

**Feb
2013**

**TA 7762-NEP Preparation of the
Agricultural Development Strategy (ADS)**

Policy Options Report

Prepared for

Government of Nepal

With the support of

**ADB, IFAD, EU, FAO, SDC, JICA,
USAID, DANIDA, WFP, World Bank,
DfID, AusAID, and UN Women**

PREFACE

This document¹ is the *Policy Options Report* for the Asian Development Bank’s Technical Assistance (TA) No. 7762-NEP on *Preparation of the Agricultural Development Strategy*.

The *Policy Options Report* draws upon the consultations and analytical work conducted by the TA Team of consultants under the guidance of the Ministry of Agricultural Development. The report takes into account the consultations held with numerous stakeholders at the central, regional, and community level and the feedback received after the submission of an earlier draft of this report in October 2012.

The views presented in the report are the responsibility of the TA Team and do not necessarily reflect the view of the Government of Nepal, Asian Development Bank, IFAD, and other supporting agencies.

Francesco Goletti
TA 7762-NEP Team Leader and Policy and Institutional Specialist
Agrifood Consulting International, Inc. (ACI)

Kathmandu, 7 February 2013

¹ To be referred to as “ADB 7762-NEP (2013) Policy Options Report. Technical Assistance for the Preparation of the Agricultural Development Strategy, Asian Development Bank, February 2013.”

CONTRIBUTORS TO THE POLICY OPTIONS REPORT

1. Francesco Goletti, Team Leader and Policy and Institutional Specialist
2. Purushottam Mainali, Deputy Team Leader and Policy and Institutional Specialist
3. Chris Landon-Lane, Agriculture Economist
4. John Mellor, Eminent Person
5. Jon Cook, Irrigated Agriculture and Water Resources Specialist
6. Keith Chapman, Agriculture and Agribusiness Specialist
7. Jitzchak Alster, Legislation and Regulation Specialist
8. Surya Poudel, Senior Livestock Development Officer, MOAD
9. Sabnam Shivakoti, Senior Agriculture Officer, MOAD
10. Yamuna Ghale, Research and Extension Specialist
11. Posh Raj Pandey, Trade Specialist
12. Dala Ram Pradhan, Livestock Specialist
13. Deep Swar, Fishery Specialist
14. Nav Raj Baral, Forestry Specialist
15. Ratna Dhwoj Shahi, Horticulture Specialist
16. Neeranjan Rajbhandari, Field Crops Specialist
17. Narendra Raj Khanal, Environment, Climate Change and Natural Resources Management Specialist
18. Indra Lal Kalu, Irrigation Specialist
19. Jagadish Chandra Gautam, Agri Economist
20. Deepak Lochan Adhikari, Micro Irrigation Specialist
21. Dina Mani Pokharel, Legislation and Regulation Specialist in Food Safety and Quality
22. Matrika Prasad Maraseni, Legislation and Regulation Specialist in Commerce and Trade
23. Prakash Mani Sharma, Legislation and Regulation Specialist in Natural Resources
24. Purna Man Shakya, Legislation and Regulation Specialist in Public Enterprise Reform
25. Govind Das Shrestha, Legislation and Regulation Specialist in Governance Institution and Planning
26. Madan Kumar Dahal, Tax Specialist
27. Anil Raj Bhattarai, Agriculture Insurance Specialist
28. Shuva Kantha Sharma, Rural Infrastructure Specialist
29. Neeraj Joshi, Social Development Specialist
30. Ian Hancock, Agricultural Value Chain and Marketing Specialist
31. Poshan KC, Agricultural Value Chain Specialist

TABLE OF CONTENTS

SUMMARY	1
1 INTRODUCTION	2728
1.1 The Policy Options Report.....	2829
1.2 Objective of the Policy Options Report	2829
1.3 Methodology	2930
1.4 The Process of Agricultural Transformation	2930
1.5 Implications of the Lessons from Agricultural Transformation	3435
1.6 Agricultural Sector Broader than Agriculture	3435
Preliminary Strategic Framework	3435
1.7	3435
Decentralization and Agroecological Diversity	3536
1.8	3536
1.9 Institutional Innovations in the ADS.....	3839
1.10 Organization of the Report.....	4041
2 GOVERNANCE	4142
2.1 Credibility of Policy Commitment.....	4344
2.2 Coordination	4546
2.3 Integrated Planning.....	4648
2.4 Implementation Support to the ADS	4849
2.5 Mechanisms for Social, Gender, and Geographic Inclusion	4950
2.6 Monitoring and Evaluation	5051
2.7 Participation and Accountability	5152
2.8 Human Resources Development and Capacity Building of Institutions.....	5354
3 PRODUCTIVITY	5556
3.1 Introduction	5556
3.2 Extension	5758
3.3 Research	6061
3.4 Education	6263
3.5 Land	6364
3.6 Irrigation	6869
3.6.1 Expand irrigation by most feasible means	7071
3.6.2 Increase irrigable area on existing schemes:	7273
3.6.3 Increase irrigation intensity	7374
3.6.4 Irrigation system and on-farm water management	7475
3.6.5 Irrigation management transfer	7576
3.6.6 Funding of Operation and Maintenance.....	7677
3.6.7 Water resources management	77
3.6.8 Capacity Building of Women Farmers in Irrigated Agriculture and Water Resource Management.	7778
3.7 Agricultural Inputs	7778
3.8 Seeds	7980
3.9 Fertilizer.....	8182
3.10 Animal Breeds.....	8384
3.11 Mechanization	8485
3.12 Farmers’ Resilience	8788
3.13 Green Farming and Renewable Energies	8889
3.14 Sustainable and Productive Forestry Sector	8990
4 COMMERCIALIZATION	9395
4.1 Investment Climate for Agricultural Commercialization	9496
4.2 Contractual Arrangements for Commercial Agriculture	9597

4.3	Tax Policy for Commercialization	9798
4.4	Agricultural Finance	98100
4.5	Value Chain Development Program	101103
4.6	Agricultural Roads.....	104106
4.7	Market Information and Market Intelligence Systems	105107
4.8	Rural Electrification.....	106107
5	COMPETITIVENESS.....	108110
5.1	Market Infrastructure for Agricultural Competitiveness.....	109111
5.2	Innovation	111113
5.3	Agricultural Export Promotion	113115
5.4	Quality and Safety of Agricultural and Food Products	116118
6	SUBSECTOR IMPLICATIONS OF THE POLICY OPTIONS	120122
6.1	Introduction	120122
6.2	Food Crops Subsector in the ADS Policy Options.....	120122
6.2.1	Objectives	120122
6.2.2	Approach.....	120122
6.3	High Value Crops Subsector in the ADS Policy Options.....	123125
6.3.1	Objectives	123125
6.3.2	Approach.....	123125
6.4	Livestock and Dairy Subsector in the ADS Policy Options	126128
6.4.1	Objectives	126128
6.4.2	Approach.....	126128
6.5	Fisheries Subsector in the ADS Policy Options.....	130132
6.5.1	Objectives	130132
6.5.2	Approach.....	130132
6.6	Agribusiness in the ADS Policy Options	132134
6.6.1	Objectives	132134
6.6.2	Approach.....	132134
7	NEXT STEPS	135137
7.1	Current status of the ADS TA.....	135137
7.2	The Food and Nutrition Security Plan of Action.....	135137
7.3	Additional Consultations.....	135137
7.4	Completion of the ADS.....	136138
8	REFERENCES	137139
APPENDIX 1.	PROBLEM TREE	141143

LIST OF TABLES

Table 1 Strategic Components of the ADS and Recommendations.....	36
Table 2 Targets for the Strategic Components of the ADS	38
Table 3 Recommendations to Improve Governance	42
Table 4 Recommendations to Improve Agricultural Productivity	55
Table 5 Objectives and Options for Irrigation Sector.....	68
Table 6 Recommended Options for Irrigation Sector	69
Table 7 Advantages and drawbacks of IBT compared to high dams	74
Table 8 Recommendations to Improve Agricultural Commercialization.....	9394
Table 9 Recommendations to Improve Agricultural Competitiveness	108109

LIST OF FIGURES

Figure 1 Analytics of the Process of Agricultural Transformation	30
Figure 2 Key Ideas of the Agricultural Development Strategy.....	35
Figure 3 Elements of a Successful Strategy.....	44

LIST OF BOXES

Box 1 ADS and Farmer Organizations	53
Box 2 Community Agricultural Extension Service Centers (CAESC).....	58
Box 3 Features of the proposed Restructuring of NARC.....	61
Box 4 Youth Agro-Entrepreneurship Program (YAEP).....	112

ABBREVIATIONS

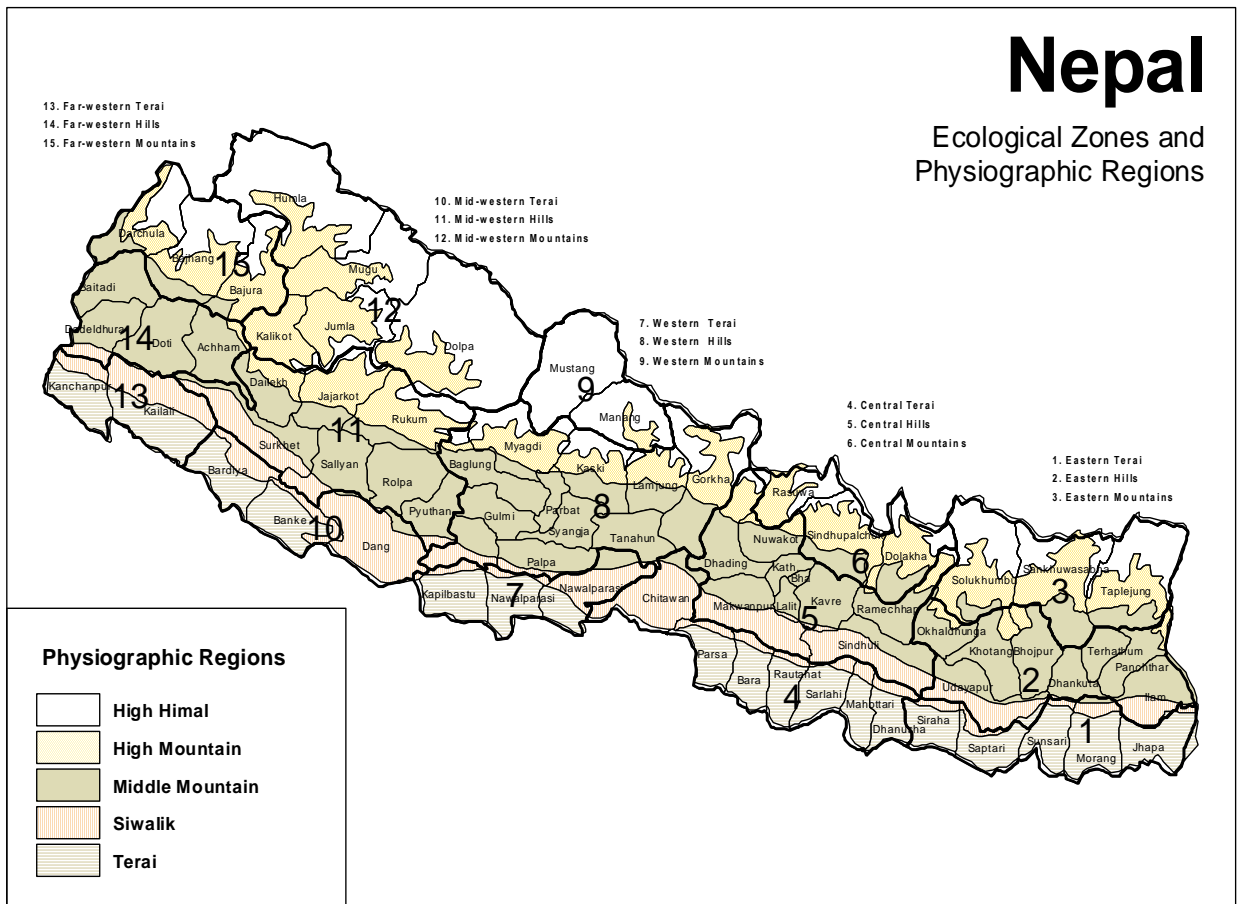
ACI	Agrifood Consulting International
ADB	Asian Development Bank
ADBL	Agriculture Development Bank Limited
ADBN	Agriculture Development Bank Nepal
ADS	Agriculture Development Strategy
AEPC	Alternative Energy Promotion Centre
AGDP	Agricultural Gross Domestic Product
AIC	Agricultural Inputs Corporation
AICL	Agricultural Inputs Company Limited
AMIS	Agency managed irrigation system
AoA	Agreement on Agriculture
APP	Agriculture Perspective Plan
APP-IAP	APP Implementation Action Plan
APP-ISR	APP Implementation Status Review
APMAU	APP Monitoring and Analytical Unit
APPSP	Agriculture Perspective Plan Support Programme
AR	Agricultural Roads
ARs	Agricultural Research Stations
ASCs	Agriculture Service Centers
ASPR	Agriculture Sector Performance Review
BA	Bangkok Agreement
BIMST-EC	Bengal Initiative for Multi-sectoral Technical and Economic Co-operation
BISEP-ST	Biodiversity Sector Support Programme – Siwalik Terai
BMI	Body Mass Index
BSP	Biogas Support Programme
CADIC	Central Agriculture Development Implementation Committee
CBOM	Community Based Operation and Maintenance Program
CBOs	Community Based Organizations
CBRE	Community Based Rural Electrification Program
CBS	Central Bureau of Statistics
CDO	Chief District Officers
CDR	Central Development Regions
CF	Community Forestry
CGISP	Community Groundwater Irrigation Sector Project
CGS	Competitive Grant System
CIB	Credit Information Bureau
CIP	Community Irrigation Project
CLDP	Community Livestock Development Project
CMIASP	Community-Managed Irrigated Agriculture Sector Project (ADB)
CPI	Consumer Price Index
DADC	District Agricultural Development Committee
DADOs	District Agriculture Development Office/Officer
DANIDA	Danish International Development Agency
DDC	District Development Committee
DDCN	Dairy Development Corporation Nepal
DFCC	District Forest co-ordination Committee
DFID UK	Department for International Development
DFO	District Forest Officer
DHM	Department of Hydrology and Meteorology
DLS	Department of Livestock Services
DLSO	District Livestock Office

DOA	Department of Agriculture
DOF	Department of Forests
DOI	Department of Irrigation
DOLIDAR	Department of Local Infrastructure Development and Agricultural Roads
DOLS	Department of Livestock Services
DRR	Disaster Risk Reduction
DRR	Disaster Risk Reduction
DRRM	Disaster Risk Reduction and Management
DRT	Debt Recovery Tribunal
DSCW	Department of Soil and Water Conservation
DSL	Deprived sector lending
DTO	District Technical Office
DTWs	Deep Tube Wells
DWIDP	Department of Water Induced Disaster Prevention (of MOI)
DWRDC	District Water Resources Development Committee
EA	Executing Agency
EDR	Eastern Development Regions
EIA	Environmental Impact Assessment
ESAP	Energy Sector Assistance Programme
EU	European Union
FAO	Food and Agriculture Organization
FCO	Fertiliser Control Order, 1999
FECOFUN	Federation of Community Forestry User Groups Nepal's
FFE	Food for Education
FFW	Food for Work
FG	Farmer's Group
FIs	Fertilizer Inspectors
FMIS	farmer managed irrigation system
FNCCI	Federation of Nepalese Chambers of Commerce and Industries
FSN	Food Security and Nutrition
FTA	Free Trade Area
FU	Fertilizer Unit
FWDR	Far Western Development Regions
FY	Fiscal Year
GAP	Government Action Plan
GATT	General Agreements on Tariffs and Trade
GBB	Grameen Bikas Bank
GDP	Gross domestic product
GEED	Gender Equity and Environment Division
GI	Geographical Identification
GO	Government Organizations
GON	Government of Nepal
GIZ	Gesellschaft für Internationale Zusammenarbeit, GmbH
GVP	Good veterinary practices
ha	hectare
HARP	Hill Agriculture Research Project
HIMALI	High Mountain Agribusiness and Livelihood Improvement Project
HIV/AIDS	Human Immunodeficiency Virus/Acquired Immune Deficiency Syndrome
HLTF	High Level Task Force
HMGN	His Majesty Government of Nepal
HRD	Human resources development
HRM	Human resources management
HRP	Hill Research Programme

HVCA	Hazard, Vulnerability and Capacity Assessment
HVCs	High Value Commodities
IAPP	Interim Agriculture Perspective Plan
IAU	Independent Analytical Unit
IBT	inter-basin transfer
ICIMOD	International Centre for Integrated Mountain Development
ICT	Information and communication technology
IDA	Iron Deficiency Anemia
IDD	Iodine Deficiency Disorder
IDD/IDSD	Irrigation Development Division/Irrigation Development Subdivision
IEE	Initial Environmental Examination
IFAD	International Fund for Agriculture Development
IMD	Irrigation Management Division of DOI
IMT	irrigation management transfer
INGO	International Non Government Organizations
IP	Irrigation Policy
IPC	Integrated Food Security Phase Classification
IPM	Integrated Pest Management
IPNMS	Integrated Plant Nutrient Management Systems
IPP	Independent Power Producers
ISF	irrigation service fee
IWRM	integrated water resources management
IWRMP	Irrigation and Water Resources Management Project (World Bank)
JICA	Japan International Cooperation Agency
JT/A	junior (agricultural) technician/assistant (of DOA)
km	kilometer
LF	Leasehold Forestry
LFP	Livelihoods and Forestry Programme
LSC	Livestock Service Centre
LSGA	Local Self Governance Act
M&E	Monitoring and Evaluation
MDG(s)	Millennium Development Goal(s)
MFDB	Microfinance development bank
MFI	Microfinance institution
MFN	Most Favored Nation
MFSC	Ministry of Forest and Soil Conservation
MGSP	Mini-Grid Support Programme
MOAC	Ministry of Agriculture and Cooperatives
MOAD	Ministry of Agricultural Development
MOE	Ministry of Environment
MOEN	Ministry of Energy
MOF	Ministry of Finance
MOH	Ministry of Health
MOI	Ministry of Irrigation
MOLD	Ministry of Local Development
MoST	Ministry of Science and Technology
MoU	Memorandum of Understanding
MoWR	Ministry of Water Resources
MRL	maximum residue limit
MGSP	Mini-Grid Support Programme
mt	Metric ton
MTEF	Medium Term Expenditure Framework
MWDR	Mid Western Development Region

