male and 38.8 % female). Access to primary education is relatively better.

The ethnic composition of the population of the district shows that Chettri-Brahmin group is dominant. About 38 % of the population is Chettri and 10.3 % of the Brahmin. The other dominant groups are Tamang (15.05 %), Newar (9.1 %), Thami (7.2 %), Sherpa (5.7 %), Kami (3.5 %), and Jirel (2.2 %). A larger population of Thami and Jirel in Nepal is confined to this district.

2. Land use and land distribution pattern in the district:

Of the total area of the district, 35 % is located in high Himalayan region, and 40 % in high mountain region, and only 25 % is located in the middle hills. Total agricultural land in the district is about 56,683 ha, of which 3125 ha is Khet 17887 ha is Pakho. This shows that Khet is very small area and, by and large, most farm land is Pakho.

Therefore, the agricultural system here is predominantly Pakho. Irrigation facilities are also at low level. Only about 1540 ha is year-round irrigated and 1585 gets seasonal irrigation facilities.

A large part of the area is covered by forest. It seems that greenery is very high as one feels while travelling there. About 60 % of the area is considered as 'forest', 18 % as pastures, 11 % snow covered area, 6.4 % barren land, 0.2 % as water-covered land and others 0.06 % land.

The land distribution pattern in the district shows that there is almost negligible number of households who do not have land at all. Most households have some land, at least for housing. About 17 % households have 1 to 3 ropani, which means that they have a housing lot and something to grow. The district is dominated by medium scale farmers. There are relatively few farmers having more than 30 ropani land. This size of land holding is just double of the average land holding in Nepal.

The land distribution pattern presents both opportunities and constraints. The opportunity is that there are almost no landless households and even the marginal farmers have 3 ropani to 10 ropani land. Therefore, if opportunity can be provided to increase income in the farm itself, then it may have good impact on their livelihoods. There is scope in the district to improve the livelihood through farming. In many places where landless households are many, the first problem would have been to provide land. But this does not seem to be the case here in Dolkha.

Table 1: Land distribution pattern in Dolkha in 2001

Land holding categories	Households	% of households
Landless	398	1.00
Up to 3 ropani	7100	17.77
3-10 ropani	14412	36.08
11-20 ropani	10979	27.49
21-30 ropani	4932	12.35
More than 30 ropani	2124	5.32
Total	39945	100.00

Source: computed from the data in a report of A.D.O. Charikot.

3. Natural resources:

The district is endowed with a wide variety of natural resources. These include water resources, forest resources and mineral/mine resources. This district is known for the

suitability of developing large as well as small hydropower schemes. Tamakosi is a well known potential hydropower, which is being built by Nepal government. There are a variety of forest products, especially herbs. Similarly, stone mining is quite popular here.

4. Agricultural situation in the district:

The effort to develop agriculture in the district started a long ago when agricultural office was established in 2030 BS, exactly 37 years ago. At present, there are 30 staff members working in the Agricultural Development Office, which is located in Charikot. There are 4 service centres covering the whole district. The major thrust of the office or agricultural program is to support APP, and all the activities here are guided by APP principles. APP emphasize the use of green revolution technology with the heavy use of external inputs especially in the form of chemicals supplying nutrients, pesticides controlling insects and pests, water and high yielding varieties of seeds. On the other hand, some of the programs of Swiss Development Agencies have emphasized the ecological farming.

The Sustainable Soil Management Program of Helvetas Nepal has been emphasizing the approach of 'farmer to farmer' extension approach for decentralized and participatory agricultural development. Under this approach farmers themselves were trained and developed as leader farmers and with farming of their own they become experienced farmers leaders. These leaders act as extension agent for the transformation of agriculture. In a way, this seems appropriate way of developing agriculture. These farmer leaders spent most of their in doing their farming and bringing in new ideas for experimentation. They spent only a small time for the extension.

At present, commercial agriculture is seen only along the road where vegetable farming is done. The vegetable is also supplied to Kathmandu. Here farmers have started using the chemicals like fertilizer and pesticides. Otherwise, because of the remoteness of the district, fertilizer and other chemicals are not available, and thus agriculture is still subsistence oriented and organic. But with the spread of road, it is likely that fertilizer and pesticides will reach the hitherto organic agriculture.

