# Agriculture

## 1] INTRODUCTION

With more than 86% of its population living in rural areas and about two-thirds of the same directly deriving their livelihood from agriculture and forestry, Nepal's economic development is inconceivable without first achieving significant growth in the agriculture and forest sectors. These two sectors are closely interdependent and jointly contribute the largest share (about 40%) to the GDP. At the present stage of development where agriculture is still largely subsistence based and potentials within the forestry sector remain under-tapped, agriculture has to serve as the engine of growth with complimentary contributions from the forestry sector thus paving the way for rapid overall economic transformation on a sustainable basis. For the foreseeable future no other sector can engage the large section of the population presently involved in agriculture. It is evident that agricultural development is a key to economic growth and reduction of poverty. In recognition of this, His Majesty's Government of Nepal (HMGN) has accorded the highest priority to this sector and expressed its commitment to speed up the process of its transformation by declaring the Tenth and Eleventh Plan periods (2002-2012) as the Agriculture Decade. In recent years, agriculture has grown at approximately 3%, population at 2.3% and average economic growth at less than 5%.

Irrigation is a critical input in the agricultural production system. In the same vein, forestry significantly contributes to the livelihood of the people by providing multiple products and services. Besides fuel wood, timber, and forage for livestock, forests are a source for valuable herbs and medicinal plants that provide an income to the rural poor. Nepal's rich genetic and biological diversity existing in forests and agricultural lands across different agro-ecological regions represent yet another critical asset that needs to be properly managed for enhanced productivity gains and improved livelihood.

This working paper summarises the long-term vision and goal of HMGN for the agriculture and irrigation sectors, present status, existing gaps between goals and achievements, policies and plans aimed at bridging those gaps, major issues and challenges, and the road map for sustaining the past achievements and additional measures necessary to hasten the process of agricultural and rural transformation.

The guiding principles and portfolio of future actions outlined in this working paper reflect the vision and priorities of HMGN while attempting at the same time to embrace the strategy and action agenda of the donor community and concerns of other development partners such as the private sector and the civil society. It builds on and incorporates the recommendations of several recently completed comprehensive studies; the Field Programme Review, carried out with assistance from the Food and Agriculture Organization of the United Nations (FAO) and the series of studies undertaken in the context of Nepal's accession to the World Trade Organisation (WTO) supported by FAO/UNDP, and other relevant studies. Attempts have also been made to incorporate the substantive comments received from participants of the pre-consultative meeting held on 4 April 2004.

## 2] VISION, POLICY AND STRATEGY

The long-term vision for agriculture and irrigation are articulated in various policy and strategy documents of HMGN such as the Agriculture Perspective Plan (APP) 1995, National Water Resources Strategy (NWRS) 2001, Irrigation Policy 2003, and Sustainable Development Agenda for Nepal (SDAN) 2003. Its key components are presented in a consolidated form under the respective sectoral chapters in the Tenth Plan whose main highlights are summarised below:

**Overall**

- Agricultural development and sustainable management of natural resources and bio-diversity;
- Development of rural infrastructure and rural energy;
- Population management, social services, and basic social security;
- Development of tourism, water resources, information technology, industrial and trade sectors with participation of the private sector;
- Human development and women empowerment;
- Targeted programmes on employment and basic security for the socially excluded, like *dalits* and the poor;
- Consolidation of local bodies, NGOs and community-based organisations;
- Emphasis on remote area and regional development;
- Use of high technology and improvement in rural technology;
- Guarantee and strengthening of good governance;
- Promotion and protection of the environment; and
- Development of infrastructure at the national and regional levels.

**Agriculture**

- Faster economic growth through increased productivity of productive resources;
- Poverty reduction and enhanced living standard as a result of faster growth and expanded employment opportunities;
- Growing commercialisation and development of additional infrastructure in support of commodities and production systems of comparative advantage;
- Diversification in agriculture through the promotion of high-value commodities;
- Creation of a favourable environment for the participation of the private sector and farmers' groups; and
- Poverty reduction through increased productivity and employment opportunities.

*Irrigation*

- Contribute to the enhancement of agricultural production and productivity by developing irrigation systems in 1,686 thousand hectares of the total irrigable area that is year-round and under full control of the farmers; and
- Contribute to poverty reduction through employment generated in the course of expanded irrigation in terms of infrastructure development, maintenance, and rehabilitation.

Key highlights of the APP, NWRS and Irrigation Policy, and Tenth Plan follow.