NADC	National Agriculture Development Committee
NAP	National Agricultural Policy
NAPA	National Adaptation Programme of Action to Climate Change
NARC	Nepal Agriculture Research Council
NARDF	National Agriculture Research and Development Fund
NASDP	National Agriculture Sector Development Priority
NBL	Nepal Bank Limited
NBS	National Bio-Diversity Strategies
NBTI	National Banking Training Institute
NCI	Non-conventional irrigation
NDAC	National Development Action Committee
NEA	Nepal Electricity Authority
NEPAP	Nepal Environmental Protection Action Plan
NFIWUAN	National Federation of Irrigation Water Users Association of Nepal
NFP	National Fertilizer Policy 2002
NGO	Non-Governmental Organization
NITP	New Irrigation Technology Projects
NLSS	National Living Standard Survey
NPC	National Planning Commission
NPL	Non-performing loan
NRB	Nepal Rastra Bank (central bank)
NRM	Nepal Resident Mission of ADB
NRREP	National Rural and Renewable Energy Program
NSC	National Support Committee
NSC	National Seed Company Private Limited
NTP	Non-tariff barriers to trade
NTFPs	Non Timber Forest Products
NWP	National Water Plan
NWRS	National Water Resources Strategy
O&M	Operation and Maintenance
OFMP	Operational Forest Management Plan
OFWM	on-farm water management
OVOP	One Village One Product
PACT	Project for Agriculture Commercialization and Trade
PF	Private Forests
PIM	participatory irrigation management
PPP	Public Private Partnership
PPP	Prioritized Productivity Package
PPS	Pocket Package Strategy
PRA	Participatory Risk Assessments
PRSP	Poverty Reduction Strategy Paper
PTA	Preferential Trade Agreement
RADC	Regional Agriculture Development Committee
RAP	Rural Access Programme
RARS	Regional Agricultural Research Station
RBB	Rastriya Banijya Bank
RCA	Root-cause analysis
RE	Renewable Energy
REDD	Reducing Emissions from Deforestation and Forest Degradation
REDP	Rural Energy Development Programme
RFSDCP	Rural Finance Sector Development Cluster Program (Subprogram 2)
RFTG	Rural Finance Thematic Group
RID	Regional Irrigation Directorate

RIO	Regional Irrigation Office
RIP	Rural Infrastructure Development Policy
RISMP	Raising Incomes of Small and Medium Farmers Project
RMDC	Rural Microfinance Development Centre
RO	Rural Organization
Rs	Nepali Rupee
RSRF	Rural Self Reliance Fund
RTAs	Regional Trading Agreements
SAFTA	South Asian Free Trade Area
SAPL	Second Agriculture Programme Loan
SAPTA	South Asian Preferential Trading Arrangement
SC	Service Centers
SCC	Savings and credit cooperative
SDC	Swiss Agency for Development and Cooperation
SFCL	Small Farmers Cooperative Limited
SFDB	Small Farmers Development Bank (Sana Kisan Bikas Bank in Nepali)
SME	Small and medium enterprise
SOP	Standard Operations Procedures
SPS	Sanitary and Phyto-Sanitary Measures
SRI	System of Rice Intensification
SSC	Service Sub Centers
SSN	Social Safety Nets
STWs	Shallow Tube Wells
TA	Technical assistance
TLDP	Third Livestock Development Project
TRIPs	Trade Related Intellectual Property rights
TU	Tribhuvan University
TWT	Technical Working Team
UNCDF	United Nations Capital Development Fund
UNDP	United Nations Development Program
UN	United Nations Entity for Gender Equality and the Empowerment of Women
Women	
USAID	United States Agency for International Development
VAD	Vitamin A Deficiency
VAM	Vulnerability Assessment Map
VARG	Vulnerability and Adaptation Resource Group
VAT	Value Added Tax
VCA	Value Chain Analysis
VDC	Village Development Committee
WB	World Bank
WDO	Women Development Office
WDR	Western Development Regions
WFP	World Food Programme
WTO	World Trade Organization
WUAs	Water User Associations
WUG	water users' group



SUMMARY

1. The *Policy Options Report* for the Technical Assistance (TA) 7762-NEP on *Preparation of the Agricultural Development Strategy* (henceforth, the TA will be referred as simply “ADS”) is the fourth deliverable of the TA funded by Government of Nepal (GON) with support by Asian Development Bank (ADB), International Fund for Agricultural Development (IFAD), European Union (EU), Food and Agriculture Organization (FAO), Swiss Agency for Development and Cooperation (SDC), Japan International Cooperation Agency (JICA), Denmark Agency for International Development (DANIDA), World Food Program (WFP), United States Agency for International Development (USAID), Department for International Development (DfID), the World Bank, the Australia Agency for International Development (AusAID), and the United Nations Entity for Gender Equality and the Empowerment of Women (UN Women). Previous deliverables included the *Inception Report*, the *Assessment Report*, and the *Vision Report*.

2. The main objective of the Policy Options Report is to present the recommendations of the TA Team, to accelerate the process of agricultural transformation of Nepal from the current situation of low agricultural development to the desired situation envisaged in the ADS vision². The ADS vision statement is **“A self-reliant, sustainable, competitive, and inclusive agricultural sector that drives economic growth, and contributes to improved livelihoods, and food and nutrition security.”**

3. The recommendations of the *Policy Options Report* are based on the analysis of alternative options to overcome the constraints identified during the assessment phase of the ADS. The process of options identification and analysis conducted by the ADS TA Team has been based on numerous consultations at the central and local level, including 5 regional workshops conducted by the Farmers’ Coalition.

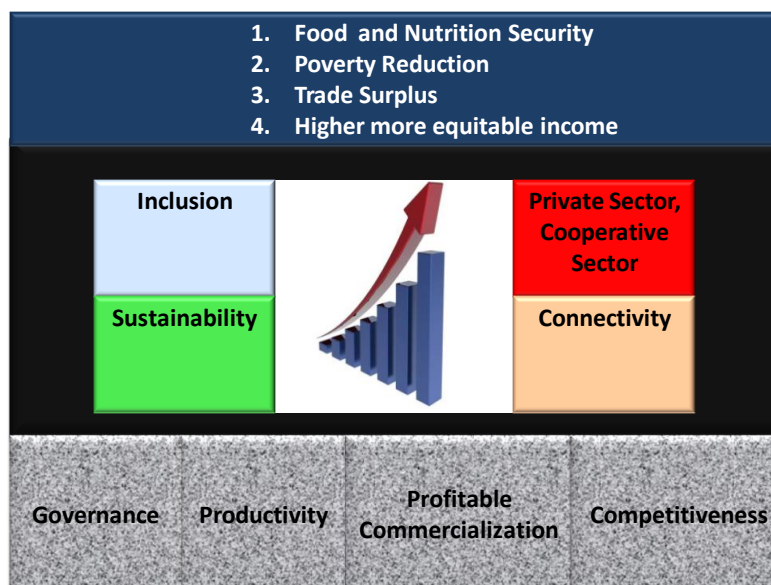
4. This strategy is formulated taking into account the conceptual framework of **agricultural transformation**³ of Nepal from a society primarily based on agricultural employment to one that derives most of its income and employment from services and industry. This process has profound implications for the ways the Nepali population will shape their food production and distribution systems, the development of rural areas including the rural non-farm sector, labor and land productivity, trade balance, employment and outmigration of the youth, the role of women in agriculture, and management of natural resources in the context of low level of agricultural development and increasingly more severe climate change events. The ADS will ensure that the process of agricultural transformation is accelerated and molded according to the aspirations, prospects, and minimize the constraints of Nepali society.

5. In order to achieve the vision, the ADS will accelerate agricultural sector growth through four strategic components/interventions including improved governance, productivity, commercialization, and competitiveness while promoting inclusiveness (both social and geographic), sustainability (both natural resources and economic), development of private sector and cooperative sector, and connectivity to market infrastructure (eg agricultural roads, collection centers, packing houses, market centers), information and communication infrastructure, and power infrastructure (eg rural electrification, renewable and alternative energy sources). The acceleration of inclusive, sustainable, multi-sector, and connectivity-based

² The vision statement formulation is documented in the ADS Vision Report.

³ The process has been described in the ADS Vision Report sections 2.2 and 2.3.

growth is expected to result in increased food and nutrition security, poverty reduction, agricultural trade surplus and higher and more equitable income of rural households. The following figure provides an illustration of the key ideas/approaches of the ADS.



6. It is worth emphasizing that the ADS looks at the agricultural sector in its complexity, and encompasses not only the production sectors (crops, livestock, fisheries, forestry) but also the processing sector, trade and other services (storage, transportation and logistics, finance, marketing, research, extension). Over the course of the ADS period, the structure of the agricultural sector is expected to change considerably and the agribusiness sector to grow relatively to the agriculture sector. The linkages between agriculture and other sectors in the economy will be critical to the reduction of poverty particularly in rural areas where the development of non-farm activities based on agriculture will be fundamental for the growth of an overall robust economy, a more balanced rural economy, and employment generation.

GOVERNANCE

7. Governance in the ADS is defined as “the capacity of government to design, formulate and implement policies and discharge functions.” In the absence of such capacity it will be difficult to design, formulate, and implement strategies such as the ADS. Some key elements of governance include:

- (a) *Accountability.* Public officials should be answerable for government behavior and responsive to the entity from which they derive authority. The accountability of public sector institutions is facilitated by evaluation of their performance in delivering services and social, environmental and economic results and in adherence with rules governing their timely execution.
- (b) *Participation.* Government structures should be flexible enough to offer beneficiaries and others affected the opportunity to improve the design and implementation of public programs and projects. The specific areas of action would be in the development of participatory development processes through, for example, participation of beneficiaries, a

public/private-sector interface, decentralization/ empowerment of local government and cooperation with non-governmental organizations (NGOs) and farmers' organizations.

(c) *Predictability*. Laws and policies should exist that regulate society and that are applied fairly and consistently. Predictability requires the state and its subsidiary agencies to be bound by and answerable to the legal system in the same way as private enterprises and individuals. The specific area of action could be the development of predictable and detailed legal frameworks for land reform and development of the cooperative and private sectors.

(a) *Transparency*. Information should be made available to the general public and there should be clarity as to policies, rules and regulations. Access to timely information on the economy can be vital to economic decision-making by the public, cooperative and private sector and can also serve to ensure better performance and reduce/prevent corruption. Trust between actors in an agricultural value chain is essential for mutually profitable trade and commerce.

8. The recommendations aimed at improving governance relate to the following issues: (i) policy credibility; (ii) coordination; (iii) planning; (iv) implementation support; (v) gender equality and social and geographic inclusion; (vi) monitoring and evaluation; and (vii) participation and accountability.

9. **Policy Credibility**. Enhanced consistency of policy and greater continuity in the program leadership and implementation will be facilitated by three factors:

- The ADS provides a coherent policy framework for agricultural policy
- The ADS will be approved with broad consensus of political actors so that it is truly owned by the Government of Nepal (GON) and resilient to political changes
- The realization that (i) ADS implementation will require commitment of resources by different stakeholders (government, private sector, cooperatives, communities, development partners); (ii) these resources are considerably higher than what has been invested in the past; (iii) these resources will not be invested in the agricultural sector unless there is a conducive policy environment and an investment climate supportive to private investment; (iv) the ADS framework provides a consistent approach towards the creation of a conducive policy environment and a supporting investment climate for the agricultural sector.

10. Consistency and continuity does not imply rigidity and inflexibility. Changes in the ADS are possible and will be required over time. The continuous assessment of performance and context will enrich the ADS and ensure its ongoing improvement.

11. Measures to assure consistency and credibility:

- Awareness campaigns (at preparation stage, approval stage, and implementation stage)
- Dissemination of information (progress reports and monitoring reports)
- Monitor policy implementation performance outcomes annually, and alert implementation stakeholders if any lack of consistency and continuity arises during ADS policy implementation.
- Independent review, evaluation, and updating (if necessary) of ADS every 5 years.

12. **Coordination**. Strengthening the capacity of existing coordination institutions and establishing new mechanisms within the existing ones will address the coordination with cooperatives, private sector, NGOs, civil society, and development partners. Specifically, this will

include measures to strengthen the capacity of National Support Committee (NSC) chaired by Vice Chairman NPC, the Central Agriculture Development Implementation Committee (CADIC) chaired by Secretary Ministry of Agriculture Development (MOAD), and the Regional Agricultural Development Committees (RADC), the District Agricultural Development Committees (DADC). The ADS will also ensure a representative of the National Federation of Cooperatives and a representative of the Farmers' Coalition are members of NSC, CADIC, RADC and a member of the District Agricultural Union of Cooperatives and a member of the District representative of the Farmers' Coalition are members of the DADC. Establish sub committees under NSC for coordinating irrigation and agricultural extension, NGO/INGOs coordination, private sector and cooperative coordination, and research-extension-education coordination. Provide legal status to the sub-committee and resources to develop capacity for effective coordination. Explore feasibility of national programs and sector wide approach (SWAP) in agriculture to enhance coordination, improve planning, mobilize resources for the sector, and conduct effective results-oriented monitoring. Establish mechanism to ensure that different ministerial development plans impacting the agricultural sector are designed, budgeted, implemented and monitored in a coordinated manner.

13. **Planning.** Assign to NPC the responsibility to oversee the implementation of ADS multi-sector plans and policies, including the assurance that policies and plans are adequately budgeted. This will include the following measures:

14. *Integration of multi-ministry plans.* The role of integrating sectoral plans that impact more than one ministry should be conferred upon the National Planning Commission (NPC). To do so amend the National Planning Commission Formation and Operation Order, 2067 (2010) by stipulating that:

- i. The NPC has the primary responsibility to coordinate and integrate sector plans and budgets of one Ministry that have an impact on or are impacted by the programs of another sector.
- ii. The NPC shall present a report to the Parliament, together with the budget proposal of the Government on the manner in which sectoral plans that impact more than one Ministry are synchronized and impacted in the workplans and budget requests of the Ministries.

15. *Implementation of long-term strategies policies and plans in annual workplans and budgets.* The role of ensuring that long-term strategic policies and plans are translated into actual workplans of all relevant and/or involved Ministries should rest with NPC – to that end amend National Planning Commission Formation and Operation Order, 2067 (2010) to the effect that NPC is assigned with responsibility also for:

- i. The verification that 5-year plans are compatible with national and regional long-term strategies policies and plans;
- ii. The verification that annual plans and budget allocation are compatible with the 5 year plans; and,
- iii. The obligation to notify Government and Parliament of any deviation thereof.

16. *Implementation Monitoring.* To ensure that plans in the agricultural sector are monitored for implementation - make effective use of existing policy level coordination forums of the Ministerial Development Action Committee (MDAC) chaired by the Minister of MOAD for projects that are primarily implemented by the MOAD and the National Development Action Committee (NDAC) chaired by the PM – by:

- i. Convening the MADC and NDAC as per regulations (every 2 and 4 months respectively at least);
- ii. Establish by Government Order under the Good Governance (Management and Operation) Regulations, 2009 that MDAC and NDAC annually report on the implementation of plans to the Government.

17. **Implementation Support.** Establish an ADS t Technical Support Unit under NPC in close collaboration with MOAD to facilitate the coordination and implementation of the ADS through: (i) capacity building in policy analysis, policy harmonization, and regulatory framework; (ii) monitoring the ADS implementation status and helping to adjust the strategy as per the developmental stage of the sector; (iii) reviewing and evaluating the concept of sector wide approach (SWAP) for the Agricultural Sector to enhance better coordination and increased flow of investment in the sector; (iv) developing and institutionalizing a performance-based management system; and (v) assisting various coordinating mechanisms (e.g. NSC, CADIC, RADC, DADC) with analytical information and advisory services.

18. **Gender Equality and Social and Geographic Inclusion.** Establish a comprehensive set of mechanisms at the policy, planning, and implementation levels to assure gender equality and social inclusion (GESI) and geographic inclusion in the ADS. The specific measures will include:

- i. Strengthening of the Gender Equity and Environmental Division (GEED) under the Ministry of Agriculture and Development (MOAD) for formulating and implementing agriculture policies, plans and programs from GESI and geographical inclusion perspectives;
- ii. Generation and maintenance of national level GESI-based and geographic inclusion-based statistics at MOAD/GEED within the monitoring and evaluation system as 'built-in mechanism' and providing feeding-back for formulating plans and policies;
- iii. Establishment of GESI staff with clearly defined responsibilities at district level agencies for effective planning including budgeting, implementation and monitoring and evaluation/auditing of agricultural programs from GESI perspective;
- iv. Enhancement of qualitative and quantitative aspects of participation of men and women farmers from all gender and social groups in agricultural development programs implemented by district, sub-district and community level entities;
- v. Making the agricultural extension service GESI responsive in all districts;
- vi. Improvement in access for farmers (from all gender and socio-economic groups in all geographical regions) to means of agriculture production (land, credit, inputs such as seeds, breeds, feed and fodder, medicine, fertilizer, improved technology, irrigation, and market);
- vii. Promotion of GESI responsiveness in the agricultural research and technology development process in all geographical regions.
- viii. Develop a GESI strategy as part of the ADS.

19. **Monitoring and Evaluation.** Support various government units with capacity building and resources in order for them to carry out periodic monitoring and evaluation on a timely and professional manner. In particular, support should be given to the following monitoring activities:

- i. Status and performance of major agricultural programs implemented by GON, private sectors, NGOs, Academia, financial institutions, public boards, public corporations and Councils;
 - ii. Status of implementation of major policies and plans;
 - iii. Performance of implementation units and agencies;
 - iv. Food and Nutrition Security, based on the development and institutionalization of the NeKSAP system already existing at MOAD as a project funded by WFP.
20. The recommendation would entail upgrading the Policy Section currently under the Planning Division of MOAD into a *Policy Analysis Division*. Capacity of such a Policy Analysis Division of MOAD should be strengthened to ensure that it professionally carries out its functions.
21. **Participation and Accountability.** Ensure that civil society, farmer organizations, private sector, and women and disadvantage group representatives are engaged in the ADS and provide comments and recommendations throughout the process of planning, implementation, and monitoring of the ADS.
22. In planning – during the process of formulation of ADS there have been and there will be:
- i. Central level and regional consultations
 - ii. Field level consultations
 - iii. Road shows⁴
 - iv. Public comments
23. In implementation:
- i. The various committees that oversee implementation of the ADS will include representatives of civil society
 - ii. At the local level, communities will be involved in the implementation through program participation
24. In monitoring and evaluation:
- i. Participatory monitoring system will be established in addition to the existing monitoring systems
 - ii. Monitoring reports will be made available to the public periodically and comments will be circulated.
25. An ADS Information Desk will be established under the Joint Secretary Division of Planning of MOAD to respond to queries of civil societies regarding the ADS. Similar information desks will be established at the Agricultural Information and Communication Center (AICC), NARC, departments and at the regional, district, and VDC level under the umbrella of DOA/DLS and the Community Agricultural Extension Service Centers.

⁴ Road shows refer to a series of presentations to communities and investors around the country describing the planned activities under the ADS. A road show is designed to inform and raise interest in the issue among potential investors.