There are potential sites where organic farming can be done. SDC-SSMP has its program in 18 VDCs, where it has emphasized botanical pesticides. Apart from this, it has also started animal shed improvement and urine collection. In 33 VDCs they have started F-F (farmer to farmer) extension. There are 82 farmers' leaders who were trained and certified by CTEVT. Refresher course is given to them from time to time.

Despite the above program, there is growing demand of hybrid seeds and fertilizers, especially in road accessible areas. There was also protest in the district headquarters to pressure government to supply these inputs. The newspapers had reports that farmers are demanding fertilizer and there is short supply from the government. People of these commercial pockets also have a desire to earn more income in a short time.

Moreover, the decline of animal population and the habit of not working hard has led to the use of fertilizer. Potato is a main crop here, which also has potential if market is expanded. It takes 8-9 months for the preparation of the harvest of potato, and it can be kept for 2 years.

The district is a food deficit district and government has no program at all in improving agriculture. On an average, there is shortage of 8000 mt. of food every year. There are only 4 service centre and one JTA, which has to cover 6-7 VDCs. Moreover their program is limited to a few mini-kit distribution and providing subsidy to a few farmers in buying equipment or seeds. Therefore, not much can be expected from the government program if the present trend continues. In the mini-kit, they generally distribute improved seeds like hybrid seeds and fertilizer. In general, government has betrayed the farmers.

5. Migration and agricultural development:

There is a high level of migration from the district. A large number of them go to Sikkim and other parts of India. Almost 50 % households have members working in India, especially in Sikkim, Darjeeling, and Himanchal Pradesh. They migrate seasonally, and come back for the farming. At present, people coming back from Himanchal Pradesh are improving their farming. Some of them have even earned Rs 3 lakhs from potato farming. They got the knowledge from their which they practised in their farm.

There is also a growing practice of going to Gulf, and this could adversely affect the agriculture production. At present, there are people from almost every house to Qatar and Malaysia (or in Gulf in general). The youths of today do not like to farm at all. To that educated people, or those who have passed high school, will not touch soil. They try to o out. Therefore, it is hard to get male labourer in the villages. In some of the farm work hoeing and digging done by male, wage rate is Rs 300 to 350 a day. This is very expensive in the village context.

6. The study of Jiri VDC as a case study:

Jiri VDC has been studied because it is also located in tourist spot and with a market, where possibility of selling organic product is high. Moreover, the partner NGO had a program here to introduce sustainable farming. This VDC has a population of 8508 of which 49.8 % were female and 50.2 % were male. A rapid survey of one ward (Ward 7), which is located just above the Jiri market was done.

Information about the VDC was available in every aspect of its development. VDC profile was developed by VDC office. It was told that there are several offices in the Jiri valley, and thus they needed information. This compelled them to develop a VDC profile.

Migration from the VDC – there are about 498 people who have gone outside for work. This population is about 10 % of the economically active population. This is a high level

of migration. Of them, 195 have gone to work within the country and 303 to foreign countries. Most of them have gone for work and a few have gone for trade and study.

The main crops grown here are maize, millet and wheat. Practice of growing vegetables is also growing. Potato is a major crop here. The vegetable is consumed within the market here, but potato is also exported. More than 500 mt of potato is exported from the VDC. Apart from this, VDC also exports *lokta* for making paper (about 40 mt), 150 mt of timber, 1 mt tea. Similarly, ghee and cheese is also exported to other parts of the country.

Animal husbandry is also important in Jiri. In fact, animal husbandry and farming go together. There are improved breeds of cattle here, which is a result of a animal farm introduced by government.

Intervention in farming and animal husbandry is done through farmers group. This area is considered as a pocket area for vegetable, cattle and chauri raising. There are about 17 groups for goat, 47 for chauri, 22 for potato, 7 for honey, 12 for young farmers, 50 for women vegetable farming, 11 for general vegetable farming, 14 for vegetable development fund, 11 vegetable groups in Sailung. Therefore, it seems that there are quite many groups formed for farming.

A study conducted by VDC revealed that farmers are not using any modern technology and this has been a concern there. They regarded traditional farming without the use of fertilizer and improved seed as backward and not modernized. Only about 87 households had used fertilizer and 129 have used pesticides.