**Agriculture Perspective Plan:** In order to address constraints and problems in the sector, HMGN adopted a 20-year strategy [1995-2015], known as the Agriculture Perspective Plan [APP]. The APP recognises the importance of rural livelihoods and agriculture and seeks to create a technology-based green revolution, which can become the engine of accelerated growth. It concentrates on commercialisation of agriculture with a focus on infrastructure, fertiliser, research and extension services, and irrigation. The intention is that this creates a demand-pull for the production of high-value agricultural and non-agricultural commodities, with consequent multiplier effects in other sectors of the economy.

The APP considers priority inputs, which include agricultural roads, power, technology, irrigation and fertiliser.

For irrigation the emphasis is on the development of year-round systems by improving the existing farmer-managed irrigation schemes [FMIS] and by expanding the installation of shallow tube wells, especially in the Terai. Although intensification of agricultural production using ground water appears to be financially viable, greater commercialisation of agricultural products is needed to enhance farmers' investment in tube-wells. This requires an integrated, sector-wide approach to development.

Even though the overall objective of the APP to achieve 2% growth in agricultural income was not reached by the end of 2000, the performance of agriculture improved in the second half of the 1990s, as shown by a per capita growth of -0.50% to +0.70%. Only the agriculture sector showed growth during the 1990s. The key issue will be how to sustain and accelerate this change over the course of the next ten years.

**National Water Resources Strategy:** The water resource system in Nepal is undergoing continuous natural changes in terms of quality, quantity and morphology. These changes are further accelerated by increased human exploitation as a result of increased population pressure demanding water for irrigation, domestic use and hydropower. To address these issues and to manage the country's water resources in a holistic way, a National Water Resources Strategy [NWRS] was released in 2001. This has short, medium and long-term targets for the development of the irrigation sector. A strategy has been developed to address these issues whose key components include:
*Inter alia;*

- Integration of irrigation planning and management with agricultural development;
- Improved management of existing irrigation systems;
- Improved planning and implementation of new irrigation systems;
- Development of year-round irrigation in support of intensification and diversification of agriculture;
- Strengthening of local capacity for planning, implementation and management of irrigation;
- Consolidation of land to promote irrigation/agriculture efficiency; and
- Improved groundwater development and management.

Adaptation of NWRS by the country in 2001, launching of the Tenth Plan in 2002, and completion of many important irrigation development projects resulted in a new irrigation policy released in 2003. This has three key objectives:

- Provide year-round irrigation service to irrigable land by effective utilisation of the country's water resources;
- Develop institutional capability of water users associations for sustainable management of the existing systems; and
- Enhance the knowledge, skill and institutional working capability of irrigation professionals, water users and non-governmental associations/organisations relating to irrigation development.

*The new policy focuses on improving administration, and through enforcing legal provisions, achieving sustainable management of irrigation systems. It will also involve the private sector in managing public irrigation systems. Other key shifts in focus include,* inter alia*, zoning, user-management, non-conventional irrigation systems, poverty-focused interventions, year-round irrigation, human resource development and the involvement of decentralised local government structures in irrigation and management.*

**Tenth Plan:** The Tenth Plan, which is an elaboration of HMGN's Poverty Reduction Strategy Paper [PRSP], sets out to address the fact that at the end of the Ninth Plan, 38% of the population was still living below the poverty line. Poverty has remained a multi-dimensional problem in Nepal and its reduction has become the main focus of national development.

In order to successfully tackle poverty it is necessary for all sectors to be involved in the development process. The main objective of the Tenth Plan is to reduce poverty through empowerment, human development, security and targeted pro-poor programmes.

A key target of the plan is to reduce poverty to 30%. In order to achieve this, a strategy of sustainable and broad-based economic growth, which fosters economic opportunities and its distribution to different sectors, is being followed. The aim is to achieve high and sustainable economic growth, poverty reduction and improvement in the food and nutritional status of the people by increasing agricultural productivity. This will be achieved through the provision of integrated packages of inputs and services as envisaged in the APP. The plan will also promote mainstreaming of women and disadvantaged groups in the development process and active participation of the private sector.

Major issues to be addressed while implementing the Tenth Plan are related to the mobilisation of the private sector and NGO service providers in partnership and on contract basis; promotion of co-operatives and contractual farming; adoption of commodity policies for creating favourable investment environment for private entrepreneurs; devolution of local agricultural programmes to local bodies; strengthening the agricultural farms/stations as resource centres to ensure the supply of quality seeds and planting and breeding materials in order to meet local needs, and provide technical backstopping.