26. **Capacity Building and Human Resources Development.** Focused plan of capacity building and human resources development of targeted institutions to improve ADS implementation.

27. The capacity building will include, NPC, MOAD, the key departments (DOA, DLS, DFTQC) under MOAD, NARC, Agricultural University, and related agencies (MOI/DOI, MOE, MOFSC/DOF, MLD/DOLIDAR, ...), key farmer organizations, and key cooperative organizations. This will require:

1. Assessment of current capacity to implement the ADS
2. Identification of gaps
3. Identification of options to fill the gaps
4. Recommendations
5. Planning of activities and resources
6. Implementation of capacity building activities
7. Monitoring and evaluation of capacity building activities

PRODUCTIVITY

28. Improved productivity of land and labor is at the cornerstone of the agricultural development strategy. Productivity is measured not only in terms of physical quantities (such as kg/ha, or liter/day), but in terms of the value of the output products per unit of land or unit of labor. Agricultural productivity requires the adoption of improved and appropriate technologies and know-how to increase efficiency and sustainability of agricultural production consistently with market demand. The measures to raise agricultural productivity include those related to: (i) effective agricultural research and extension; (ii) efficient use of agricultural inputs; (iii) efficient and sustainable use of natural resources (land, water, soils, genetic materials); and (iv) increased resilience to climate change and disasters.

29. **Extension.** Promote participation of private sector, NGOs, and public sector in agricultural extension and adopt a pro-poor decentralized extension system approach. The approach requires considerable capacity building of service providers to enhance their capacity of responding to the demands and needs of users. It will also require specific programs to target poor farmers, socially excluded, and the most marginal groups (women farmers, dalits, the uneducated, those living in remote areas). Key elements/pillars in this approach are:

- i. Targeting by type of farmers (subsistence, semi-commercial and commercial), by commodity, by market (domestic or international market), and by agroecological area (eg terai, hills, mountains);
- ii. Devolution to the lowest administrative level with option to decide whether such level is the district, the VDC or the municipality - based on resources and capabilities;
- iii. Major involvement of private sector, cooperatives, NGOs/INGOS, community based organizations (CBOs), individual resource persons, universities and training institutions into various forms of public-private partnership modalities (PPP).
- iv. Establishment and capacity building of a network of VDC level extension workers.
- v. Establishment of Community Agricultural Extension Centers (CAESC) in each VDC that are funded and managed by VDC or local communities or cooperatives and are linked to existing DOA/DLS service centers/subcenters for technical support and backstopping.

- vi. Establishment of a voucher system that would empower farmers to buy the best available extension and advisory services that meet their demand. Initially established on a pilot basis, the approach will be replicated on a larger scale contingent on a favorable review of the pilot.
- vii. Target agricultural market centers to provide information and extension services.
- viii. Adopt multiple extension methods including farmer field schools and farmer marketing schools.
- ix. Facilitate linkages of farmer groups and organizations with other value chain actors and financial institutions, including commercial banks.
- x. Use of innovative forms of Information and Communication Technology (ICT).
- xi. Train field level technical personnel to be more GESI sensitive and build this into their incentive-based reward system.
- xii. Increase the representation of women in JT, JTAs.
- xiii. Introduce nutrition into extension programs, particularly in extension programs targeted to women.

30. **Research.** Restructure Nepal Agriculture Research Council (NARC) with focus on decentralization and responsiveness to research needs of farmers and agroenterprises. Decentralization will ensure that the specific needs of different types of farmers (subsistence, semi-commercial, and commercial), cooperatives and agroenterprises (small, medium, and large), and specific agroecologic areas in the terai, hills, and mountains are taken into consideration through different research and extension modalities and local presence. Under this recommendation NARC's main functions will be supporting the formulation of agricultural research policies, maintaining international relations and linkages, setting national standards, and engaging in assurance of quality control through appropriate monitoring and evaluation.

31. The basic research, long term strategic research, applied research and adaptive research will be the responsibility of National Research Institutes (NRIs) and agro ecologically based Regional Agricultural Research Stations (RARS). Collaborative and action research will be the responsibility of the local research centers. Local level research activities will be managed according to the standards of central government. Central research centers will provide back up to local level stakeholders like community based centers, cooperatives, agroenterprises, and others. The investment in public research institutions will be for public goods in agriculture such as food and nutrition security, food safety, bio safety, epidemic control, mitigating effect of climate change, environment and biodiversity conservation. Specific programs for integration of research, extension and education activities will be planned, established, implemented, and monitored. The public and private investment in research will have to increase to support a more functional and effective research system.

32. The linkages in the research – education – extension triangle will be strengthened. NRIs and RARS will collaborate with post-graduate education according to subject matter. Extension will link to local research centers so that collaborative and action research is promulgated amongst local community. Farms/stations under the DOA and DLS could be used for collaborative arrangements between research, extension, and education institutions.

33. **Education.** A comprehensive package of measures to ensure closer integration with research and extension, improved capacity of the agriculture university, agricultural colleges,

and vocational schools, and better response to the needs of farmers and agroenterprises. These measures will include:

- i. Improvement of facilities and capacity of Agricultural University
- ii. Establishment of an Agribusiness Department in the Agricultural University
- iii. Joint research programs with NARC institutes
- iv. Joint extension programs with departments and district officers
- v. Identification of innovative ways for Agricultural University to partner with private sector (example renting/leasing facilities, training to private/community organizations)
- vi. Promote establishment of new agricultural/veterinary science colleges in other regions of Nepal
- vii. Support strengthening of capacity of CTEVT through curriculum improvement and training of trainers

34. **Land.** The ADS recognizes that the solution of the land issues is critical to the success of the strategy. Unless resolved, land issues will continue to linger and fuel social problems that will retard the envisaged acceleration of growth of the ADS. To that purpose, the ADS will support the ongoing policy and regulatory effort to identify solutions to land use planning, land fragmentation, land tenure, land ceiling, etc, while protecting the interest of farmers and providing the framework for the commercialization of agricultural production. Farmer organizations, cooperatives, and private sector representatives will need to be involved together with the government in finding suitable solutions. Representatives of farmer organizations, cooperatives, and private sector will need to be members of any future land commission that the government might initiate.

35. Overall the ADS will improve land use management and planning to promote a farming sector composed of adequately sized owner-operated, cooperative and larger-size agro-business farms that use land efficiently and sustainably. Also adopt a combined set of laws and regulations accompanied by programs for rehabilitating/restoring degraded land. Specific regulations include:

- 1 GON to adopt a formal decision (policy statement) to review or implement the existing legislation and policies pertaining to the land reform, including -
 - i) The level and the enforcement of the land ceiling;
 - ii) the adjudication and registration of pre-1964 tenancy rights; and
 - iii) the adjudication and determination of the dual ownership cases.
- 2 Promote farming sector composed of owner operated small farms, multi-purpose farming cooperatives and larger-size agro-business farms with adequate wages for farm workers. To that end –
 - i) Introduce incentives to promote the prevalence of small-owner-operated farms and disincentives to exploitative sharecropping arrangements⁵ and absentee landlord phenomena.
 - ii) Adopt more secure alternative arrangements for land leasing / tilling.
 - iii) Promote and encourage formation multi-purpose agricultural cooperatives and other community based ones or consolidated forms of joint farming.
 - iv) Explore mechanisms of “land bank” to facilitate land leasing of currently unutilized land.

⁵ Keeping in mind that not all sharecropping arrangements are necessarily exploitative.

- 3 Prevent land fragmentation by -
 - i) Amending the traditional inheritance law (Mulki Ayn) - or amending the Civil Code - to allow leaving land by testamentary disposition to one heir only.
 - ii) Introduce legal, financial and tax incentives to reduce fragmentation.

 - 4 Enact contract farming act to promote agri-business operations, that includes *inter alia* -
 - i) Collective bargaining arrangements with multiple small farmers
 - ii) Protection of the parties to the contract (farmers against exploitation through credit and accumulation of debt and contractors against unauthorized sales)
 - iii) Provisions on insurance of crops and livestock
 - iv) Implementation of the Secured Transaction Act (STA) by establishment of Pledge Registry for Movable Property.

 - 5 Enact land-lease act that provides for -
 - i) Fair lease contracts (including for example fixed fee or reasonable sharecropping ratios)
 - ii) Measures to prevent acquisition of tenancy rights in long-term lease relations
 - iii) Ability to secure long-term leases for agro-businesses to enable them to cultivate land for the agro-business.

 - 6 The options for the implementation of the land zoning policy are -
 - i. To introduce a simple zoning system on the basis of the already existing Land Classification prepared by the Ministry of Land Reform and Management (MOLRM) by Government Order to be issued under Article 51E (1) the Lands Act and the recently approved Land Use Policy, as required by the Lands Act (Chapter 9A) to be able to prevent land plotting.
 - ii. To formulate bylaws to accompany the recently approved Land Use Policy; determine in the bylaws that the Ministry of Local Development may not change municipal boundaries of lands that are classified as agricultural lands without the consent of the Ministry of Agriculture and Development and the Ministry of Land Reform and Management.
36. **Irrigation.** Expand irrigable area by the most economic and equitable means while increasing irrigation efficiency and intensity, and improving irrigation management.
- i. **Expand irrigation by most feasible means.** The recommended options include:
 - a. Complete already commenced surface schemes
 - b. Construct new large surface systems if justified by other purposes such as hydropower
 - c. Repair damaged surface systems
 - d. Construct new tubewells
 - e. Repair damaged tubewells
 - f. Develop non conventional irrigation (NCI) and introduce efficient water application systems

 - ii. **Increase irrigable area on existing schemes.** The recommended options include:
 - a. Increase irrigation efficiency
 - b. Expand command area
 - c. Improve water allocation, crop planning

- d. Construct permanent headworks in feasible sites and improve main canals on farmer-managed irrigation systems (FMIS)
 - e. Construct shallow tubewells (STWs) in the tail areas of water short systems (conjunctive use)
- iii. **Increase irrigation intensity.** Increasing irrigation intensity will depend on a number of factors including crop profitability, but most importantly on increasing dry season river flow or water availability. One of the reasons for increased seasonality of river flow is related to climate change and catchment area degeneration. Options for increasing irrigation intensity thus include:
- a. Improved catchment management, reforestation including the program of Churia areas conservation.
 - b. Constructing inter-basin transfer schemes to move water from permanent to seasonal rivers to augment supplies in water-short irrigation systems and generate hydropower
- iv. **Focus on irrigation system and on-farm water management.** Establishment of a higher level institution (than the present Irrigation Management Division of DOI) to assist AMIS and WUAs to upgrade system and water management. Establishment of a new department or directorate within DOI is recommended.
- v. **Irrigation management transfer.** Although some have questioned the ability of WUAs or WUA federations to manage medium to large-scale irrigation infrastructure in Nepal, it is likely to prove to be the optimal system in the medium to long term. Recommended options include:
- a. Joint management (agency and farmers) for large schemes
 - b. Ownership and/or management transfer to WUAs
 - c. Management by WUAs, through farmer owned company
 - d. Streamlining and harmonization of legal structures for WUAs
- vi. **Funding of Operation and Maintenance.** At present, DOI is responsible for headworks and main canal management on AMIS. However, this may change within the 20-year ADS period. The recommended options include:
- a. Full funding of main system operations and management (O&M) by government
 - b. Partial funding of main system O&M by government
 - c. Full funding of system O&M by irrigators.
- Whichever options are implemented, undertake needed preventative maintenance (for example on aqueducts) to prevent system collapse
- vii. **ISF calculation.** There are several options for defining and charging irrigation service fees (ISFs). The recommended one is on a land-owned basis.
- viii. **Water resources management.** Irrigation and Water Resources Management (IWRM) framework needs to be introduced nationally, initially in water short valleys where there is inter-sectoral competition for water or conflict over water. As part of the move to IWRM, consideration needs to be given to the geographical basis for water management. The recommended option is hydraulic boundary management.

- ix. **Capacity Building of Women Farmers in Irrigated Agriculture and Water Resource Management.** The programs to improve irrigation and water resources management designed under the ADS will include a capacity building module for women farmers in how to build, manage, and maintain irrigation system will need to accompany other measures.
37. **Agricultural Inputs.** Formulate and adopt consistent policies for input supply and distribution. The policies might include support of subsidies provided that a clear understanding of the following issues is included in the policy formulation, namely:
- i. *Targeting:* who benefits from the subsidies? The poor, the women, the marginal, and the remote farmers should be targeted. In fact often the opposite takes place: the better off farmers, the more connected ones, and the ones with better access to markets are the one who get most of the subsidies.
 - ii. *Size of subsidies:* how big should the subsidy be? The size of the subsidy is important because it has trade-off relative to other possible uses of public resources. For example, in the most recent budgets, fertilizer subsidies were about one quarter of the size of the overall investment in agriculture. Was this a rational use of the limited resources?
 - iii. *Period of subsidies (phasing out):* is there a clear strategy of phasing out subsidies over time? If not, then subsidies either might generate a dependency or they might be withdrawn abruptly without the necessary adjustment.
 - iv. *Affordability of subsidies:* Can the government afford subsidies at a par with India? And even if it could afford it, would it be worthwhile?
 - v. *Monitoring:* who will monitor the distribution of subsidies and ensure that subsidies are distributed according to the regulations and targeting?
 - vi. *Outcome and impact:* who will evaluate the outcome and impact of the subsidies?
38. Guidelines for such a policy in order to ensure consistency with the overall ADS are:
- i) *Consistency over time:* Do not create abrupt changes unless those are announced with sufficient lead time and an adjustment policy is well designed.
 - ii) *Promotion of private sector:* do not use subsidies to promote parastatal entities at the detriment of the private sector involved in the supply and distribution of inputs.
 - iii) *Gradual phasing out of subsidies over time:* ensure that over time subsidies are phased out.
 - iv) *Promotion of competitiveness:* ensure that there are complementary measures to ensure competitiveness (for example demonstrations about effective and efficient input use)
 - v) *Promotion of sustainability:* ensure the sustainable use of inputs through improved practices and assured supply and distribution chains
 - vi) *Promotion of quality:* ensure that agencies responsible to assure the quality of agricultural input have the capacity, resources, and authority of doing so.
 - vii) *Inclusiveness:* ensure that good quality and timely inputs are accessible to everybody particularly to the less favored groups
 - viii) *Regressive nature of subsidies:* do not create a situation in which the greatest beneficiaries of the subsidy system are those who need the subsidies the least
 - ix) *Voucher system:* whereby targeted farmers are provided with a voucher that empower them to purchase the input of their preference. On the basis of a positive review of the pilot, replicate the system and upscale.

39. **Seeds.** Ensure effective implementation of existing policies through sufficient investment in resources and capacity building. Consistently with the Seed Vision 2025, this will include a number of measures such as:

- i. *Support to research stations to produce breeder and foundation seeds.* This will involve:
 - a. Enhancing capacity of public research institutions and research stations through increased funding.
 - b. Maintaining good quality land races and open pollinated varieties (OPVs) of different crops in remote areas dominated by subsistence agriculture and establish good linkages with international agencies.
- ii. *Promote private sector and community based seed production.* This will involve:
 - a. Promoting partnerships with relevant private organizations, farms and nurseries for production of quality planting materials
 - b. Encouraging private sector to slowly take over the commercial production of saplings, seeds, while the role of government is that of facilitator, quality control, policy and regulations formulation, information provider, and monitoring and evaluation
 - c. Providing certified breeder and foundation seed to private seed growers
 - d. Promoting private sector to produce breeder, foundation and hybrid seeds
 - e. Promoting seed enterprise as an industry catering to the national needs and for export
 - f. Promoting community based seed production and agro-biodiversity to strengthen resilience in remote areas.
- iii. *Enforce quality assurance systems.* This will involve:
 - a. Strengthening planting materials certification processes through improved capacity of concerned public organizations
 - b. Enforcing compliance of nurseries with farm inputs quality standards
 - c. Encouraging provision of quality control and certification from private sector as well as government
- iv. *Promote production of hybrids.* This will involve:
 - a. Allowing imports of suitable hybrids⁶ after necessary testing.
 - b. Encouraging local hybrid seed production within GON organizations, the private sector, cooperatives, and in partnership with foreign companies.
- v. *Establish an information system about seed demand and supply.* This will involve an updated database available to the public containing timely information about seed production and seed stock for main crops with information about nurseries, breeding stations, and research centers. The database will also contain estimated demand by crop and area and information about suppliers and inspections.
- vi. *Fill the gap related to Biodiversity Policy Implementation.* This will involve filling the gap in implementation of the related policy. This will involve (a) strengthening collection, classification, and assessment of diversified bio resources relevant to agriculture, and support scientific report/ documentation; (b) initiation system of registration of agro-biodiversity; (c) develop regulation for the research and experimentation of Nepalese

⁶ Note that hybrid seeds are not GMOs – there has been public concern due to this confusion. For example hybrids are allowed in certified organic farming standards, but GMOs are prohibited.

Bio-diversity and Genetic Resources; and (d) develop regulation of genetically modified organisms (GMO) having negative impact on bio-diversity, genetic resources, and human health.

- vii. *Voucher system*: whereby targeted farmers are provided with a voucher that empower them to purchase the input (in this case seeds) of their preference. On the basis of a positive review of the pilot, replicate the system and upscale.

40. **Fertilizer.** Maintain fertilizer and other subsidies at 2011 level in the short term, review them in the medium term and consider their removal in the long term. Initiate a number of measures to improve productivity and fertilizer use efficiency such as:

- a. Conduct an aggressive campaign for demonstrating efficient use of fertilizer and educate farmers about the cost and benefit of efficient use of fertilizer.
- b. Promote the production and use of organic/bio-fertilizer at least at the supplementary or complementary level that can sustain the soil fertility and use inorganic fertilizers to attain higher production and productivity.
- c. Explore feasibility of (i) establishing a fertilizer factory in the country under PPP arrangement; (ii) obtaining equity shares of fertilizers factory outside the country; (iii) establishing long-term contracts with foreign suppliers of fertilizer (both in India and third countries).
- d. Establish and operate Fertilizer Buffer stock under PPP arrangement
- e. Establish database and monitoring system of fertilizer use and distribution, including both official imports and informal import (the latter to be obtained through survey data).
- f. *Voucher system*: whereby targeted farmers are provided with a voucher that empowers them to purchase the input of their preference (in this case chemical or organic/bio-fertilizer). On the basis of a positive review of the pilot, replicate the system and upscale.
- g. *Enforce quality assurance systems*. This will involve:
 - Strengthening fertilizer inspection through improved capacity of concerned public organizations
 - Enforcing compliance of importers and dealers with fertilizer quality standards
 - Encouraging provision of quality control and certification from private sector as well as government

41. **Animal breeds.** Ensure that improved breeds appropriate for the Nepal farming systems conditions are available to farmers. To ensure the availability of improved breeds the following measures are recommended:

- i. Develop livestock and fishery breeding policy.
- ii. Support pure breeds production farms.
- iii. Promote private sector and cooperatives to produce improved breeds with proper recording of progeny, productivity, resilience and efficiency.
- iv. Expansion of artificial insemination laboratories and service for the promotion of breeding programs for breeds improvement.
- v. Support private sector to establish grandparent stocks of poultry.
- vi. Support production of improved breeds to private sector.
- vii. Support recording and improvement of quality, health status, productivity of improved herds.