6.1. Land distribution in the VDC and food security:

As of the record of VDC, there are only 4 households (of the total 1596 households) which are landless, and 10 % of households have land up to 3 ropani, 39 % have 4 to 10 ropani, 33 % have 11 to 20 ropani, 10 % have 21 to 30 ropani, and 9 % have more than 30 ropani. This land distribution pattern shows that there are only few landless households and if high value crops are introduced for the marginal farmers, they can raise their income from farming.

Despite availability of a larger land holding (as compared to other parts of the country in the hill region), there are only 8 % households which are totally self sufficient in food. About 35 % can meet food for 7-9 months, 47 % can meet food for 4-6 months and 10 % can meet food for 3 months. As a result, 73 % households have food for less than 6 months from their own production.

6.2. Study of a settlement.

As a part of case study, a settlement just above the Jiri market was studied. This settlement was dominated by Jirels. The settlement looked very prosperous with good houses and adequate sanitation. But most of the male members of the settlement had gone away for work in Gulf States or even in Europe and North America. Even the women have gone abroad from here. They have gone to Israel, Lebanon and Saudi Arabia. Therefore, this settlement was kept alive by women. All the farming work was done by women. Despite the burden of family work, there were a few women who had done extra work to introduce new things in farming. For example, they have started growing vegetables and animals like goat and pig. But again this is not done extensively. This is done by those households who have been approached by development agencies with support. Otherwise, farming has remained the way it was in the past. There is not much changes. Even some of the fields were kept fallow, where potato could be easily cultivated. There was a good availability of water for irrigation also.

When asked a women group member formed by the partner NGO why they do not grow lots of vegetables as this area is suitable for them, she told that there is shortage of labour, and there is also need a ready market. The local market is not capable of absorbing more products. Where along the road side in Charikot, there are opportunities for selling vegetables in Kathmandu. Therefore, guarantee of marketing is important. Now she grows vegetables only for home consumption and only a little is sold. Her husband went to Malaysia by paying Rs 120,000 and loan was obtained after paying 3 % interest rate.

In the settlement, there is no practice of using external inputs. Therefore, it has remained organic. But very recently pesticide has also been introduced and it is available in the shop in the market.

There is no shortage of land in this place, and there are no landless households. It seemed that all have some land. Moreover, land is easily available for renting. But people of the village, who have small land holding, also do other things. They can find work in the market and most of them also work in tourist industry as porter or as guides. Those who are capable, they have gone out for work.

Two farms were observed where some interventions were made by the partner organizations. One of the farms was owned by a local high school teacher and another by JTA. They have also received from partner organization as well as government office. They have raised vegetables in green house as well as outside it. They have grown different types of vegetables like tomato, cauliflower, cabbage, and the like. The old father sitting there told that in the past, when there was only one family and the land was not divided, there was not enough for food. But now with cultivation of vegetables in a small piece of land, can feed the family. The vegetable is sold and rice is bought with

the money obtained from selling of vegetables. They used to produce a lot of millet and they was consumed. But now millet is not eaten, and all eat rice, which is bought from the market. Now millet is produced to a small extent and it is used for producing alcohol. They have felt that soil is being deteriorated now. This is because of the lack of manure – they tell. In the past, the same house used to have 40-50 cattle and some buffaloes and goats. The old man said that animals were kept in shed in the lekh and manure was brought down in winter. This was a lot of work, but it kept the soil fertile and good. But now they do not keep many cattle, only a few have kept improved cattle. In the forest, some keep chauri also. But the cattle now are improved ones – some crossing of Brown Swiss or jersey kept in the government farms.

The farm was not organic, because they have been getting seeds, fertilizer and pesticides from government office and partner organization. They also have a practice of using pesticide. At the end of the visit, they were preparing chemicals for the spray through a sprayer which was given by the agricultural office.

7. Conclusion:

The study reveals a number of findings, which can be used for developing strategies for sustainable agricultural development.

1. There is potential to increase through farming, especially through vegetable farming, as this area is good for that.
2. The area is still organic, but with the reach of market and extension agents promoting green revolution technology, the practice of using chemicals has started, especially in road areas growing vegetables. The decline of manure production and the habit of not working hard means that manure is not produced and as a result, the soil has been degraded.
3. Land is not a constraint for the poor people. There is common land and even the landed people are willing to give land for cultivation at a cheap rate. Moreover, community forestry is very common here and poor people can have access to community forestry for agro-ecological farming.
4. Promotion of sustainable farming should go together with marketing. Making Dolkha as a chemical free and marketing this in Kathmandu would enhance the prospect of organic farming. This means that there will be opportunities for marketing at a mass scale.
5. Political support and commitment is required for promoting organic farming. As farmers are not getting not much income from traditional farming itself and they are food deficit to a large extent, they will have no hesitancy in converting to organic farming for the market provided it is guaranteed.
6. The physical condition of the area also supports sustainable farming.