For irrigation the key issues in the Tenth Plan are:

- To develop deep and shallow tube-wells with appropriate subsidy support in poverty-stricken areas and bring additional areas under irrigation through other irrigation schemes;
- Increase water use efficiency in irrigation systems;
- Increase the use of local manpower and inputs in the construction of medium and large irrigation systems; and
- Intensify water management activities.

Experiences of other growing economies suggest those strong linkages between agriculture, industry, and related services are crucial to the commercialisation and growth of agriculture and to the smooth transition to a diversified high-income economy. A sector-wide approach is a prerequisite for successful implementation of the plan.
HMGN, with assistance from the donor community, has also formulated the Medium Term Expenditure Framework [MTEF]. The MTEF directly links the major sector programmes and activities with the overall national goal of poverty reduction. The strategies of the MoAC for the MTEF period will be directed at achieving three core objectives:

- Increasing productivity;
- Implement need-based research; and
- Empowering small farmers, cooperatives and the private sector in agricultural business and market promotion.

MoAC will implement prioritised programmes that complement the main target of reducing poverty and ensuring food security. It aims to increase the supply of fertilizer, ensure sufficient seed supply, implement agricultural research and extension according to farmers' needs, conduct on-farm water management, crop intensification and diversification, and implement programmes on food and nutrition security. Similarly, MoAC will promote production and marketing of high-value commodities and assist enterprises that substitute imports and ensure equity participation in extension services.

## 3] ONGOING PROGRAMME THRUSTS IN AGRICULTURE AND IRRIGATION

The contribution of agriculture to livelihoods, and thus to poverty reduction, is being addressed through productivity increases and a focus on key policy issues, as articulated in the APP and the Tenth Plan. The major thrusts are summarised below.

*Increasing agricultural productivity* is being tackled by increasing the participation of farmers in the planning and implementation of interventions that include, *inter alia*, the development of appropriate technologies through needs-based research, policy, information and advisory systems; markets and market access, co-operatives, partnerships, social mobilisation, and decentralisation. Also of significance is the signing of Memoranda of Understanding to facilitate and develop collaboration between ministries and formalise their commitment to poverty reduction programming.

*Agricultural research* is being focused not only on the development of needs-based technologies, but also on encouraging networking and the development of information systems, partnerships and information relevant to pro-poor policy formulation.

*Commodity focus* is on two groups; those which provide direct food security, such as rice, wheat, maize, potato, milk and meat, and those which can indirectly improve food security through income generation such as horticultural crops, niche crops, raising of small livestock and poultry, seed production, bee keeping and fisheries.

*Infrastructure development* includes development of collection and marketing centres, agricultural and rural roads, agro-processing industries, corridor development, and seed business promotion.

*Modernising agriculture* is being approached through a range of activities, including the development of farmers' groups and cooperatives, development of public-private partnerships and contracting out of extension services, participatory monitoring and evaluation, institutional reform, and decentralisation.

**Irrigation** has made a significant contribution to agricultural productivity by increasing cropping intensity, diversification, and employment opportunities. Other important factors are, *inter alia*, fertilizer, seeds and planting materials, attitude of farmers, agricultural technology and market access.

In order to address the aims of the Tenth Plan, activities of the Department of Irrigation [DOI] are focused on the following key areas:

*Agency managed irrigation systems* [AMIS] covering 280,710 ha are being, and will be, maintained and operated annually to deliver irrigation water to users or user groups with users' participation. Several important large and medium irrigation systems, originally developed during the 1970s are in need of rehabilitation and/or replacement, and this is a targeted activity. Similarly, infrastructure whose management is to be transferred to users will first be rehabilitated and the capability of stakeholders enhanced to assume management responsibility of the revitalised systems. This will create an environment for equitable water distribution and higher irrigation water utilisation efficiency.

*Farmer-managed irrigation systems* [FMIS] work will focus on those which need external help to enhance the present level of irrigation service by constructing or improving the essential structures and by upgrading the management capability of users. Such projects need to be linked with the APP package programme in the district. This programme will be implemented through several projects[1] using a participatory approach based on user demand.

*New developments in irrigation* include *inter alia* and the development of both groundwater and surface irrigation projects, some of which will be completed in the Tenth Plan period and others which will be completed over a longer term. This programme includes the development of non-conventional systems, including water harvesting in the hills and river valleys, conjunctive management of surface and groundwater in the Terai, and drip/sprinkler irrigation in the hills. This programme is being implemented on a pilot basis since the second year of the Tenth Plan.