- viii. Support implementation of livestock insurance schemes.
 - ix. *Voucher system*: whereby targeted farmers are provided with a voucher that empower them to purchase the input of their preference (in this case an animal breed). On the basis of a positive review of the pilot, replicate the system and upscale.
42. **Mechanization.** Support private sector led mechanization with awareness creation, demand stimulation, concessionary financing arrangements, capacity building, and taxation.
- i. *Information Dissemination*: Conduct a social marketing campaign on a cost sharing basis with 2-wheel tractor importers and dealers emphasizing the advantages of a 2-wheel tractor over the traditional forms of cultivation, harvesting etc. In effect there would be three separate campaigns one for the mountains, one for the hills and one for the terai. Each one of them would have the same aim, to inform farmers of the potential options and choices, however the orientation and relative weighting of these options would be different in the three different agro-economic zones. Apart from tractors, other equipment will be related to irrigation equipment, milking equipment, loading and unloading, etc.
 - ii. *Improving Customer Access to Finance*: Rather than conceiving of a financing project through retail banking and for end users it would make more sense and be far less costly, to finance dealers to on-lend to their customers. Commercial banks have expressed an interest in this type of financing and have propose two options: either to extend credit on commercial terms to dealers so that they can also on-lend at rates around 17%⁷ or to access cheaper credit from the Rastra Bank’s “deprived sector” lending program although there are restrictions on the targeting of end users.
 - iii. *Capacity Building of Service and Maintenance Providers*: It is proposed that the dealers, instead of setting up their own repair workshops (as 4-wheelers have done), increase the technical capacity of the smaller existing workshops that are scattered through the countryside. These workshops could also stock spare parts and act as small brokers for some of the 30-35 dealers operating in major commercial centers. In addition we are proposing that, in connection with importers and dealers, that upwards of 1,000 farmer/service providers be offered technical training to enable them to become local experts in the impacts of mechanization (additional germination rates, cost saving implications, the advantage of zero leveling, the impact of seed drills etc.)
 - iv. *Introduce leasing program for agricultural equipment*: it is proposed to introduce an enabling environment for the development of a leasing market for agricultural equipment that would allow leasing companies to operate. To this end we are suggesting the following legal measures:
 - a. clarifying that the Banking Institutions Act does not restrict non-banking institutions to engage in leasing; and
 - b. form a pledge registry (under the Secured Transactions Act or under by amendment to the Contracts Act) to allow securing the financing for leasing operations by leasing companies
 - v. *Revising Supporting Policy Conditions*: To accompany the three components mentioned above, we are suggesting the following supportive fiscal measures.

⁷ Commercial banks must lend up to 3.5% of their outstanding portfolio to agriculture or face fines of 16% on loans unallocated to this sector. They therefore have an incentive to constantly look for lending to this sector. Commercial bank also have the option to access concessionary financing for the “deprived sector” (cooperatives and micro-finance institutions) at 10-10.5%, but there are restrictions on how the funds are deployed.

- a. Waiving the value added tax (VAT) amount and import duty on spare parts. The high cost of spare parts (over 28%) has seen the proliferation of sub standard spare parts brought illegally across the border. It has similarly impacted on the business of the local dealers and sub dealers.
- b. Tractor owners cannot change their vehicle ownership for a period of 5 years. This has adversely affected the level of tractor sales. Though this rule was enforced so as to control speculation, it has nevertheless discouraged the adoption of agricultural mechanisation as a whole, but particularly for that of 2-wheelers.
- c. Although it is not possible to raise the import duty on 4-wheelers because of South Asia Free Trade Area (SAFTA) agreements we see the justification to impose a 13% VAT on the purchase of 4-wheelers because the majority of these are being used for commercial transport rather than for agriculture. This modest tax increase would “nudge” buyers to more seriously consider their choice of this vehicle.
- d. Currently the road tax is Rs. 2,900 for 4-wheeler and 2,300 for 2-wheelers. 2-wheel dealers claim that this is a disincentive for a 2-wheel purchase if it is to be used for agriculture and that it seems excessive in comparison to the 4-wheeler.
- e. Given the low rate of attachment usage and their relatively expensive costs we recommend a 30% voucher subsidy on all attachments (for 2-wheelers and 4-wheelers). This would be extended to ploughs, cultivators, seed drills, reapers, laser levelers, planters etc. We foresee this lasting just 3 years and to be accompanied by the above mentioned social marketing campaign.

43. **Improving Resilience of Farmers.** The ADS will improve resilience of farmers by supporting the national and local programs NAPA/LAPA to increase resilience to climate change and disasters and by increasing resilience to shocks of other origin. Specific measures will include:

- i. Promotion of research on identification and adoption of stress tolerant crop, livestock and fish species for the development of climate resilient agriculture.
- ii. Establishment of early warning system and adoption of early warning information in managing climate change risk to mitigate risks in agriculture and food and nutrition security in the country.
- iii. ICT based climate information systems designed to provide information to farmers.
- iv. Crop yield forecasting system.
- v. Establishment of Farmers Welfare Fund that would provide assistance to farmers under distress through access to financial resources to overcome temporary losses of income.
- vi. Strengthen food reserve system to cope with emergency and food safety distribution to targeted farm households.

44. **Green farming and GAP/GVAHP.** Establish Good Agricultural Practices and Good Veterinary and Animal Husbandry Practices (GVAHP) standards and under suitable socioeconomic and agroecological conditions promote adoption of:

- i. integrated soil fertility management,

- ii. integrated plant nutrients management,
- iii. integrated pest management (IPM),
- iv. renewable energies based on biogas and biomass utilization,
- v. organic farming,
- vi. farm sanitation and hygiene good practices,
- vii. practices to prevent use of hazardous chemicals in crops and regulations of the use of antibiotics in livestock production process.

45. **Forestry.** Develop subsistence production based forestry into a competitive, agriculture friendly and inclusive forest management practices in line with a holistic and community based landscape approach to natural resource management and livelihoods improvement. This includes several dimensions as follows:

- i. An enabling policy environment in place for developing, managing, and sustaining forest products and services in a more commercial and sustainable way. This will require the following measures:
 - a. Develop new forestry sector strategy aligning with changing political and institutional context.
 - b. Develop forest land use planning in line with the national land use policy.
 - c. Harmonize conflicting policies in line with overall national land use policy and forest sector policy, and international commitment of the Government and ensure ground actions.
 - d. Develop policy measures to control the forestry land use conversion, startup scientific forest management and enhance the forestry sector contributions.
 - e. Revise the policy and programs of community based forest managements to address their unintended negative effects on distant users, resource sharing, social inequity and traditional use rights of transhumance and transient graziers.
- ii. Developed and integrated productive, commercial, socially inclusive, agro-forest products production land use models into the existing forest management practices across the landscape/physiographic region. This will require the following measures:
 - a. Identify and prioritize the most socially and economically competitive forest products for each of the management regimes across the various landscapes and physiographic regions.
 - b. Develop multiple use context specific climate change friendly agro forestry modalities for each type of farmer (small to rich farmers).
 - c. Develop and scale up intensive management model for community based forestry for each landscape/physiographic region actively contributing to productivity of farming system, increasing social, economic and environmental benefits and achieving food security.
- iii. Economic enhancement and livelihood improvement through marketing and enterprises development. This will require the following measures:
 - a. Improve the value chain of forestry products (timber and non timber) to be promoted for each of management regimes of farm or forests across the landscape/physiographic regions.
 - b. Identify the role and involve stakeholders in the forestry sector management. Develop public-user-private partnership mechanism with well identified roles and responsibilities.

- c. Promote the establishment of agro forestry based enterprises providing emphasis to the poor, community and private sector based on context and appropriateness.
- iv. Forestry social inclusion and food security addressed. This will require the following measures:
 - a. Strengthen the implementation of Gender and Social Inclusion Strategy of the forestry sector in all phases of program planning and implementation at all levels from center to the district levels.
 - b. Restore the degraded lands, enrich the public lands and increase the productivity of low yielding farm lands with appropriate pro poor agroforestry models to achieve the goal of food security, environmental sustainability and poverty alleviations.
- v. Biodiversity Conservation and Climate Change Adaptation and Mitigation through the following measures:
 - a. Support the Local Adaptation Plan of Action (LAPA) as implementation support for the National Adaptation Plan of Action (NAPA) for climate change and emphasize the role of forestry sector components for adaptation and mitigations.
 - b. Support revision and implementation of National Biodiversity and Action Plan (NBSAP) and scale up the interventions on soil conservation and watershed management.
 - c. Develop with policy decision, implement and scale up schemes related to payment of environmental services including carbon sequestrations.
 - d. Promote use of alternative/renewable energy and energy saving scheme among the local forestry groups
- vi. Institutional and Human Resource Development and Forest Governance improved through the following measures:
 - a. Restructure the forestry sector based on the new forestry strategy, periodically reorient the staffs and improve the service delivery mechanism.
 - b. Prepare and implement a comprehensive human resource development plan.
 - c. Democratize governance system of government, non-government, community and private institutions working in forests sector and making it inclusive, transparent and accountable.
- vii. Improved Research and Extension Programs through the following measures:
 - a. Develop and implement sustainable forest management research, communication, education and awareness raising strategies for national district and community level.
 - b. Collaborate between stakeholder agencies by clearly recognizing needs and priorities on forest research and carry out adaptive research with high-quality support from national and sub-national research institutes.
 - c. Develop extension package on best forestry practices and test. The extension package includes reduction on forest threats including forest encroachment, grazing management, sustainable forest management and improved agricultural practices.
- viii. A collaborative sustainable investment plan in place through the following measures:
 - a. Develop and implement district forest development funds management.
 - b. Develop strategy on public private partnership and increase the private sector investment in forestry

- c. Develop National REDD plus strategy, Biodiversity Strategy and Action Plan, Strategy on Green Jobs and Investment plan for receiving benefits from regional and international funding schemes.
 - d. Create conditions for continuous and stable investments in the forestry sector through the process of realization of the new Forestry Strategy.
 - e. Develop coordination and for planned investments between private and state sectors, international and national donors.
 - f. Create the favorable climate for investments in the private and state sectors, international and national donors.
 - g. Improve law enforcement to decrease the negative impact on forest markets and increase the income for the sector that will ensure larger reinvestments in forestry.
 - h. Co-ordinate with the national and international financial assistance including international funds for support to sustainable forest management, to biodiversity conservation, protective functions of forests, payment of environment services and for carbon sequestration.
- ix. Develop joint platform for policy formulation and actions on ground through the following actions:
- a. Join –up the work of organizations to map and access policy initiatives for the agriculture and forestry sectors, and identify where the measures exist or are missing.
 - b. Work to embed a common understanding and language, generate shared messages on the need to adapt, and incorporate new, consistent messages on farming systems and priorities for action
 - c. Develop better information to help farmers consider the costs and benefits of capital investments that would improve their productivity
 - d. Build on existing knowledge and research to ensure that agriculture and forestry complementing each other.
 - e. Develop examples of good working practice and adding value to support decision-making engaging with the forestry user groups looking at existing and future schemes for forestry to support agriculture production
 - f. Develop critical capacity in research, expertise and the evidence base.

46. **Rural Electrification.** Support expansion of rural electrification programs through the promotion of renewable energies (water, solar, wind, biomass, biogas). Establish a separate liaison section and create a fund especially for power development in MOAD. Make the section responsible for assisting the farmers' community to: (i) reach National Electricity Authority (NEA), Alternative Energy Promotion Center (AEPC), National Rural and Renewable Energy Program (NRREP), MSGP etc for power supply (ii) plan, design, procurement, implementation and maintenance and iii) provide financial support (in some cases) for power generation.

COMMERCIALIZATION

47. The overall goal of the commercialization component of the ADS is to transform the agricultural sector from one in which a substantial proportion of farming is carried out for subsistence, and by default (i.e. no other livelihood or household food security options are available to the household), into a sector in which the vast majority of farming is carried out for

commercial purposes (i.e. it provides profitable opportunities for all the stakeholders who engage in it) and is connected to the local and national economy and markets.

48. This transformation towards a more commercialized agriculture requires a set of measures that focus not only on farmers, but also on agroenterprises and cooperatives involved in the commercialization of agricultural products and services. Agroenterprises and cooperatives include input providers, producer companies, marketing cooperatives, storage operators, logistic companies, agroprocessors, importers and exports of agricultural and food products, distributors, traders, and agricultural service providers such as financial service providers, insurance providers, and business service providers.

49. The recommendations are related to the investment climate and a number of reforms to strengthen contractual arrangements, taxes, and financial services to promote an efficient commercial agriculture. The recommendations also emphasize the need of prioritizing a number of value chains to ensure they achieve scale economies and therefore have national income and employment impact. Finally, a number of physical and institutional infrastructure programs to promote commercial agriculture are also recommended (agricultural roads, market information and market intelligence systems).

50. The recommendations aimed at accelerating agricultural commercialization relate to the following issues: (i) investment climate; (ii) contracts; (iii) taxes; (iv) finance; (v) value chain development; (vi) roads and (vii) market intelligence.

51. **Investment Climate.** Promote broad-based organizations that include farmer associations, agro-commodity associations, cooperatives, processors, and traders (e.g. Commercial Agricultural Alliance, Agro-Enterprise Center) that could dialogue with government on issues related to improved investment climate for agricultural commercialization such as:

- Increased participation of agribusiness and industry organizations, farmers' cooperatives and organizations in sub-sector planning and implementation.
- Appropriate regulation to promote larger scale commercial cooperative farming; contract farming; lease farming.
- Level playing field of private sector with state enterprises in the distribution of agricultural inputs and outputs, and in processing.
- Reformed land use policy to stimulate commercial agriculture.
- Effective provision of information for commercial agriculture (e.g. crop gross margin and cash flow analyses)

52. **Contractual Arrangements and Insurance.** Strengthen contractual arrangements mechanism to promote agricultural commercialization such as (i) contract farming act; (ii) secured transactions act; (iii) land-lease act; (iv) leasing operations; and (v) livestock and crop insurance. Promote awareness and demonstration of these mechanisms.

53. **Taxes.** Develop tax policy supportive of an efficient commercial agricultural sector through providing subsidies and targeted tax incentives, until the sector has reached a sufficient level of maturity and sustainability that those subsidies and incentives may be phased out. In the long term the agriculture sector will provide government with an additional source of revenue for mobilization. The recommendation is for a rationalization of all tax incentives with specific termination dates and including the following:

- i. Consider specific income tax concessions to (a) stimulate investment in farm plant, machinery and irrigation infrastructure; and (b) promote green technologies and reduce carbon emissions.
- ii. Consider tax incentives for the insurance industry to stimulate the growth of agricultural insurance contracts.
- iii. Consider tax incentives for the banking industry to stimulate the growth of agricultural loans.
- iv. Consider changes to the way land is taxed.

54. **Finance.** Promote development of diverse agricultural finance providers that supply a variety of competitive and demand-driven financial products. This includes supporting ongoing policies and measures in the finance sector such as:

- i. Provision of long-term finance through leasing.
- ii. Expedite implementation of already established government policy to restructure financial institutions (ADBL and Grameen Bikas Bank) and divest government shareholding to achieve full private sector ownership in financial institutions.
- iii. Ensure that all financial institutions have autonomy in the appointment of board and management team members, in management functions and in their commercial operations subject to prevailing prudential regulations.
- iv. Achieve financial institution viability represented by consistent profitability, notwithstanding periodic, unforeseen losses, and sustainability in terms of their long-term financial health demonstrated by profitability, ability to mobilize deposits, and ability to raise equity through capital market mechanism. Support ongoing efforts by NRB to promote consolidation of financial institutions through selective licensing of new financial institutions and through the merger of weak financial institutions. Implement the provisions of the Microfinance Act to establish a second-tier regulatory authority for MFIs that will facilitate improved viability and sustainability, and governance, in the microfinance subsector.
- v. Facilitate the development of a range of financial products and services, subject to prevailing prudential regulations, that better serve the diverse needs of agricultural enterprises (such as those based on information and communication technology [ICT]), and products that are readily available in many countries' financial systems but are effectively untried in Nepal such as and warehouse receipts).
- vi. Facilitate increased supply-side penetration of financial institutions into the agricultural finance market by providing incentives, rather than directives, to promote an increased volume of lending. On the demand side, the strategy is to enhance agricultural enterprise creditworthiness through improved financial literacy. On the supply side, the capacity of financial institutions to better understand agricultural finance and appraise agricultural credit needs to be improved, including by way of branching out of banking institutions into rural centers to gain on-hands knowledge of the needs of rural lenders.

55. **Value Chain Development.** Prioritize the development of competitive agricultural value chains that increase value added and benefits to smallholder farmers. Priority will be given to a very limited number of value chains (for example 5) selected through a process that takes into account the following criteria: (i) Poverty reduction potential; (ii) Growth potential (or potential for increasing growth and access); (iii) Intervention potential; and (iv) Cross-cutting issues (social inclusion and gender, environmental sustainability, matching with national and regional strategic

priorities, balance of trade (import substitution and export), and geographical spread). Initial stakeholder prioritization shows the following value chain ranking:

Commodity/Product	Rank
Maize	1
Dairy	2
Vegetable	3
Tea	4
Lentil	5

56. ADS will support the development of prioritized value chains as follows:
- Provision of support to government entities to be better able to accelerate and sustain growth and development of various value chains in agriculture sector to enhance its contribution towards export and import substitution.
 - Enhance the development of the selected value chain through production, post harvest, marketing and policy/ institutional support.

57. **Roads.** Accelerate the expansion of the network of agricultural roads in coordination with the ongoing rural roads programs under MOLD/DOLIDAR. Establish an Agricultural Infrastructure Section under District Technical Office of DDC to implement new agricultural roads policy and clarify division of responsibilities between center and subnational levels for implementation of the policy. Include separate funding for development and maintenance of agricultural roads. Involve private sector and communities in the development and maintenance of roads.

58. **Market Intelligence.** Strengthen and rationalize existing systems of agricultural market information and establish new suites of ITC products for market intelligence. Establish a well functions system of market information and market intelligence that is easily accessible to smallholder farmers, traders, and enterprises.