5. Case study: Tehrathum

Tehrathum one of the hilly districts of eastern Nepal, where rural agriculture economy persist as livelihoods options for the majorities. The Pakhribas farm at the neighbouring district Dhankuta and its outreach activities of agriculture extension have greater influences in the farming system in the district. Therefore, the study of this district could shed light on the impacts of intervention in agriculture, agricultural production and farming behaviour of the local farmers. The study team explored the status scope and challenges of the food and agriculture taking the case of Dobate village, ward no.5 Fakchamara.

Land use and land distribution pattern in the village

Dobate village of the Fakchamara VDC lies in the middle of the village. It is a small hamlet of 50 HHs with the population of 278. There are mixed caste and ethnicity groups; mostly Dalits (13) and janajatis (26) and others (11). In this village, only 16 HHs can produce enough food for the family. Out of 50, 40 HHs are share cropper to manage the household income. There is limited fallow land left in the village.

There are no households who do not have land at all. Most households have some land, at least for housing and kitchen gardening. Although, the per capita land is reasonably good [10 ropani/HHs] the distribution is unequal. Mostly Dalits have small land holding; 1 to 3 ropani, which means that they have a housing lot and something to grow. Women's access to land is also limited.

As in other hilly districts, this is also dominated by medium scale farmers; 10-15 Ropani of farm land] average land holding in Nepal.

Field observation:

The agriculture in this village is rain-fed. There are no water sources in the villages, even the drinking water supply comes from distant sources. Maize is the main crop in the village, millet, upland paddy, legumes are major food grains produced in the village. Vegetables, mainly chillies, beans and potatoes grown in this area and sold in local market of Sukrabare.

There is increasing trends of food import. It is bought from the nearest local market. Earlier villagers used local foods in the food deficit seasons but these days no one buy food locally. This was started with the migration of the part of the family members to Terai for settlement and accelerated by the cash income received from the employment abroad.

In the village, poor and disadvantaged people, still have to rely on local food production, as they lack enough income to purchase food from local market. They are coping either by growing foods in their field [whatever produced] or sharecropping the farm lands.

The farming practice in the village is deteriorating day by day. The main problem is seen as not availability of labour forces. Most of the young generation people have moved out from the villages. Close to road heads, there is commercial production of vegetables, mainly the chilli, which gets higher price in urban markets. Here farmers have started using the chemicals like fertilizer and pesticides.

There are few outside organisation working in the village in partnership with local communities. However, there are several self-help groups and community organisation in the village. Community forestry, farmers group, women, Dalit and a reflect centre. These self-help groups are facilitated by AAN partner and other local NGOs. Saving and credit is the main function of these groups.

There is no migration to Terai recent years, however many families are moving to local urban centre leaving the village desert. There is decrease in livestock and earlier planning fields are turning into barren lands because of less productive farming

There was great sense of climate change during this year. Although, the change in rainfall pattern was being observed for last 8-10 years, according to villagers, there is no full re-change in soil for the last 5-6 years. Rainfall is very quick and for shorter time, it is running off causing soil erosion and landslides. Because of the less re-change in monsoon, there are limited water spring sprout each year. This year 60-70 days late in maize planting. While we were in the village, last year the maize were at edible stage but this year they were just showing the seeds.

Farmers also developing resilience behaviour to the changing environment and said, this is nature we cannot change it but have to follow the patterns of nature. There was also the sense of human induced environmental problem because of 'greed' but have little idea about the factors.

The reflect centres are running well. While in discussions, it is revealed that many of the participants have high expectation of getting direct benefits from the organiser in future. These centres run by DAS facilitators as routine work- need to make these lively through discussions on day to day problems and issues facing by the participants with concrete action plan and preparations.

7. Conclusion:

The study was very useful to understand food and agriculture situation in the mid hills of eastern region. It revealed a number of findings, here are the summary points of the observations.