---

[1] The World Bank assisted **Nepal Irrigation Sector Project** completed by June 2004, the European Commission assisted **Mid-Western Irrigation Development Project**, completed by August 2004, **Community Managed Irrigation Agricultural Sector Project**, expected to start by the end of 2004 and **Praganna Irrigation Project** funded by Kuwait Fund, completed by 2005.

*Maintenance of major hydraulic structures*, which is yet to be started, will involve maintenance and rehabilitation of intakes, weirs, barrages and pumping stations located throughout the country. A central project office located in Kathmandu will manage this activity in close co-ordination with field offices.

## 4] GOVERNMENT POLICY REFORM INITIATIVES AND ACHIEVEMENTS

**During the last ten years HMGN has made several policy reforms in order to move the economy towards a more market-oriented system. These include the removal of subsidies and the de-regulation of fertilizer trade and distribution. A competitive fund, the National Agricultural Research Development Fund [NARDF], has been created which focuses on pro-poor issues and the delivery of effective development impact on the poor and excluded groups. The public sector agricultural research organisation, the Nepal Agricultural Research Council [NARC], has drawn-up and is implementing a strategic plan which focuses on the development of demand-driven technologies, cross-cutting sector-wide issues, and achieving a pro-poor impact.** Extension services have been devolved to local governments and privatisation of veterinary services and establishment of revolving funds has been initiated in partnership with farmers' groups. Within agriculture, the main reforms have affected the fertilizer and irrigation sub-sectors.

In the case of fertilizer, subsidies have been eliminated and the private sector has been allowed to participate in the distribution system which is now mainly in the hands of the private sector.

In the case of irrigation, the main reforms have included the elimination of subsidies on shallow tube wells and the continued support to irrigation user groups. Even though the impact of these reforms on the irrigation sector is not clearly observed, there are indications that over the period of the Ninth Plan, access of farmers to technology and income per capita has improved.

The Local Self-Governance Act of 1999 supports the principle of devolving power to the local bodies. The agricultural sector has made significant progress towards decentralisation by transferring the responsibility for agricultural planning, extension and animal health services at the district level.

There has also been an increased emphasis on participation and partnerships between the public and private sectors, including NGOs. This has resulted in the formulation of new partnerships between the public sector and other providers, embodied in several projects[2].

The common threads of these policies, programmes, and projects are:

- A movement toward a more market-oriented system;
- Decentralisation; and
- Participation of stakeholders in the design, monitoring, and implementation of agricultural development programmes.

## 5] KEY ISSUES AND CHALLENGES

Involvement of stakeholders in the design and implementation of development activities is key to the success of the programmes. Effective participation requires transparency, accountability and adequate incentives. Targeting of programmes to vulnerable and disadvantaged groups is often not achieved because of poor local capacity and the lack of clear methodologies.

Lessons emerging from the implementation of past **agriculture sector programmes** can be summarised as follows:

---

[2] **Agricultural Research and Extension Project** [AREP], **Third Livestock Development Project** [TLDP], **Crop Diversification Project** [CDP] and the **APP Support Project** [APP-SP].

- Inadequate investment in infrastructure and post-production value addition;
- Inadequate marketing services/information for agricultural produce;
- Uneconomical scale of commercial production;
- Competitive disadvantage due to subsidies in neighbouring countries;
- Sub-optimal utilisation of irrigation facilities [see below for further detail];
- Weak capacity to implement various laws related to land and agriculture and non-enforcement of their provisions such as new ceilings on holdings following the Fifth Amendment to the Lands Act;
- Non-optimal and unsustainable utilisation of forest and pastureland;
- Agricultural education not matched with farmers' needs, priorities and/or market demand;
- Small and fragmented land holdings with high costs of production;
- Subsistence farming with low productivity;
- Inadequate attention paid to rain-fed agriculture particularly in the hills and mountains with limited potentials for irrigation where poverty incidence is relatively higher;
- Limited targeting of disadvantaged groups;
- Weak capacity for planning and policy analysis;
- Inadequate development of quality control, quality assurance and regulatory mechanisms for seeds, fertilizer and food;
- Weak linkages among agencies responsible for agricultural production, agro- industry, and trade;
- Inadequate/weak participatory monitoring & evaluation systems; and
- Institutional set-up not capable of dealing with new challenges in commercialisation and agribusiness promotion emerging from liberalised market economy and WTO membership.