COMPETITIVENESS

59. Accelerated agricultural growth represents the best way out of poverty for the millions in Nepal still living below the poverty line. Agricultural-based growth is 2 to 3 times more effective at reducing poverty than the other major economic sectors. Experience from Asian economies has demonstrated that one of the most successful ways to stimulate growth in agriculture is by creating a conducive investment climate for agricultural entrepreneurs and by creating increased access to the critical knowledge and inputs needed to achieve higher levels of productivity. For growth to be sustainable it needs to be rooted in structural changes and improvements that do not evaporate with fluctuations in global prices, disappear after a bad monsoon or depend on concessional external funding. Competitiveness is founded on: a competent, hard-working and efficient work force; a clear understanding of what makes Nepal unique in the global market place; and, the determination and entrepreneurship to maximize productivity and innovate with new products and processes based on the country's natural endowments.

60. To achieve this vision, the energy and inventiveness of the private sector is essential. Since the design of the APP, many years ago, the private sector in Nepal has made considerable

investments in agriculture and created thousands of sustainable jobs and incomes; the poultry sector “leapfrogged” Indian technology and now outcompetes them in its cost of production, nursery investors in Banepa reach out to 20,000 farmers and collectors of medicinal plants, commercial milk production is gradually replacing subsistence dairy, and the dramatic expansion of the vegetable sector is the product of small and medium investments in sustainable supply chains that link primary producers with viable markets. This emergence of the private sector in agriculture is no casual accident; it is happening on a global stage as well as in India, Bangladesh and Pakistan. The age of communications and better education has enabled Nepali producers to learn better practices and access market information, while stability, rising market prices for land and remittances have created the disposable cash to make these investments.

61. These changes demand an approach to agricultural promotion and competitiveness that acknowledges the vital role of the private sector, without conceding the critical function of the government to oversee, regulate and facilitate growth that is both competitive and pro-poor. This blending of private sector energy and innovation with the steady hand of government to ensure positive public outcomes is often called public-private partnerships. The essence of these partnerships is to create some form of “additionality” that would not have been possible without the other’s involvement. From the public point of view it affords the opportunity to leverage its funds and channelize outcomes while for the private sector the addition of public funds reduced the perceived exposure to investing in high-risk high-potential projects.

62. The recommendations aimed at accelerating competitiveness relate to the following issues: (i) market infrastructure; (ii) innovation; (iii) trade; (iv) quality and safety; and (v) reciprocal duty free trade.

63. **Market Infrastructure.** Promote development of market infrastructure through the combination of public investment, PPP (including cooperatives) and community participation. Example of PPP involving different types of infrastructure include: (a) Promotion of on-farm storage, cool/cold/controlled atmosphere (CA) storage; (b) Creation of new processing and market facilities and improvement of existing ones; (c) Network of collection centers linked by hub and spoke system to wholesale markets; and (d) Zone planning and creation of new agroindustrial parks and improvement of existing ones. Different schemes for PPP are possible. One could be based on matching grants; another one based on back-end subsidies linked to credit. The most appropriate one will depend on the size of the investment, the risk involved, and the ownership structure.

64. **Innovation.** Promote innovative agribusiness enterprises through the combination of tax incentives, innovation matching grant funds, and agribusiness incubators. The range of *tax concessions* considered may include, but is not limited to:

- the tax free threshold for income tax, and whether agriculture and agro-based activities should have a separate exemption limit;
- the income tax rate;
- accelerated depreciation;
- investment allowances;
- full deductibility of research and development costs;
- carry forward of losses;
- graduated level of concessions for developed, under-developed and undeveloped regions;

- special incentives for foreign and domestic investors in agricultural research and development in Nepal;
- matching grants to promote innovation and entrepreneurship, including Innovation Fund and Agro-Entrepreneurship Programs targeted to youth, women, and disadvantage groups;
- Agribusiness Incubator to help innovative start-up companies to grow into small and medium agro-enterprises.

65. *Agribusiness Incubators* are organizations that foster the start up of companies through direct one-on-one engagement with them. Business incubators operate through the provision of mentoring services, mutual support services from fellow incubatees, recent graduates and the provision of facilities. The heart of a business incubator is the business support service that it provides to companies it supports during their typically limited incubation period. However the incubation period is typically laid out in the performance agreements which codify relationships between incubator and incubatee at the beginning of an incubatee's tenure. The enforced discipline of these agreements acts as an introduction to commercial reality for many clients. In lieu of even tougher market competition, incubators cultivate a non excuse performance culture among their clients through the hard budget constraints and tough incentives which they enforce on them.

66. There is sufficient evidence both in Nepal and internationally to give credibility to *matching grants* as an instrument of public-private partnerships. Nevertheless two potential schemes could be envisaged in the context of the ADS. The first one, an "Outreach" fund, would be oriented to support public private partnerships at the district level. The core criteria for its usage would be: that the proposal generates "additionality" in outreach to more farmers or primary producers with some form of innovation (product development, process, or technology) that leads to a measurable income increase for producers. The second matching-grant scheme, for the time being called "Applied Agricultural Research" would be aimed at directing agricultural research more towards factor improvements. Criteria for this scheme would include the need for proposals to have some matching funds (not necessarily 50-50) from the private sector as a way of ensuring that the research had relatively short term impact. Another criterion would be related to strengthening the linkage between this research and the dissemination of its results, assuming that they are relevant.

67. **Trade.** Strengthen capacity building to improve ability to apply and comply with sanitary and phytosanitary (SPS), anti-dumping (AD), and countervailing duties (CVD) measures. The preferred options consist of (i) Legislative Measures; (ii) Institutional Measures; and (iii) international measures.

68. *Legislative Measures* related to trade and foreign investment. In trade, the ADS Team proposes to enact a modern Trade Act to create an environment that is conducive to exports and regulates imports. The proposed Trade Act will include (i) the regulation of imports in terms of the ability to take fair and non-fair trade protection measures permitted under the WTO regime but not enacted yet such as measures for balance of payments (BOP) reasons or to counter import of subsidized (CVD) or dumped (AD) products that harm the Nepali producers; and (ii) the formation of an agricultural products export promotion body either as part of the Ministry of Commerce and Supplies (MOCS) Trade and Export Promotion Center (TEPC), or in the MOAD.

69. Measures to promote *foreign investment* should distinguish between mid-term and short-term. In the short-term, the recommendation is to (a) Prescribe Rules under Section 8 of the FITTA to promote Foreign Investment by granting incentives and proclaim incentives through annual Budget Acts; and (b) Reduce the number of agricultural sectors that are currently “closed” for FDI (fisheries, poultry breeding and bee-keeping). In the mid-term, enact a new Investment Act that includes the promotion of investments, by providing for incentives for foreign investments in agriculture and agro-businesses.

70. *Institutional Measures* include the creation, within MOAD, of an International Agricultural Trade Division as a focal point for Nepali exporters of agricultural products, in matters of information about production level, standards, SPS requirements, export conditions, export incentives, market intelligence, including developing auction market for strategic commodities (eg tea), etc.

71. *International Measures* also are different for the short and medium-long term. In the short term: (i) Promote the export of products currently enjoying preferential treatment pursuant to existing agreement; and (iii) Engage in dialogue (joint seminars for customs officials) with trading partners on correct implementation of trade agreements. In the medium-long term conduct a review of the following aspects of the trade agreements of Nepal: (i) Tariff and quota exempt product coverage in bilateral and multilateral trade agreements of Nepal (reduction of sensitivity list); (ii) Technical barriers to Nepali exports; and (iii) Nepali SPS certification recognition by 3rd parties. Additional issues to be considered include the review of pegged exchange rate policy and its implication for Nepali agricultural sector; and the differential tariff structure for processed and unprocessed products.

72. **Quality and Safety.** Strengthen regulations and institutions for enhancing food safety and quality. In order to allow Nepali export products to compete in international markets on the one hand while protecting the Nepali consumers from consuming unsafe food products, the following steps have to be taken:

- i. Enact a modern Food Act, prescriptive rather than reactive, that creates an enabling environment conducive to the development of internal trade and export market of agricultural and agro-business products as well as ensures that all foodstuffs sold meet acceptable standards, prevent and punish food adulteration, and promote food traceability. The new Food Act should include provisions on the following matters:
 - a. The formation of an independent Food Authority that is affiliated to but not part of structure of ministry with authority to issue standards and enforce these, including food quality standards
 - b. The stipulation that the Department of Food Technology and Quality Control DFTQC (or the Food Authority once established) is authorized to issue SPS standards for local and exported food products. The authority to issue SPS standards by a simplified procedure in case that the SPS standards are internationally accepted standards, such as those of the *Codex Alimentarius*.
- ii. Formulate, adopt and implement Food Safety and Quality (FSQ) standards that meet international SPS standards to avoid import restrictions by trading partners for SPS reasons. Set numerical goals for proclamation of new standards.
- iii. Adopt legislation on the accreditation of standards certification bodies;

- iv. Adopt legislation on the accreditation of national laboratories for FSQ certification;
 - a. Establish Nepali accreditation body
 - b. Join ILAC to establish recognition of Nepali accreditation body

73. Institutional measure in the short term include: (i) Strengthen the capacity of the DFTQC under the MOAD, in terms of transforming it to become a pro-active rather than reactive body, with annual plans and targets for the proclamation of FSQ standards, enforcement of FSQ standards and public awareness; and (ii) Implement agreement with India on recognition of DFTQC as certified laboratory by India.

74. In the mid-term: (i) Form Food Authority under new Food Act with full authority to proclaim FSQ standards and enforcement thereof; (ii) empower Food Authority to accredit standards certification bodies; and (iii) Establish Nepali accreditation body for laboratory certification.

75. The basic SPS requirements are relatively straightforward, but it is a substantial task to establish capacity for pest and disease risk lists and preparing and disseminating accepted SPS management for these risks, as well as SPS and surveillance systems for transboundary animal diseases and epizootic diseases.

76. For animal health, the ADS propose the use of the modern approach advocated by World Animal Health Organization (OIE) and FAO on risk base monitoring and surveillance of animal disease threats and traceability. The existing practices in animal identification and registration system movement control will greatly influence the outcome of such monitoring and surveillance programmes. The following measures are recommended:

- (i) strengthened surveillance and inspection programs for animal health status and disease;
- (ii) enhanced capacity of national specialists in surveillance, risk analysis, testing, diagnostics, disease identification, standards, conformity assessment, good veterinary practices (GVP), and quality assurance management (such as hazard analysis critical control point - HACCP)
- (iii) improved regional cooperation and harmonization in SPS management in livestock, livestock products/byproducts and its production inputs trade, transboundary disease and epizootic diseases;
- (iv) enhanced awareness and capacity of government support services and enterprises to implement SPS and food safety management systems.
- (v) Upgrading and functioning of the laboratory network to ensure getting the samples from the field to the labs, and subsequently results back to the field, along with accredited laboratories for testing and certification.

1 INTRODUCTION

77. IMAGINE A NEPALI AGRICULTURAL SECTOR WHERE...

- Farmers can make a decent living out of their land.
- Agriculture and agribusiness is an attractive business.
- The country can feed itself and has a large surplus of high value agricultural products that are exported.
- Agricultural land is used efficiently and sustainably and the beautiful landscape of the country is enhanced.
- Everybody has access to nutritious and safe food.
- People are prepared to withstand climatic events and food market shocks so that the vulnerable groups are protected.
- Agribusiness cooperatives and companies from Nepal are admired throughout the world for being innovative and competitive.
- Policy makers are strongly committed to the agricultural sector and civil servants are serving the people efficiently and effectively.

78. The current agricultural sector in Nepal is far from this vision. However, envisioning a prosperous Nepali agricultural sector is the inspiring motive of the ADS.

79. **The ADS is a great opportunity to move Nepal out of poverty. The Agricultural Development Strategy (ADS) is expecting different results from the past. To achieve different results, the ADS will require doing things differently from the past. ADS advocates change. Change is difficult, but now is the moment for the change advocated by ADS to occur.**

80. Now is the moment for the ADS because of the combination of various favorable conditions.

- Renewed **global interest** in food and agriculture spearheaded by the recent episodes of food price instability, a concern for climate change impact on food supplies, and the needs of a growing world population, urban population, and more affluent population.
- In Nepal, the ADS preparation is supported by 12 **development partners** including Asian Development Bank (ADB), International Fund for Agricultural Development (IFAD), European Union (EU), Food and Agriculture Organization (FAO), Swiss Agency for Development and Cooperation (SDC), Japan International Cooperation Agency (JICA), Denmark Agency for International Development (DANIDA), World Food Program (WFP), United States Agency for International Development (USAID), Department for International Development (DfID), the World Bank, the Australia Agency for International Development (AusAID), and the United Nations Entity for Gender Equality and the Empowerment of Women (UN Women).
- **All political forces** recognize the critical role of agriculture and food in socioeconomic development of the nation. Development of agriculture as key sector for growth and development is highlighted in all major plans and policies including National Agricultural Policy (2004), National Agribusiness Promotion Policy (2006), Trade Policy (2009), Nepal Trade Integration Strategy (2010), and Three-Year Plan (2011–2013).

- **Farmer organizations** are actively involved in the ADS. The Peasant Coalition has nominated four representatives of major political party-affiliated farmer organizations to be part of the Steering Committee of the ADS. The Peasant Coalition together with MOAD and in coordination with the ADS Team has led 5 regional consultations with district based farmer organizations to discuss about the ADS and provide input into its formulation.
- **A large number of consultations** with civil society aimed at building broad consensus are ongoing to ensure that the ADS is owned by Nepal society and provide a strong direction to future implementation.

1.1 The Policy Options Report

81. This document is the *Policy Options Report* for the Technical Assistance (TA) 7762-NEP on *Preparation of the Agricultural Development Strategy* (henceforth, the TA will be referred as simply “ADS”). The TA is funded by Government of Nepal (GON) with support by Asian Development Bank (ADB), International Fund for Agricultural Development (IFAD), European Union (EU), Food and Agriculture Organization (FAO), Swiss Agency for Development and Cooperation (SDC), Japan International Cooperation Agency (JICA), Denmark Agency for International Development (DANIDA), World Food Program (WFP), United States Agency for International Development (USAID), Department for International Development (DfID), the World Bank, the Australia Agency for International Development (AusAID), and the United Nations Entity for Gender Equality and the Empowerment of Women (UN Women).

82. The report is the *fourth* main deliverable of the ADS Preparation Team, after the *Inception Report*⁸, the *Assessment Report*⁹, and the *Vision Report*¹⁰. The *Assessment Report* presented the current situation of the Agricultural Sector, identified issues and constraints, and discussed the policy context. The *Vision Report* presented the stakeholders’ view of the Agricultural Sector over the next 20 years, taking into consideration likely trends of factors exogenous to the agricultural sector and lessons from experience of agricultural transformation in other countries.

1.2 Objective of the Policy Options Report

83. The *Policy Options Report* main objective is to present the recommendations of the TA Team to accelerate the process of agricultural transformation of Nepal from the current situation of low agricultural development to the desired situation envisaged in the ADS vision¹¹.

⁸ ADB 7762-NEP (2011) Inception Report. Technical Assistance for the Preparation of the Agricultural Development Strategy, Asian Development Bank, September 2011

⁹ ADB 7762-NEP (2011) Assessment Report. Technical Assistance for the Preparation of the Agricultural Development Strategy, Asian Development Bank, April 2012

¹⁰ ADB 7762-NEP (2011) Vision Report. Technical Assistance for the Preparation of the Agricultural Development Strategy, Asian Development Bank, December 2012

¹¹ The Vision Statement presented in the Vision Report is: *A self-reliant, sustainable, competitive, and inclusive agricultural sector that drives economic growth, and contributes to improved livelihoods and food and nutrition security.*

84. The recommendations are based on the analysis of alternative options to overcome the constraints identified during the assessment phase of the ADS TA.

1.3 Methodology

85. The *Policy Options Report* presents the recommendations to overcome the constraints to achieving the vision described in the *Vision Report*. The constraints are those discussed in the *Assessment Report* and are listed in the problem tree presented in [APPENDIX 1](#).

86. The process followed to arrive at the recommendations presented in this report is as follows:

- i. **Link subsector visions to the overall vision.** The ADS provides a strategy for the overall agricultural sector and allied subsectors such as crops, livestock, irrigation, forestry, agribusiness, etc. For each of these subsectors, the ADS Team, on the basis of extensive consultations in the field and thematic group discussions, have formulated specific sub-visions. The sub-visions are consistent with the overall vision formulated by stakeholders in the Vision Workshop of 30 November 2011 and further refined over the course of 2012. The overall vision is stated as follows: *“A self-reliant, sustainable, competitive, and inclusive agricultural sector that drives economic growth, and contributes to improved livelihoods and food and nutrition security.”*
- ii. **Identify policy options.** For our purpose, the expression “policy options” refers to measures which affect change and may consist of policies, investments, or institutional innovations. They are measures to address the problems already identified in the sector analysis and assessment. They are measures that the ADS can do something about in order to move closer to the specific subsector vision. The identified options have to be feasible options and within the purview of the ADS.
- iii. **Analyze advantages and disadvantages of each option.** Each option was analyzed¹² from different points of view (technical, economic/financial, institutional, and social) in order to identify the advantages and disadvantages and provide a basis for a recommendation.
- iv. **Suggest one preferred option and justify the recommendation.** The recommendations presented in this report are the outcome of the analysis of the options described above.

1.4 The Process of Agricultural Transformation

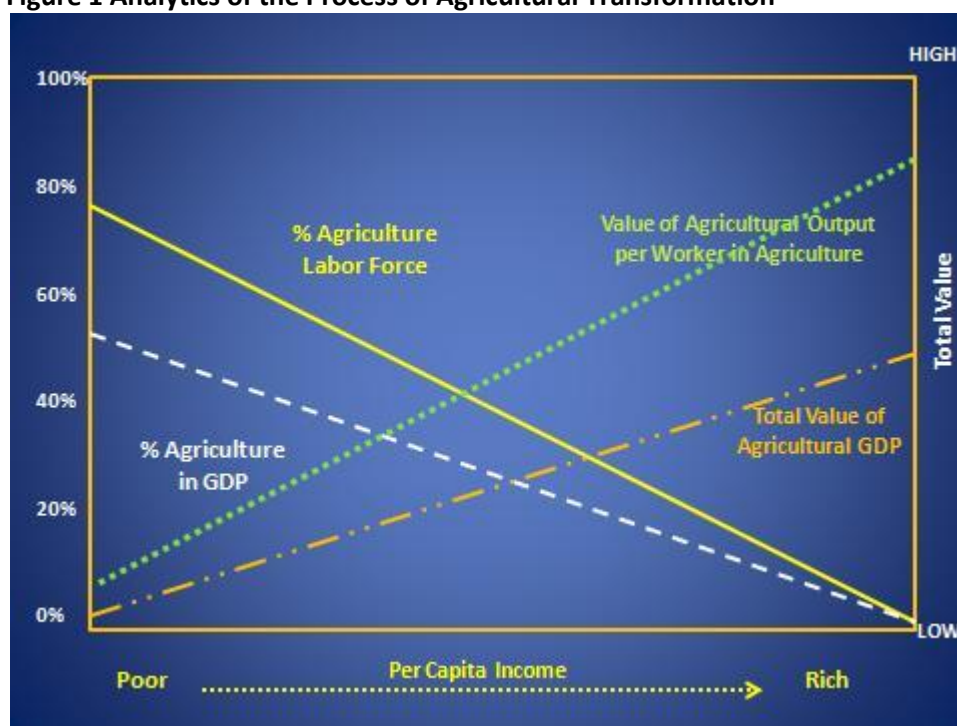
87. The process of options identification and analysis conducted by the ADS TA Team during the policy options phase of the TA had led to the formulation of recommendations that have been validated through a number of consultative processes (workshops, thematic groups, steering committee, consultations with civil society including farmer organizations cooperative organizations and business organization, and consultations with policy makers).