The focus of the partners on rights to food is slightly slipping away from the main agenda of food security which need to bringing into centre exploring on the strength and scope of engaging farming communities in production promotion and marketing.

There is potential to increase through farming, especially through vegetable farming [AKABARE chillies], as this area is good for that.

There is an increased trend of using chemicals, pesticides and outsourced seed varieties. It is revealed that this was the case after reach of market and outreach plans of the Pakhribas agriculture farm which promoted green revolution technology as well as the practice of using chemicals in farmer's field.

There are many reflect centres running smoothly, however, there is need to bring the agenda of food and sustainable farming so that participating farmers can benefits from the discussions as well as enhanced practices by groups

It is observed that the Dalit awareness society (DAS) is very reliable partner to work with poor and marginalised communities; however, there is limited knowledge and skills of the team to work on food and agriculture issues at present, which need to be strengthened.

6. Case study: Dhanusha

Introduction:

Dhanusha Sewa Samiti (DSS) is working in 5 VDCs of northern part of the Dhanusha district in partnership with AAN. It is working with the farming communities in promoting sustainable farming practices for the last 4 years. This case is unique in terms of the successful facilitation of organic farming practices among the sites visited during this study.

The field visit to the case study site:

The study team visited in various site of the DSS working area, interacted with women and men farmer group, reflect centre and interviewed with individual members of farming communities. The general impression of all group discussion is that the farmers who were using chemicals and pesticides in their farms some year back now totally convinced with the organic production technology. Community member's confidence is commendable and the farmer's satisfaction with the outcomes of the organic farming practices is quite high;

Here are some examples:

The leader of the janakalyan farmers group, Kemalipur, claimed that the most benefit of the organic farming is the improved human health of the farmer's family. Earlier when they were using pesticides in their vegetables there were many cases of stomach pain and headache but these days no one complaint about it.

The taste of organic food is naturally good, it cooks well, smells good. A woman suggested that if any one grows two plants of leafy vegetables one with chemical fertilizers and another with cow dung or organic manure, cook and taste the differences, they will know why we need to grow organic foods.

Another woman shared how she could able to reap higher yield of paddy from organic farm (200 kg/kathha) and 120 kg from the field where she used chemical fertilizer.

Their experiences suggest that it takes 3-4 years to regain the fertility of the soil. After this period, there will be no differences/ or higher will be production from organic farm. Also, they experienced that if the field is organic there are reduced insect and pests in the crop fields.

However, they have bitter experiences when they take their product in local market for sale, consumers ask lower price for organic product as these are not seen as well shaped as the products grown with chemical use particularly in case of vegetables.

These are some examples of the farmer's experiences over the organic farm practices. These experiences are attracting many fellow farmers to adopt the organic farming. In

Janakalyan farmers group there were 13 farmers in the group at the beginning now there are 40 members.

Farmers are adapting and innovating various technologies of sustainable agriculture; agro forestry, compost, improved animal shed, urine collection and use it for pest control and manuring are some examples. Use of their own local seeds, improvement in farming practices and mobilisation of the group other social works making them self reliant, confident and motivated. DSS's role is vital in promotion of organic farming as well as self reliant communities; they are facilitating community development activities including health, education and empowerment including land rights movements.

7. Conclusion:

Sustainable farming practices in these villages are commendable. These practices need to be further consolidated and scaled out for the wider effect of the initiatives, particularly expand it to the lower plains. In this respect, this site can be developed as a demonstrative field sites for wider populations to learn from farmers own practices in field situation.

The experiences of the farmers and the demonstrative effects need to be well documented for critical knowledge generation to develop powerful tools for advocacy. For this, DSS and development partners have to move forward in networking activities with other stakeholders for integrated supports and services.

7. Case study of Rasuwa

Introduction:

The Rasuwa district is endowed with a wide variety of natural resources. These include water resources, forest resources and mineral/mine resources. This district is known for the suitability of developing large as well as small hydropower schemes. Chilime is one of the hydropower stations, which was developed by Nepal government. Similarly, there are a variety of forest products, especially Himalayan medicinal herbs are important species.

Field Observation:

The team visited the working area of Manekor society-the Chilime village, where the society is working with communities in promoting NTFPs plantation in farmer's field.