The development of irrigation is a complex socio-technical phenomenon. Achieving impact involves collective action by a number of stakeholders and includes multiple activities such as organising local communities, delivering water to users for meeting crop water requirements, timely supply of seeds, fertilizer and pesticides, support to farmers for capacity building, and market support for farm produce. Varying demand and supply of irrigation water over time and space further increases the complexity in managing irrigation systems and achieving the desired benefits.

Two key issues are sustainable management of existing irrigation systems and sustainable development of year-round irrigation.

*Sustainable management of existing irrigation systems*. This includes both the management of AMIS and modernisation of FMIS. People's participation has remained one of the key policy tools in modernising FMISs for sustainable management. Besides planning and design, participation is also required in sharing capital costs for infrastructure development. Past experience suggests that participation in sharing capital costs of infrastructure has not been satisfactory.

*Sustainable development of year-round irrigation.* Current expansion of the irrigated area has been achieved through exploitation of medium and small rivers. This was technically easy and relatively low-cost. Further expansion will require complex technology and high capital investment since development of year-round irrigation through these systems is only possible if storage reservoirs are built. Large areas remain un-irrigated while the country's water resources flow downstream unutilised. The APP emphasises development of groundwater for year-round

irrigation, especially in the Terai, although because of the removal of the subsidy on shallow tube-well development and the high operating costs, the progress has been less than satisfactory.

Irrigation development has tended to happen in areas where farmers are less poor. There is now a need, in light of the Tenth Plan, to re-focus efforts on poor and disadvantaged groups through the development of appropriate technologies which utilise non-conventional irrigation such as water harvesting and drip, sprinkler and pond irrigation systems.

## 6] FOCUS AREAS FOR INTERVENTION IN AGRICULTURE AND IRRIGATION

In the context of the Tenth Plan, APP, NWRS, and SDAN, the key focus is on pro-poor development with the aim of achieving significant impact and poverty reduction. There is a great challenge to developing user responsive and sustainable technologies and to facilitating their uptake and upscaling. The public sector must be dynamic and imaginative enough to develop and implement strategies that produce relevant technologies, effective dissemination and useful policies.

There should be a strong socio-economic and policy research programme in order to meet the national objectives of food security, poverty reduction and sustainable agricultural development. This is especially important in the changed national and global scenario where the information and technology needs of the country can be addressed through development of social science skills in information management, market intelligence, and policy research. Socio-economic and policy factors influence directly or indirectly the adoption and utilisation of agricultural technologies by clients.

There are several areas where attention needs to be specifically focused. These are outlined below. Key to implementation is consultation, participation and consideration of the implications of a sector-wide approach to problems, and integrating efforts and inputs from a range of stakeholders including the public and private sector. All these actions should, and will have, a positive, direct or indirect impact on poverty reduction.

*Agri-business promotion in support of growing agricultural commercialisation and expanded value-adding enterprises* would require development of entrepreneurship, product diversification, and intensification and specialisation in commodities having comparative advantage in the domestic and international markets.

*Stepped up and focused attention is required for developing and up-scaling location-specific technologies in support of domestic agro-based industries and export promotion*

*Strengthening post-harvest and marketing systems* is necessary if Nepal is to take advantage of the export of off-season vegetables, niche crops, fruits, and livestock products to neighbouring countries.

*Strengthening infrastructure for marketing, post-harvest handling and quality control* is required to support commercialisation of livestock and poultry production in potential pockets.

*Strengthening marketing and processing of hides and skin* is required, as this has been an important source of foreign exchange earning.

*Market-shed development for high value commodities [HVC]* is key to achieving a major APP goal by exploiting the relationship between hill and Terai agriculture. The Tenth Plan has also given high priority to the commercial development of HVC along the north-south road corridor. There is huge potential to increase agricultural growth and reduce poverty in this area.

*Institutional capacity needs to be considerably enhanced* for designing and implementing targeted programmes in close partnership with, specifically, poor and vulnerable sections of the population. Innovative programmes, such as “passing on gift” of small animals and poultry birds, revolving fund for utilisation by various farmer groups, leasehold forestry, fish production in small water bodies and marginal swamps, bee keeping, and skill development, have produced

encouraging results and the range of such programmes need to be further expanded and up-scaled in order to directly benefit larger proportions of the targeted communities.