¹² The detailed analysis is provided in the background reports.

88. The recommendations have been combined into a general framework that provides a preliminary insight into the strategy for the agricultural sector. This preliminary strategy is formulated taking into account the conceptual framework of **agricultural transformation** of Nepal from a society primarily based on agriculture to one that derives most of its income from services and industry. This process will have profound implications for the ways the Nepali population will shape their food production and distribution systems, the development of rural areas including the rural non-farm sector, labor and land productivity, trade balance, employment and outmigration of the youth, the role of women in agriculture, and management of natural resources in the context of increasingly more severe climate change events. The ADS will ensure that the process of agricultural transformation is accelerated and molded according to the aspirations and constraints of Nepali society.

89. The analytics of the process of agricultural transformation is illustrated in [Figure 1](#).

Figure 1 Analytics of the Process of Agricultural Transformation¹³



Source: Adapted from Timmer 2007.

90. In this process of transformation, several things take place at the same time. Agricultural GDP and labor share of agriculture decline, but at the same time agricultural productivity and agricultural GDP increase. So, in spite of being less as a share of total GDP, agricultural GDP is still growing bigger.

¹³ The graph is a conceptual one. The actual curves might not be linear and the numbers are illustrative. The graph has to be taken only as abstract representation of complex processes, rather than as a statistical illustration of actual numbers.

91. Four lessons from the process of agricultural transformation are relevant to the formulation of ADS's vision. The lessons can be summarized as follows;

1. Total Factor Productivity (TFP) growth is the main source of future agricultural growth.
2. At early stage of development, agricultural growth is the main engine of poverty reduction. Lower inequality enhances the impact of growth on poverty reduction.
3. Integration of smallholder farmers with modern value chains is a feasible response to the urbanization challenge.
4. As the economy moves closer to middle income status, the development of the rural non-farm sector becomes increasingly important in closing the gap between rural and urban areas.

92. **Productivity Matters.** Increased agricultural productivity is the main stylized fact of agricultural transformation. Increased productivity allows freeing up resources (labor and capital) for the development of other sectors. It also contributes to higher income and therefore higher demand by rural population for goods and services produced by the non-agricultural sector. Increased productivity can be achieved in different ways, by using factors of production more intensively and efficiently, by adopting new production technology, by expanding values, by improving exchange rates, by innovations along the value chain.

93. Total factor productivity (TFP) represents the intangibles explaining productivity growth. The main driver of growth in modern economy is total factor productivity (TFP), which is the part of growth output not explained by growth in inputs. TFP requires knowledge and relies upon intangible things such as technology, innovation, efficiency, creativity, and governance.

94. TFP growth contributed between 40% and 70% to agricultural output growth in Asia¹⁴. The factors affecting TFP growth in agriculture include accelerated investments in agricultural research, extension, and education (REE). Paradoxically, the countries at early stage of agricultural transformation invest less in REE, even though they could benefit most in terms of reduced poverty¹⁵.

95. **Poverty and Inequality Matter.** The historical record shows that no country (except city states) has ever seen rapid economic growth without substantial growth of its agriculture. In many cases the increases in agricultural output have preceded the major expansions of manufacturing. This would be the case for the UK in the 17th and 18th C, as well as many of the recent East Asian growth stars, such as China, South Korea, Indonesia, and Taiwan. Moreover, agricultural productivity growth contributes to overall productivity growth – agriculture is a large sector at initial stage of development, has strong growth linkages with the rural and urban economies.

96. In fact, even more interestingly, agricultural growth has a strong poverty reduction effect, particularly at early stages of development. Agricultural growth reduces poverty as most of the poor live in rural areas and agriculture is the main occupation of rural population at initial stages of development. Moreover, farming:

¹⁴ Keith O. Fuglie, 2010, Total Factor Productivity in the Global Agricultural Economy: Evidence from FAO Data.

¹⁵ Nienke M. Beintema and Gert-Jan Stads, 2008, Measuring Agricultural Research Investments, Agricultural Science and Technology Indicators, ASTI Background Note

- can use relatively large amounts of unskilled labor compared to capital, so that agricultural growth results in increased **demand for unskilled labor**, thus creating jobs and tending to raise the rural wage rate;
- generates **returns to land**, an asset that some of the poor have when they have few other assets than their labor power;
- tends to **push down the price** of produce, including food, to the immense benefit of the majority of the poor who have to buy in food staples.

97. In fact, food productivity growth contributes to higher calories per capita and reduction of real prices of food – food expenditure is the major budget share of the poor.

98. Quantitative comparisons across countries using regression analysis tell a similar story. It has been estimated¹⁶ that for every 10% increase in farm yields there is a 7% reduction in poverty in Africa and a 5% reduction in Asia. Growth in manufacturing and services has no such effect.

99. While the link between agricultural growth and poverty reduction is well established, the link between agricultural growth and inequality is not clearly established in the literature. The evidence is mixed. In some cases (Korea, Taiwan, China) economic transformation reduced income inequality. In other cases, the opposite has occurred (India).

100. There is however an indirect link between agricultural growth and inequality that could be best appreciated through the introduction of the concept of Growth Elasticity of Poverty Reduction (GE). GE is the proportionate change in the measure of poverty that results from a given rate of growth. A large negative GE reveals that even a modest growth rate can bring rapid poverty reduction. For the US\$1-a-day poverty rate, the average GE is about -2, meaning that a growth rate of, say, 5% in household income per capita will reduce the share of the population living below the poverty line by 10 percent a year (in proportionate terms).

101. **Cities Matter.** Most of urban growth in the world will occur in Asia. Larger cities and urban populations present various challenges:

- More food is supplied from diverse and distant sources.
- Food is more processed, more conveniently prepared, better packaged and stored, more scrutinized for quality and safety.
- Agricultural land particularly peri-urban land is under pressure for conversion to non-farm uses.
- Increasing need for improved food logistics and infrastructure

102. Traditional food distribution systems are not well prepared for meeting the challenges of rapid urban growth. Instead modern value chains are required, that provide organized systems of exchange from production to consumption with the purpose of increasing value and competitiveness. Modern value chain creates business linkages by getting stakeholders to work together. This requires effective coordination of decisions and exchange, and hence Governance. In order to increase value, the value chain needs to meet consumer demand and be competitive. In order to keep competitiveness, the value chain needs to innovate continuously. In order for

¹⁶ Irz, X, Lin Lin, Thirtle, C and Wiggins, S. (2001). Agricultural Productivity Growth and Poverty Alleviation." Development Policy Review. 19(4):449-466.

the chain to establish effective linkages, the chain needs to distribute benefits that provide incentives to the participants.

103. Supermarkets are the most sophisticated value chains to meet the food demand of growing urban population. A Supermarket Revolution¹⁷ has been spreading throughout Asia and moving fast particularly in East Asia and Southeast Asia. South Asia has been lagging behind so far, but it is catching up. Supermarkets imply a massive reorganization of food distribution. In this reorganization, new standards are established and smallholder farmer are often at a loss to meet the standards and integrate along these modern value chains. Yet, unless they integrate, they will be left out of the most dynamic food distribution sector in developing Asian economies.

104. Fortunately, there are examples of successful integration of smallholder farmers with supermarket chains and value chains. Vegetable farmer cooperatives in West Java, dairy cooperatives in India (e.g. Amul), and feed and poultry integrators (e.g. CP in Southeast Asia and China) provide models for replication.

105. **Rural Non-Farm Sector Matters.** A vast literature has documented the linkage between strong agricultural growth and strong growth of Rural Non Farm Economy (RNFE), at early stage of development. The multiplier effect from agricultural growth to RNFE has been quantitatively estimated¹⁸. Each dollar of additional income in agriculture generates \$0.6 to \$0.8 of additional RNFE income in Asia, and \$0.3 to \$0.5 in Africa and Latin America.

106. Although rural areas prosperity depends on agricultural performance during the early stages of economic development, this link gradually weakens over time as agriculture's share in national economies declines.

107. Evidence from India, for example, suggests that rapid rural nonfarm growth is occurring along transport corridors linked to major urban centers, largely independent of their agricultural base. Similarly, in Southeast Asia and in China high population density and low transport costs have led to rapid growth in urban-to-rural subcontracting for labor-intensive manufactures destined for international export markets, and to astonishing rates of rural-urban migration.

108. The relation between rural non-farm economy and agriculture has different dimensions:

- Rural non-farm activities improve food security by diversifying income sources and improving the ability of rural households to cope with shocks
- Rural non-farm activities generate employment for the poor

¹⁷ The Rise of Supermarkets in Africa, Asia, and Latin America, Thomas Reardon, C. Peter Timmer, Christopher B. Barrett and Julio Berdegue, *American Journal of Agricultural Economics*, Vol. 85, No. 5, Proceedings Issue (Dec., 2003), pp. 1140-1146.

¹⁸ Peter Hazell 2010, Linkages between agriculture and the rural nonfarm economy in support of rural transformation, Briefing n. 24, Imperial College of London, SOAS
Haggblade, Steven, Peter Hazell and Thomas Reardon (eds.). *Transforming the Rural Nonfarm Economy*. Baltimore: Johns Hopkins University Press, 2007.
Haggblade, Steven, Peter Hazell and Thomas Reardon. "The Rural Nonfarm Economy: Prospects for Growth and Poverty Reduction". *World Development*, 38(10):1429-1441, 2010.

- Growth of employment in the non-farm sector is typically faster than in the rural farm sector

109. Agribusiness is one of the most important non-farm activities. In particular, it is the non-farm industry most closely linked to farming. Agribusiness includes a broad array of activities (processing, input supply, storage, distribution) aimed at adding value on the agricultural raw material. Agribusiness share in GDP increases as agricultural share is declining. In US for example, while farming is less than 1% of GDP, agribusiness (food and fiber system) sector contributes about 12% of GDP.

1.5 Implications of the Lessons from Agricultural Transformation

1. Accelerate investment in Science and Technology. Invest in the Knowledge Triangle – research, education, and extension.
2. Ensure broad-based and inclusive agricultural growth. Invest in programs to moderate social and geographic inequalities.
3. Integrate smallholder farmers with competitive value chains.
4. Promote rural infrastructure and rural agro-enterprises.

1.6 Agricultural Sector Broader than Agriculture

110. It is worth emphasizing that the ADS looks at the agricultural sector in its complexity, and encompasses not only the production sectors (crops, livestock, fisheries, forestry) but also the processing sector, trade and other services (storage, transportation and logistics, finance, marketing, research, extension). Over the course of the ADS period, the structure of the agricultural sector in Nepal is expected to change considerably and the agribusiness sector to grow relatively to the agriculture sector. The linkages between agriculture and other sectors in the economy will be critical to the reduction of poverty particularly in rural areas where the development of non-farm activities based on agriculture will be fundamental for the growth of an overall robust economy, a more balanced rural economy, and employment generation.

1.7 Preliminary Strategic Framework

111. In order to achieve the vision of “a *self-reliant, sustainable, competitive, and inclusive agricultural sector that drives economic growth, and contributes to improved livelihoods and food and nutrition security,*” the ADS will accelerate agricultural sector growth through four strategic components including improved governance, productivity, commercialization, and competitiveness while promoting inclusiveness (both social and geographic), sustainability (both natural resources and economic), development of private sector and cooperative sector, and connectivity to market infrastructure (eg agricultural roads, collection centers, packing houses, market centers), information infrastructure and ICT, and power infrastructure (eg rural electrification, renewable and alternative energy sources). The acceleration of inclusive, sustainable, multi-sector, and connectivity-based growth is expected to result in increased food and nutrition security, poverty reduction, agricultural trade surplus, and higher and more equitable income of rural households. [Figure 2](#) provides an illustration of the key ideas of the ADS.

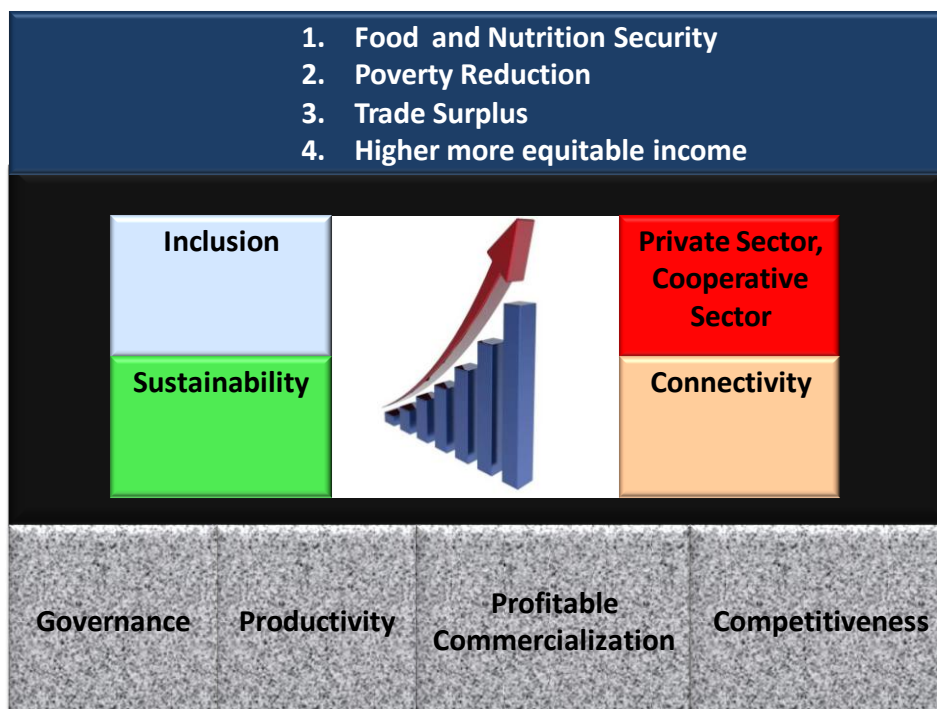


Figure 2 Key Ideas of the Agricultural Development Strategy

1.8 Decentralization and Agroecological Diversity

112. The emphasis of the strategic approach on inclusion and the governance pillar of the ADS have implications for two key dimensions which subsume the implementation of the ADS, namely decentralization and agroecological diversity.

113. The ADS will strongly support the implementation of the Local Self-Governance Act of 1999. Participatory planning at the local level will be essential to ensure identification of investments that are responsive to the local needs and accountability to the local communities. The new guidelines by the Ministry of Finance in Budget Speech 2011/2012 indicating a 15% investment in agriculture provide a new impetus for the involvement of the local government in agricultural investment.

114. A new administrative structure of Government Nepal, envisaging the possibility of a Federalist Structure is still under discussion by political forces. The formulation that is being prepared by the ADS Team is based on the existing administrative structure and might require some modification in the new administrative structure that will emerge in the future. However, the ADS current formulation is in harmony with the principles of decentralization, local self-governance, and participatory planning that are likely to remain present in the future. For example, the ADS is promoting the establishment of community-based and management agricultural extension centers or CAESC (see [Box 2](#)); moreover, the ADS supports capacity building of regional and district agricultural development committee (see section [2.23-2](#)).

115. Given the rich agroecological diversity of Nepal, investment programs will need to be tailored not only to the needs and potential of different communities but also to their agroecological conditions. For example, in the design of irrigation projects, the conditions of terai, hills, and mountainous areas differ markedly and technological solutions will need to be

adapted. Similarly, the approach to value chain development will require taking into consideration the geographical nature of the supply chain, from production areas to consumption or export destinations. Even though the ADS will be one national strategy, its implementation at the local level will take into consideration specific agroecological and socioeconomic conditions.

116. The national programs of the ADS will coexist with local programs that are funded by local agencies (eg VDC, community based organization), private sector and cooperatives and integrated with national programs. The ADS will encourage local government to establish and fund local programs that address the specific local needs that cannot be addressed by national programs. In addition to the funding from the local agencies, additional sources of funding to local programs could be raised through application to various funds such as the Nepal Agricultural Research Fund (see [Box 3](#)), the Innovation Fund, the Youth AgroEntrepreneurship Program and the Women Agroentrepreneurship Program (see section [5.26-2](#)).

117.

118. [Table 1](#) presents a summary of the main recommendations for each strategic component

Table 1 Strategic Components and Recommendations

Governance	
1	Policy Credibility. Enhance consistency of policy and greater continuity in the leadership and implementation of programs and projects.
2	Coordination. Strengthen the capacity of existing coordination institutions and establish new mechanisms within the existing coordination institutions to address emerging needs to coordinate government agencies programs and projects with cooperative sector, private sector, farmer organizations, NGOs, and development partners.
3	Integrated Planning. Assign to NPC the responsibility to oversee the implementation of multi-sector plans and policies, including the assurance that policies and plans are adequately budgeted.
4	Implementation Support. Establish an ADS Support Technical Assistance Unit to facilitate the implementation of the ADS through analytical services, monitoring and evaluation, and technical assistance.
5	Gender Equity and Social and Geographic Inclusion. Establish a comprehensive set of mechanisms at the policy, planning, and implementation levels to assure gender equity, social inclusion, and geographical inclusion in the ADS through capacity building of relevant institutions at the central and local level.
6	Policy and Program Monitoring and Evaluation. Support various government units with capacity building and resources in order for them to carry out policy and program monitoring and evaluation on a timely and professional manner.
7	Participation and Accountability. Ensure that civil society including farmer organizations, cooperatives organizations, trade/industry organizations, women organizations, and socially disadvantaged groups are engaged in the ADS, have access to information, and provide comments and recommendations throughout the process of planning, implementation, and monitoring of the ADS.
8	Capacity Building and Human Resources Development. Focused plan of capacity building and human resource development of targeted institutions to improve ADS implementation.
Productivity	

1. **Extension.** Promote participation of private sector, cooperative sector, NGOs, and public sector in agricultural extension and adopt of a pro-poor decentralized extension system approach to dissemination and adoption of innovative and demand-oriented technology and know-how.
2. **Research.** Restructure NARC with focus on decentralization and responsiveness to research needs of farmers and agroenterprises while fostering linkages within the Research-Education-Extension triangle.
3. **Education.** A comprehensive package for improved capacity of the agriculture university, agricultural colleges, and vocational schools, and better response to the needs of farmers and agroenterprises.
4. **Land.** Improve land use management and planning to promote a farming sector composed of adequately sized owner-operated, larger-size cooperatives and agro-business farms that use land efficiently and sustainably.
5. **Irrigation.** Expand irrigable area by the most economic and equitable means while increasing irrigation efficiency and intensity, and improving irrigation management.
6. **Inputs.** Formulate and adopt consistent policies for input supply and distribution.
7. **Seeds.** Ensure effective implementation of existing seed policies through sufficient investment in resources and capacity building.
8. **Fertilizer.** Maintain fertilizer and other subsidies at 2011 level in the short term, review them in the medium term and remove them in the long term while initiating a number of measures to improve productivity and fertilizer use efficiency, facilitate effective distribution and supply to meet demand, and promote organic and bio fertilizer as a supplementary or complementary measure.
9. **Animal breeds.** Ensure the desired level of improved breeds of livestock, poultry, and fish.
10. **Mechanization.** Support private sector led mechanization with awareness creation, demand stimulation, concessionary financing arrangements, capacity building, and taxation.
11. **Building Resilience.** Increase resilience of farmers to climate change events, disasters, and idiosyncratic shocks through the combination of measures such as adoption of stress tolerant crop and animal species, establishment of early warning systems (EWS), access to Farmers' Welfare Fund, and food reserves system.
12. **Green Farming and Renewable Energy.** Establish Good Agricultural and Veterinary Practices standards and promote adoption of good practices in integrated soil fertility, plant nutrients, pest management, and herd management while promoting renewable energies based on biogas and biomass utilization.
13. **Forestry.** Develop subsistence production based forestry into a competitive, agriculture friendly and inclusive forest management practices in line with a holistic and community based landscape approach to natural resource management and livelihoods improvement.