As of the information of the farmers group, there are no landless families in this village. In the 5 working VDCs of Manekor Society, there are only 18 HHs who are landless. Therefore, there is not a big issue of landlessness, Also there are still large areas of forest or common lands.

As a part of case study, the study team met with the women's group and NTFP farming group in Chilime and discussed the local issues of food security, local food system, farming practice and marketing issues.

This settlement is at the bottom of hills and the residents are all Tamang communities. This settlement was kept alive by women. All the farming work was done by women. Despite the burden of family work, the women in this village organised in a group for self-help, saving and credit and other social works including raising voices for women rights. They are also engaged in kitchen gardening, and organic farming.

This is very remote villages from the district head quarter. Although this is potential for vegetable production, due to the remoteness of the areas and access to market, the production of vegetable in small scale is not economically viable. Some innovative farmers have started NTFPs and orchard. However, the produced fruits as raw are difficult to send to the market and there is need for some small scale processing units/ technologies to be developed that could benefit the fruit growing farmers.

There is no shortage of land in this place, and there are no landless households. It seemed that all have some land. Moreover, land is easily available for renting. But people of the village, who have small land holding, also do other things. They engage in construction and other. Those who are capable, they have gone out for work.

As in other part of the villages there is also increasing trends of leaving villages by youths; many of them have moved out in search of employments leaving farming in

hands of women and old people. Expect some innovative farming practices where women and farmers groups are active, many farm land has remained the way it was in the past. There is not much change. Even some of the farmlands were kept fallow, where various food species could be easily cultivated. There was a good availability of water for irrigation also.

When asked why the villagers do not cultivate lands that used to cultivate earlier, there answer was straight there is shortage of labour, and there is also need a ready market. The local market in chilime is not capable of absorbing more products. However opening of link road to China [Tibet] could provide opportunities in future.

In this settlement, there is no practice of using external inputs. Therefore, it has remained organic. But very recently some farmers started using pesticides which is readily available in the shop in the Dhunche.

High altitude areas of Chilime are ecologically appropriate for medicinal plants. Farmers themselves have started planting Chiraito [medicinal plants]. In this area, these are produced in produce it organic so that they can get premium price of their products. But there is limited human resources to raise live stocks, making them difficult to

From the discussions with members of Manekor society as well as NAF staffs, this area is highly potential for organic agriculture, potato, Himalayan medicinal herbs, Chauri for cheese and cold water fisheries. In particular, VDCs north of Dhunche could be developed organic farm areas.

This is also tourist hot spot; close from Kathmandu, tracking route to Langtang, Gosaikund where thousands of local/international tourists visit each year. The area could further benefit if it demonstrates the organic agriculture and sustainable farming.

7. Conclusion:

The overall observation in the field and the reflection with the team highlighted the following issues, scope and opportunities for the promotion of sustainable agriculture in the area;

1. The physical condition of the area also supports sustainable farming. This area is the base of Langtang [covering the 7 VDCs above the Dhunche]. It is free from the inorganic agriculture and with high potentials of organic production system; livestock and dairy, medicinal herbs, potatoes and temperate fruits.
2. Development partners in the area are promoting high value NTFPs, Himalayan medicinal herbs, which are important cash crop for the farmers.
3. The area is still organic, but slowly with the reach of market and extension agents promoting green revolution technology, the practice of using chemicals has started, especially in road areas growing vegetables. The decline of manure

production and the habit of not working hard means that manure is not produced and as a result, the soil has been degraded.

4. Promotion of sustainable farming should go together with marketing. Making Dhunche area as a chemical free and marketing the organic products would enhance the prospect of organic farming. This means that there will be opportunities for marketing at a mass scale
5. Tourists to Langtang and Gosainkund, opening up route to china boarder would be an opportunity for wider publicity of the sustainable agriculture practice.
6. Local farmers are relying on traditional farming however, the farming culture, institutions and practices are changing rapidly, an innovative approach to these areas are urgent; technology, institutions and policy innovations to support sustainable farming.
7. In terms of food, these areas are food deficit areas. This is also further affected by the changing food habits.
8. The road links to Kathmandu and China boarder will be an opportunity for economic growth for the area, at the same, it is likely that the direct access to market might be a threat to local food security.
9. AAN partners working in these areas are actively engaged in promoting NTFPs and agro-forestry, will be an asset to promote sustainable agriculture in the area.