*Promotion of goat, pig and poultry raising programmes* will benefit the livelihoods of *Dalits,* former bonded labourers (*kamaiya*), and poor and landless farmers.

*Domestic production of carpet wool* needs to be increased to address issues raised under the WTO for carpet production.

*Integrated pest management* schemes have been successful. In order to increase the impact and scale, the expansion of Farmers' Field Schools is necessary to cover major cereals, vegetables and fruits.

**The main focus of agricultural development is on *commercialisation.* Unlike the supply driven approach followed in the past, emphasis is being increasingly shifted toward a demand driven one. This presents the new context in which to envisage future project ideas. Moreover, in the context of WTO, institutional development will be required to enhance commercial agriculture, which is mainly focused on prioritised commodities such as citrus, vegetable seed, ginger, tea and large cardamom. To support ongoing attempts in this direction, further institutional development of public sector bodies and the development of partnerships with other agencies is extremely important.**

*MoAC* requires *strengthening and enhancing its capacity* so that it is able to comply with its commitments and obligations associated with WTO membership as well as to smooth regional and bilateral trade with its neighbours. Some of the time-bound commitments include the review of existing sanitary and phyto-sanitary measures and regulations, development of amendments to ensure regulations are based on risk assessments and scientific evidence, upgrading of human resources with special emphasis on quarantine management and harmonisation with international standards, quality control, quality assurance and regulation mechanisms (with special emphasis on certification, inspection, testing and accreditation), and guidelines and recommendations. MoAC also needs support in enhancing its capacity to more effectively respond to the above challenges as well as to carry out sound policy analysis.

***Conservation of plant genetic resources* for food and agriculture plays a vital role in the Nepalese economy and food security. Genetic resources of plants and animals are available to resource-poor farmers and contribute to sustainable production and improved livelihoods. In this context, conservation and utilisation of agro-biodiversity, including traditional crop varieties and breeds, is both a national and global concern. It is the foundation upon which animal and plant breeding depends for the creation of new breeds and varieties and is therefore a critical aspect of food security. This would require establishment of a gene bank and documentation of indigenous knowledge and practices scattered in different geographic locations.**

***While there is a need to formulate new laws and amend the existing ones consistent with the country's commitments to the WTO and regional and bilateral trade agreements, experience has demonstrated that it is equally important to ensure that laws and regulations related to land and agriculture are effectively implemented.* This area has hitherto received low priority and needs to be corrected by giving greater priority and enhancing institutional capacity.**

*On-farm water management* needs to be extended throughout Nepal. This will require collaboration between the Department of Agriculture and Department of Irrigation, as well as with farmers' groups and other stakeholders. This will benefit small and marginal farmers and improve nutritional status and strengthen food security.

*Regular operation and maintenance of existing irrigation systems* is vital for proper utilisation of the investment done in this sector. FMIS are managed by the farmers themselves whilst management of AMIS is the responsibility of the Government. Every year a significant amount of money is needed to run these systems at design level. The Government, with the help of water users, is able to operate the systems.

*Rehabilitation and modernisation of existing FMIS and AMIS* which are scattered throughout the country. Most of the AMIS developed during the 1970s are to be modernised to cope with the present level of farmers' demand.

*Expansion of year-round irrigation to cover the remaining irrigable area* will require high levels of intervention. The run-of-river types of systems developed so far are unable to provide year-round irrigation in the command area. There is a need to develop storage, inter-basin transfer, irrigation from large rivers, and ground water systems, including deep and shallow tube-wells, as envisioned by the APP. The agriculture and livestock extension services need reorientation in order to cope with the changing needs of the market led change processes. Likewise, agricultural resource centres need to be established and strengthened for the provision of quality resource materials, training, laboratory services and surveillance so these can effectively support the local bodies in an integrated manner.

## 7] Conclusion

In order to attain increased, sustainable and broad-based economic growth and poverty reduction, programmes in agriculture, irrigation and forestry need to be developed and implemented in a holistic manner taking into account HMGN policy expressed in the Tenth Plan and other supporting documents.

It is recognised that in order to achieve this it may be necessary to implement institutional changes and a paradigm shift which focuses on a cross-sectoral, pro-poor, participatory and demand-driven approach.

Poverty still remains the major challenge. Whilst programmes and activities should focus on poverty reduction, it is important that these contribute significantly to building a tolerant and inclusive society where everyone is treated equally and with unhindered and easy access to all socio-economic opportunities, without discrimination.