Commercialization

1. **Investment Climate.** Improve investment climate for agricultural commercialization through structure dialogues of the government with farmer organizations, trade organizations, cooperative organizations, and other private sector organizations.
2. **Contracts and Insurance.** Strengthen contractual arrangements to promote agricultural commercialization through promotion of contract farming, land leasing, equipment leasing, secured transactions for warehouse receipts and livestock and crop insurance.
3. **Taxes.** Develop tax policy supportive of an efficient commercial agricultural sector with the long term objective of agricultural sector providing the government with an additional source of revenues.
4. **Finance.** Promote development of diverse agricultural finance providers that supply a variety of competitive and demand-driven financial products.
5. **Value Chains.** Prioritize the development of competitive agricultural value chains that increase value added and benefits to smallholder farmers.
6. **Agricultural Roads.** Continue the development of rural roads and accelerate the expansion of the network of agricultural roads.
7. **ICT and Market Intelligence.** Strengthen and rationalize existing systems of agricultural market information and establish new suites of ITC products for market intelligence.
8. **Rural Electrification.** Support expansion of rural electrification programs through the promotion of

renewable energies (water, solar, wind, biomass, biogas).

Competitiveness

1. **Market Infrastructure.** Promote development of market infrastructure through the combination of public investment, PPP and community participation.
2. **Innovation.** Promote innovative agribusiness enterprises through the combination of tax incentives, innovation matching grant funds, and agribusiness incubators, and agroentrepreneurship programs for the youth and women and disadvantaged groups.
3. **Export Promotion.** Strengthen trade negotiation capacity; strengthen capacity building to improve ability to apply and comply with sanitary and phytosanitary (SPS), anti-dumping (AD), and countervailing duty (CVD) measures; reduce/eliminate pro-manufacturing bias in tariff structure; and review and assess the policy of pegged exchange rate with India and its impact on the agricultural sector.
4. **Food Safety and Quality.** Strengthen regulations and institutions for enhancing food safety and quality.

119. Selected targets for each component of the strategy are included in **Table 2**. These overall targets will be further elaborated during the preparation of the Action Plan.

Table 2 Targets for the Strategic Components of the ADS

Component	Indicator	Current Situation	Target
Productivity	Land productivity	\$1,600/ha	\$5,000/ha
	Labor productivity	\$800/agricultural labor	\$2,000/agricultural labor
Commercialization	Marketed surplus	Less than 50% of agricultural production	More than 80% of agricultural production
	Agribusiness GDP	30% of Agricultural GDP	100% of Agricultural GDP
Competitiveness	Agri-food exports	\$250 million	\$1,600 million
Governance	Agricultural Growth	3% average annual growth	5% average annual growth

1.9 Institutional Innovations in the ADS

120. The ADS approach to institutional reform is to strengthen existing institutions, build upon them, and propose institutional innovation only to the extent that there are no existing institutions to carry out specific objectives. The details of the proposals summarized in this section will be elaborated in the ADS Draft Final Report.

121. **National Support Committee (NSC) and Sub-Committees** (see section 2.2). The National Support Committee, under the chairmanship of Vice Chairman (VC) of National Planning Commission (NPC) will be strengthened and the following sub-committees will be created for improving coordination between different agencies and stakeholders including coordination:

- a. Between agriculture and irrigation extension (specifically between DOA and DOI)

- b. Between government sector, private sector (e.g. FNCCI, AEC, Agribusiness Associations), cooperative sector (National Federation of Cooperatives), and farmer organizations (Peasant Coalition)
- c. Between government sector and NGOs/INGOs
- d. Between government and development partners
- e. Among Research-Extension-Education (NARC - DOA, DLS, DFTQC - University of Agriculture and Forestry, Colleges of Agriculture, Center of Vocation Education and Training)
- f. Between Agricultural Development and Food Nutrition Security and Food Safety (MOAD and MOH, National Nutrition and Food Security Steering Committee-NNFSSC)

122. **Central Agriculture Development Implementation Committee (CADIC)** chaired by Secretary MOAD (see section 2.2). It is proposed that new members should include (i) representative of National Federation of Cooperatives; and (ii) representative of Peasants Coalition.

123. **Establishment and Strengthening of a Policy Analysis Division at MOAD** (see section 2.6). This would entail the upgrading of the Policy Section currently under the Planning Division of MOAD.

124. **Establishment and Creation of International Agricultural Trade Division at MOAD** (see section 5.3). This would entail the combination of the WTO Section currently under the Agribusiness and Statistics Division of MOAD, the SPS inquiry point currently under the DFTQC, and a new section on International Agricultural Trade Promotion.

125. **Establishment of National Agricultural Research Fund (NARF)** under NARC; existing NARDF to be merged with NARF (see section 3.3).

126. **Establishment of three new national research institutes within NARC** (see section 3.3), namely the National Horticulture Research Institute (NHRI), the National Animal Health Research Institute (NAHRI), and the National Aquaculture and Fisheries Research Institute (NAFRI).

127. **Establishment of research stations in Far Western Region different agroecological areas** to supplement the recently established Regional Agricultural Research Station (see section 3.3).

128. **Establishment of Agriculture Mechanization Centers** in the terai (2), mid hills (1), and high hills (1) within existing research centers (see section 3.3).

129. **Agricultural Innovation Fund** to promote innovative start-up agroenterprises (see section 5.2).

130. **Agribusiness Incubators** (see section 5.2) to facilitate growth of start-up agroenterprises with a menu of facilitating services (infrastructure, training, networking, access to information, markets, and finance).

131. **Establishment of Community Agricultural Extension Service Centers (CAESC) in each VDC** (see section 3.2) that are funded and managed by VDC or local communities or cooperatives

and are linked to existing DOA/DLS service centers/subcenters for technical support and backstopping.

132. **Voucher System** (see section 3.2) to empower farmers in their access to technology.

133. **Farmers' Welfare Fund** to improve resilience of farmers (see section [3.123.12](#)).

134. **Youth Agro-Entrepreneurship Program, Women Agro-Entrepreneurship Program, and Disadvantaged Groups Agro-Entrepreneurship Program** providing capacity building and access to matching grant for specific target groups intending to invest in agroenterprises (see section 5.2).

135. **ADS Information desks** at MOAD, NARC, Departments and at district level (see section 2.7).

1.10 Organization of the Report

136. The report is organized into 7 chapters as follows:

Chapter 1	Introduction
Chapter 2	Governance
Chapter 3	Productivity
Chapter 4	Commercialization
Chapter 5	Competitiveness
Chapter 6	Subsector Implications of the Policy Options
Chapter 7	Next Steps

137. The report includes an appendix summarizing the problem tree for the agricultural sector in Nepal.

Formatted

2 GOVERNANCE

138. There is a broad agreement that governance is critical for development but much of the consensus about how governance matters is still deficient. The good governance agenda emphasizes the need in developing countries to have policies that stabilize property rights and engage in rule-of-law reforms, carry out anti-corruption and anti-rent seeking strategies, engage in democratization and accountability reforms, and sustain these through the mobilization of the poor through the prioritization of pro-poor spending by governments (see Khan 2010¹⁹).

139. Extreme views on this theme suggest on one hand that good governance is the key to development and on the other extreme, that good governance is not an essential element to growth and poverty reduction.

140. Governance itself is a slippery concept and a precise and broadly agreed definition is elusive. However, from the point of view of the ADS it would be sufficient to identify those key elements of good governance that are critical to the success of the ADS.

141. In the ADS we will refer to governance as **“the capacity of government to design, formulate and implement policies and discharge functions.”** (World Bank 1992²⁰)

142. In the absence of such capacity there is little doubt that it will be difficult to design, formulate, and implement strategies such as the ADS.

143. Some key elements of governance include²¹ (see ADB):

- (a) *Accountability.* Public officials should be answerable for government behavior and responsive to the entity from which they derive authority. The accountability of public sector institutions is facilitated by evaluation of their economic performance. The suggested specific areas of action would be in the building of government capacity through, for example, public-sector management, public-enterprise management and reform, public financial management and civil-service reform.
- (b) *Participation.* Government structures should be flexible enough to offer beneficiaries and others affected the opportunity to improve the design and implementation of public programmes and projects. The specific areas of action would be in the development of participatory development processes through, for example, participation of beneficiaries, a public/private-sector interface, decentralization/ empowerment of local government and cooperation with non-governmental organizations (NGOs).
- (c) *Predictability.* Laws and policies should exist that regulate society and that are applied fairly and consistently. Predictability requires the state and its subsidiary agencies to be bound by and answerable to the legal system in the same way as private enterprises and individuals. The specific area of action could be the development of predictable and

¹⁹ Mushtaq H. Khan 2010. Governance, Growth and Development, Real Instituto Elcano, ARI 138/2010

²⁰ World Bank 1992, “Governance and Development”, the World Bank

²¹ ADB 1995, “Governance: Sound Development Management”, Asian Development Bank, October 1995

detailed legal frameworks for land reform and development of the private and cooperative sectors.

- (d) *Transparency.* Information should be made available to the general public and there should be clarity as to rules and regulations. Access to timely information on the economy can be vital to economic decision-making by the private and public sector and can also serve to inhibit corruption.

144. The following sections highlight the recommendations to improve governance that contribute to the ADS success. [Table 3](#) summarizes the recommendations.

Table 3 Recommendations to Improve Governance

No.	Area	Recommendation
1.	Policy Credibility	Enhance consistency of policy and greater continuity in the program leadership and implementation of programs and projects.
2.	Coordination	Strengthen the capacity of existing coordination institutions and establish new mechanisms within the existing coordination institutions to address emerging needs to coordinate government agencies programs and projects with cooperative sector, private sector, farmer organizations, NGOs, and development partners.
3.	Planning	Assign to NPC the responsibility to oversee the implementation of multi-sector plans and policies, including the assurance that policies and plans are adequately budgeted.
4.	Implementation Support	Establish an ADS Support Technical Assistance Unit under NPC to facilitate the implementation of the ADS through analytical services, monitoring and evaluation, and technical assistance.
5.	Gender Equality and Social and Geographic Inclusion	Establish a comprehensive set of mechanisms at the policy, planning, and implementation levels to assure gender equity, social inclusion, and geographical inclusion in the ADS through capacity building of relevant institutions at the central and local level.
6.	Monitoring and Evaluation	Support various government units with capacity building and resources in order for them to carry out monitoring and evaluation on a timely and professional manner.
7.	Participation and Accountability	Ensure that civil society including farmer organizations, cooperatives organizations, and trade/industry organizations are engaged in the ADS, have access to information, and provide comments and recommendations throughout the process of planning, implementation, and monitoring of the ADS.
8.	HRD and Capacity Building	Focused plan of capacity building and human resource development of targeted institutions to improve ADS coordination and implementation.

--	--	--

2.1 Credibility of Policy Commitment

The problem:

145. Policy Implementation cannot be effective unless society believes that government decisions are consistent and sustained over time with adequate institutions, investments, and enforcing mechanisms. Continuous changes in leadership of the institutions involved in the agricultural sector do not allow to build capacity and competences to carry out programs effectively. Gaps between policy statements and implementation (eg. Agribusiness Policy 2005) have a negative effect on investment and compliance with rules and regulations. The push toward decentralization and devolution is not helped by the lack of elected bodies at the local level. The changes in input subsidy policy over the past 15 years (provision of subsidies, withdrawal of subsidies, and again provision of subsidies) leave great confusion and uncertainty.

The solution:

146. Agreed strategy and political support during implementation.

The recommendation:

147. Enhanced consistency of policy and greater continuity in the leadership and program implementation. The contribution of ADS to credibility and consistency of policy is as follows:

- The ADS provide a coherent policy framework for agricultural policy.
- The ADS will be approved with broad consensus of political forces so that it is truly owned by the GON and resilient to political changes.
- The realization that (i) ADS implementation will require commitment of resources by different stakeholders (government, private sector, communities, development partners); (ii) these resources are considerably higher than what invested in the past; (iii) commitment of these resources in the agricultural sector will require consistency and continuity of policy and an investment climate supportive to private investment²²; (iv) the ADS framework provides a consistent approach towards the creation of a conducive policy environment and a supporting investment climate for the agricultural sector.

148. Consistency and continuity does not imply rigidity and inflexibility. Changes in the ADS are possible and will be required over time. The continuous assessment of performance and context will enrich the ADS and ensure its ongoing improvement.

149. It is important however to know what are the key elements of the ADS that need to remain stable and the ones that could be changed over time.

150. Key elements that should remain stable:

- The ADS vision
- The following principles:
 - Food security and food safety.
 - Private sector development.

²² On investment climate see also section [4.14.1](#).

- Cooperative sector development.
- Inclusiveness and sustainability.
- Growth.
- Productivity.
- Competitiveness.
- Transparency and accountability.

151. Measures to assure consistency and credibility:

- Awareness campaigns (at preparation stage, approval stage, and implementation stage).
- Dissemination of information (progress reports and monitoring reports).
- Monitor policy implementation performance outcomes annually, and alert implementation stakeholders if any lack of consistency and continuity arises during ADS policy implementation.
- Enact regulations that provide tenure of at least 3 years for key positions (eg Secretary, Director Generals, Program/Project Directors) at the central, program, and local level.
- Review, evaluation, and updating of ADS every 5 years.

Rationale:

152. Three factors are needed to solve the complex issues of agricultural development, namely: (i) a good plan and strategy; (ii) adequate resources; and (iii) credible policy commitment (see [Figure 3](#)).



Figure 3 Elements of a Successful Strategy

153. *A Good Strategic Plan.* The ADS aims to be a document that could guide future policy and program formulation and implementation. The key features of a good plan and strategy include: (i) Relevance of the issues; (ii) Clarity of the approach; (iii) Evidence-based analysis; (iv) Based on extensive consultation with a broad range of stakeholders; (v) Paying attention to both social and geographic inclusion; (vi) Paying attention to sustainability; (vii) Keeping into account the likely structural changes the economy and society will go through over the next 20 years.

154. *Adequate Resources.* The implementation of the ADS will require an amount of resources that is likely to be considerably higher than what is currently invested in the sector and also higher than what has been invested in the past. Resources to the agricultural sector have to be increased and be more predictable, so that programs can be formulated and provided

with continuity. Public sector resources including development partner commitments should be identified early on to ensure that especially the initial years of the ADS implementation are successful so that momentum is gained to accelerate growth of agriculture.

155. In addition to public sector resources, adequate incentives have to be created for mobilization of private sector resources, including remittances, and investment in the agricultural sector.

156. *Credibility of Policy Commitment.* This is perhaps the most crucial element of success of the ADS. Credibility of policy commitment derives from the capacity of the political forces in the country to overcome their differences and jointly embark on an ambitious long-term plan to develop the sector. This will require continuity of leadership and program implementation, monitoring and evaluation, and transparency of investment.

157. The Preparation of the ADS will focus on the first factor, namely A Good Plan and Strategy. The second factor – adequate resources – is currently worked out by GON and Development Partners as new interest in the agricultural sector is picking up and some partners are already planning for considerable investment in agriculture to be in place by the beginning of the ADS implementation period. The third factor – credible policy commitment – is something that overall society and main political forces have to work out.

158. The ADS is a dynamic process. Its formulation sets the stage for accelerated growth that is inclusive and sustainable. The strategic directions of the ADS will be embedded in an action plan for a period of 10 years. The ADS is however aware that over the course of its implementation, new information and contexts, both nationally and internationally, will emerge.

159. Therefore a process of continuously updating the ADS in its details and strategic direction is established from the very beginning to ensure that the ADS formulation, planning, and implementation are continuously improved.

160. A key milestone in the ADS will be its 5-year in depth review, evaluation, and updating to take into account the lessons learned and to inject new vigor in its implementation.

161. The review and evaluation will be led by NPC chairing a Steering Committee that includes representatives of relevant agencies and civil society stakeholders. The review and evaluation will be conducted by an independent panel selected by the Steering Committee.

162. The recommendations of the review and evaluation panel will be evaluated by the Steering Committee who will make the final decisions regarding the need of updating or adjusting specific parts of the ADS.

2.2 Coordination

The problem:

163. The experience of APP and other programs has shown the difficulty of coordinating effectively across multiple agencies and different administrative levels (central, district, village). Noteworthy, APP coordination was weaker at central level (among agencies such as NPC, MOAC, MOI, ...) than at district level. Even within the same agency, there are difficulties in coordinating

related programs. For example, there are different bodies within NPC for food security and nutrition. Within the same irrigation scheme, it is difficult to coordinate between irrigation engineers and agricultural extension officers. Even though at the national level the Social Welfare Council functions as coordinating body for NGOs, this provides very little coordination as far as agricultural development activities are concerned. There is no national level NGO program coordinating body. Coordination mechanisms with private sector, cooperatives, and development partners exist but are weak. Coordination with farmer organizations are not in place. Duplication and lack of synergies are common features of programs and projects.

The solution:

164. Strengthen the capacity of existing coordination institutions and establish new mechanisms within the existing coordination institutions to address emerging needs.

The recommendation:

165. Strengthen the capacity of National Support Committee (NSC) chaired by Vice Chairman NPC, Central Agriculture Development Implementation Committee (CADIC) chaired by Secretary MOAD, Regional Agricultural Development Committee (RADC) coordinated by Regional Director Agriculture and District Agricultural Committee (DADC) chaired by DDC Chairman.

- i. Establish sub committees under NSC to improve coordination
 - a. Between agriculture and irrigation extension
 - b. Between government sector, private sector, cooperative sector, and farmer organizations
 - c. Between government sector and NGOs/INGOs
 - d. Between government and development partners
 - e. Among Research-Extension-Education institutions
 - f. Among Food Security, Nutrition, and Food Safety initiatives
- ii. Provide legal status to the sub-committees and resources to develop capacity for effective coordination.
- iii. Ensure a representative of the National Federation of Cooperatives and a representative of the Farmers' Coalition are members of NSC, CADIC and a member of the District Agricultural Union of Cooperatives and district representative of the Farmers' Coalition are members of the DADC.
- iv. Ensure effective communication system between DADCs, RADCs, and CADIC through periodic briefings from DADCs to the RADCs and CADIC.
- v. Develop ADS Implementation Guidelines and Monitoring System with the support of the ADS Implementation Support Unit to be widely disseminated and adopted by central, regional, and district agencies and organizations.
- vi. Annual Sector Report on ADS by CADIC to NPC with assistance of Implementation Support Unit.

Rationale:

166. In the absence of effective coordination, there will be duplication of programs, lack of synergies, waste of resources, and missed opportunity to involve valuable partners in the development process.

2.3 Integrated Planning

The problem:

167. One of the most important examples of coordination is the conduct of integrated planning. Given its importance, it is considered separately from the other issues of coordination addressed in the previous section.

168. Periodic plans (5 years, 3 years, and 1 year plans) are conducted as a routine but they do not necessarily reflect integration of multi-sectoral aspects, assurance that policies will be implemented, and plans are budgeted. The planning exercise often consists in updating previous plans with little analysis of feasibility and consistency with overall policy.

169. Integrated planning is fundamental for the agricultural sector, as it affects several subsectors and many agencies, including the MOAD, MOI, MOFSC, MOL, MLD, and MOE.

The solution:

170. Integrated and structured, national, regional, district, local, and sectoral planning cycles under the auspices of an effective authority that oversees the full planning cycle (planning, implementation, monitoring and enforcement, assigns responsibilities and verifies that the plans are implemented.

The recommendation:

171. Assignment to NPC of the responsibility to oversee the implementation of multi-sector plans and policies, including the assurance that policies and plans are adequately budgeted.

172. *Integration of multi-ministry plans.* The role of integrating sector plans that impact more than one ministry should be conferred upon the NPC. To do so amend the National Planning Commission Formation and Operation Order, 2067 (2010) by stipulating that:

- i. The NPC has the primary responsibility to coordinate and integrate sector plans and budgets of one Ministry that have an impact on or are impacted by the programs of another sector.
- ii. The NPC shall present a report to the Parliament, together with the budget proposal of the Government on the manner in which sector plans that impact more than one Ministry are synchronized and impacted in the workplans and budget requests of the Ministries.

173. *Implementation of long-term strategies policies and plans in annual workplans and budgets.* The role of ensuring that long-term strategic policies and plans are translated into actual workplans of all relevant and/or involved Ministries should rest with NPC – to that end amend National Planning Commission Formation and Operation Order, 2067 (2010) to the effect that NPC is assigned with responsibility also for

- i. The verification that 5 year plans are compatible with national and regional long-term strategic policies and plans;
- ii. The verification that one year plans and budget allocation are compatible with the 5 year plans; and
- iii. The obligation to notify Government [Parliament] of any deviation thereof.

174. Introduce a procedure in the Parliamentary process that requires that together with the presentation of a draft Bill for Parliamentary legislation, the proponents (Government or Private Bills) provide a note on the costs for its implementation in terms of budgets and manpower

allocation. Such explanation should reduce the enactment of legislation which, due to the inability to implement remains a dead letter.

175. *Implementation Monitoring.* To ensure that plans in the agricultural sector are monitored for implementation - make effective use of existing policy level coordination forums of the National Agricultural Development Committee (NADC) chaired by the Minister of MOAD for projects that are primarily implemented by the MOAD and the National Development Action Committee (NDAC) chaired by the Prime Minister by

- i. Convening the NADC and NDAC as required by their regulations (every 2 and 4 months respectively at least);
- ii. Establishing by Government Order under the Good Governance (Management and Operation) Regulations, 2009 that NADC and NDAC annually report on the implementation of plans to the Government.

Rationale:

176. Improved planning will increase the likelihood that policies are translated into actions.

2.4 Implementation Support to the ADS

The problem:

177. Past experience shows large gaps between Periodic plans, Policies, Long Term Plans/Strategies and implementation. This was the case in the Agriculture Perspective Plan (APP). The gaps between plans and implementation are the results of several factors including (i) weak coordination among stakeholders; (ii) poor monitoring system and lack of mechanisms for timely adjustments in the plan; (iii) limited awareness and dissemination of the plans; (iv) weak capacity in policy analysis and monitoring, and understanding of regional and global policy context; (v) inadequate resources to implement the plans; and (vi) lack of harmonization of policies, protocols, regulatory frameworks between national and international agencies.

The solution:

178. The ADS should be supported by a mechanism providing a number of services that bridge the gap between plan/strategy formulation and implementation.

The recommendation:

179. An ADS Implementation Support TA under NPC to facilitate implementation of the ADS through (i) capacity building in policy analysis, policy harmonization, and regulatory framework; (ii) monitoring the ADS implementation status and helping to adjust the strategy as per the developmental stage of the sector; (iii) reviewing and evaluating the concept of sector wide approach (SWAP²³) for Agricultural Sector to enhance better coordination and increase flow of investment in the sector; (iv) developing and institutionalizing performance-based management system; and (v) assisting various coordinating mechanisms (NSC, CADIC, DADC) with analytical information and advisory services, including preparation of annual ADS report by CADIC to NPC.

²³ Sector-Wide Approach (SWAp) is an approach to international development that "brings together governments, donors and other stakeholders within any sector. It is characterized by a set of operating principles rather than a specific package of policies or activities. The approach involves movement over time under government leadership towards: broadening policy dialogue; developing a single sector policy (that addresses private and public sector issues) and a common realistic expenditure program; common monitoring arrangements; and more coordinated procedures for funding and procurement."

Rationale:

180. The complexity of the agricultural sector requires a set of analytical skills that cover different disciplines and are currently dispersed among different agencies. A unit responsible to the EA and reporting to the NSC and CADIC, endowed with analytical capacity, and assured of continuity at least over the first 5 years of the ADS will greatly contribute to bridging the gap between policy and implementation.

181. In the initial period of the ADS, the ADS implementation Support Unit with the guidance of NPC and GON Ministries will facilitate coordination and harmonization of the Development Partners' Country Strategic Plans with the ADS. Over the course of ADS, such harmonization and coordination will be institutionalized.

2.5 Mechanisms for Social, Gender, and Geographic Inclusion

The problem:

182. Social, gender, and geographic exclusion have multiple and complex links with agricultural development. Social differentiation of Nepal has led in the past to polarization and social conflict. Even in the present, inequality and fragmentation are very high and represent a constraint not only to social development but also to economic growth. Most of the poor are in rural areas and derive their livelihood from agriculture. Yet, agricultural policies, programs, and projects to address gender equality and social exclusion are often poorly planned and implemented. There is a growing recognition of the need to identify mechanisms that value diversity, eliminate or reduce polarization, and create cooperative arrangement for mutual benefits of the parties involved. This will need to be realistically formulated given the economic stage of development, the resources available, and the support of a leadership able to promote consensus around the strategy and its implementation.

The solution:

183. Promote increased and sustainable agricultural productivity across the country through enhanced regional equity and participation of all gender and excluded groups in policies, programs and projects' implementation.

The recommendation:

184. A comprehensive set of mechanisms at the policy, planning, and implementation levels to assure gender equality and social inclusion (GESI) and geographic inclusion in the ADS. The specific measures will include:

- i. Strengthening of the Gender Equity and Environmental Division (GEED) under the Ministry of Agriculture and Development (MOAD) for formulating and implementing agriculture policies, plans and programs from GESI and geographical inclusion perspectives;
- ii. Generation and maintenance of national level GESI-based and geographic inclusion-based statistics at MOAD/GEED within the monitoring and evaluation system as 'built-in mechanism' and providing feeding-back for formulating plans and policies;
- iii. Establishment and strengthening of GESI staff with clearly defined responsibilities at district level agencies for effective planning including budgeting, implementation and monitoring and evaluation/auditing of agricultural programs from GESI perspective;

- iv. Enhancement of qualitative and quantitative aspects of participation of men and women farmers from all gender and social groups in agricultural development programs implemented by district, sub-district and community level entities;
- v. Making the agricultural extension service GESI responsive in all districts;
- vi. Improvement in access for farmers (from all gender and socio-economic groups in all geographical regions) to means of agriculture production (land, credit, inputs such as seeds, fertilizer, improved technology, irrigation, and market);
- vii. Promotion of GESI responsiveness in the agricultural research and technology development process in all geographical regions.
- viii. Develop a GESI strategy as part of the ADS to ensure GESI perspective in planning, implementation, and monitoring of ADS activities

Rationale:

185. Increased equality of women and social inclusion will accelerate the process of growth and bridging the gap between current situation and vision. Inclusion will also free the potential of excluded group to contribute to overall growth, increase participation and reduce conflict, and promote cooperation of stakeholders in implementation. Inequality and social and geographic exclusion will perpetuate and even increase lack of trust and therefore slow down the implementation of investment and increase the cost of execution.

2.6 Monitoring and Evaluation

The problem:

186. GON conducts monitoring and evaluation (M&E) of its own programs on an annual basis. The gaps in M&E are numerous and include the following. First, M&E in one specific year is not linked to the previous year and therefore leaves the exercise a little in the dark as related to the trends of over time. Second, several programs relevant to agriculture such as those implemented by public corporations, boards, financial institutions, and councils are not part of the same monitoring and evaluation system; each organization monitoring is independent and there is no overall attempt at consolidation of the agricultural sector monitoring systems. Agriculture related programs implemented by NGOs, academia, and private sector are not monitoring by any national level agency. Fourth, there is no linkage between the performance of the programs and the performance evaluation of those who implement the programs. There is a system of punishment for administrative and financial irregularities, but no system of performance-based monitoring and management. Fifth, key issues such as climate change in agriculture, food and nutrition security, pests and diseases, and agricultural trade are not monitored systematically or regularly. Finally, policy and strategy monitoring is also largely lacking.

The solution:

187. A monitoring and evaluation system based on reliable and timely data on major agriculture-related programs carried out by public, private, and NGOs sector, and providing reliable monitoring of key issues, policies and strategies implementation, results, and performance.

The recommendation:

188. Support various government units with capacity building and resources in order for them to carry out monitoring and evaluation on a timely and professional manner. In particular, support should be given to the following monitoring activities:

- i. Status and performance of major agricultural programs implemented by GON, private sectors, NGOs, Academia, financial institutions, public boards, public corporations and Councils.
- ii. Status of implementation of major policies and plans.
- iii. Performance of implementation units and agencies.
- iv. Food and Nutrition Security, based on the development and institutionalization of the NeKSAP system already existing at MOAD as a project funded by WFP.

189. The recommendation would also entail upgrading the Policy Section currently under the Planning Division of MOAD into a *Policy Analysis Division*. Capacity of such Policy Analysis Division of MOAD should be strengthened to ensure that it could professionally carry out its functions. This policy division would provide a mechanism to institutionalize capacity building in policy analysis within MOAD. Given the presence of various policy centers and consulting firms in Nepal working on policy issues, separate independent policy studies could still be available; however capacity within the ministry is required to promote, interpret and evaluate the external studies.

190. In addition to policy monitoring, each department of MOAD has a monitoring and evaluation section that requires capacity strengthening.

Rationale:

191. In the absence on a regular and professional monitoring system, actual performance of the sector can only be guessed. It would be difficult to identify corrective actions when the specific problems to remedies are not timely and objectively identified.

2.7 Participation and Accountability

The problem:

192. In spite of the Local Self Governance Act, the participation of civil society in the formulation and implementation of plans for agricultural development is minimum. Accountability is limited to administrative regulation rather than to outcomes and performance. The lack of effective participation and accountability mechanisms is sometime bridged by politicization of issues that is often leading to inaction and conflict. The broader participation of civil society and particularly marginal groups is often manipulated by interest groups and does not necessarily reflect the interest of the marginalized groups.

The solution:

193. A set of transparent mechanisms through which the ADS is owned and improved by public debate and participation without leading to inaction and confrontational tactics.

The recommendation:

194. Ensure that civil society including farmer organizations, cooperatives organizations, trade/industry organizations, women organizations, and socially disadvantaged groups organizations are engaged in the ADS, have access to information, and provide comments and

recommendations throughout the process of planning, implementation, and monitoring of the ADS.

- i. In planning. During the process of formulation of ADS there have been Central level and regional consultations.
- ii. Field level consultations.
- iii. Road shows.
- iv. Public comments.

195. In implementation:

- i. The various committees overseeing implementation of the ADS will include representatives of civil society.
- ii. At the local level, communities will be involved in the implementation through program participation.

196. In monitoring and evaluation

- i. Participatory monitoring system will be established.
- ii. Monitoring reports will be made available publicly periodically and comments will be circulated.

197. In order to facilitate access of civil society to information pertaining to the ADS, a website on ADS will be established and information on ADS made available both in Nepali and English. In addition to the website, an ADS Information Desk will be established under the Planning Division Joint Secretary. The function of the ADS Information Desk will include:

- Make publications and reports on ADS available to the public (formulation reports, planning documents, monitoring reports, events, policy formulation, investment plans, projects and programs)
- Respond to general queries about ADS
- Redirect specific queries to relevant units of MOAD or other agencies
- Facilitate networking of ADS with the ADS stakeholders (farmer organizations, cooperatives, agribusiness enterprises, government officials at the central and local level, development partners)

198. Similar information desks will be established at the Agricultural Information and Communication Center, Departments, regional, district, and VDC level under the umbrella of DOA/DLS and the Community Agricultural Extension Service Centers.

Rationale:

199. Participation and accountability will improve ownership and consensus, which in turn will impact on effectiveness of the programs.

200. The ADS is not only a government strategy but also a national plan. Its success depends on the information and the support of different groups of society. Over the 20 year-period of the ADS there will be political and social changes. In order to ensure resilience of the ADS to those changes, it is necessary for civil society to be engaged throughout the process of planning, implementation, and monitoring.

Box 1 ADS and Farmer Organizations

The ADS recognizes that its success depends on the participation and the ownership of farmer organizations. Differently from previous strategies, the ADS has involved farmer organization at the formulation stage and will continue to involve them during implementation, monitoring, evaluation, and periodic reviews.

Decision and Coordination Processes of the ADS

Representatives of Farmer Organizations will be present in key decision and coordination bodies that oversee the formulation, planning, implementation, and monitoring of the ADS namely:

- FO Representative will be member of NSC and CADIC
- FO Representative will be member of various NSC Subcommittees related to the ADS
- FO Representative will be member of the Steering Committee of the ADS Implementation Support Unit
- FO Representative will be member of DADC and RADC
- FO Representative will be member of the NARC Board
- FO Representative will be member of the Governing Body of the CAESC
- FO Representative will be invited to the Policy Review Panels organized to review the formulation of new policies under the proposed new Policy Analysis Division at MOAD
- FO Representative will be member of the Steering Committee for the periodic 5-year Review, Evaluation, and Updating Committee of the ADS.

2.8 Human Resources Development and Capacity Building of Institutions

The Issues

201. The concept of governance adopted by the ADS refers to the “capacity of government to design, formulate, and implement policies and discharge functions.” The key word is “capacity”. Previous sections in the Governance Component have highlighted the need to improve capacity in policy formulation, policy consistency, planning, coordination, policy formulation, gender analysis, monitoring and evaluation, accountability, and participation. Other components of the ADS highlight the need of capacity building in technology, research, extension, good agricultural practices, value chain development, business services, quality and safety assurance system, and trade promotion. Capacity building and human resource development is cross-cutting throughout the ADS.

202. Capacity building and human resource development refers not only to government staff, but also to service providers, farmers, entrepreneurs, cooperatives, farmer and trade organizations, financial institutions, etc.

Solution

203. A plan for capacity building and human resource development to support the implementation of the ADS.

Recommendation

204. Focused plan of capacity building and human resource development of targeted institutions to improve ADS coordination and implementation.

205. The capacity building will include NPC and MOAD, the key departments (DOA, DLS, DFTQC) under MOAD, then NARC, Agricultural University, and related agencies (MOI/DOI, MOE, MOFSC/DOF, MLD/DOLIDAR, ...), key farmer organizations, and key cooperative organizations. This will require:

1. Assessment of current capacity to coordinate and implement the ADS
2. Identification of gaps
3. Identification of options to fill the gaps
4. Recommendations
5. Planning of activities and resources
6. Implementation of capacity building activities
7. Monitoring and evaluation of capacity building activities

Rationale

206. Rather than embarking upon an ambitious master plan for all organizations, stakeholders, and type of capacity, it is preferable to focus at the beginning of the ADS on the implementation capacity of the key responsible agencies.

3 PRODUCTIVITY

3.1 Introduction

207. The objective of this chapter is to discuss the productivity enhancement measures recommended by the ADS Team.

208. Improved productivity of land and labor is at the cornerstone of the ADS. Agricultural productivity requires the adoption of appropriate technologies and know-how to increase efficiency and sustainability of agricultural production consistently with market demand. The measures to raise agricultural productivity include those related to (i) effective agricultural research and extension; (ii) efficient use of agricultural inputs; (iii) efficient and sustainable practices and use of natural resources (land, water, soils); and (iv) increased resilience to climate change and disasters.

209. In the ADS, the government sector will be one among other actors including private sector, cooperative sector, NGOs, leading farmers, and farmer field schools involved in the generation and dissemination of technology. The government sector however has a key role in coordinating the efforts of other actors, facilitating implementation of policies and plans, monitoring performance, and enforcing regulations.

210. The ADS recognizes that already a number of actors are involved in agricultural extension and over time their presence will become even more important. Rather than advocating a massive increase of human resources in the public extension service, the ADS promotes capacity building of existing government human resources and their transformation of roles from delivery of extension to overall facilitator of agricultural extension. This role change should also be accompanied by a greater emphasis on the delivery at the VDC level, where Community Agricultural Extension Service Centers (CAESC) are proposed.

211. The ADSs also recognizes the critical importance that farmers' access and control of the means of production – primarily land – has for the success of the strategy. Critical land issues such as tenancy, fragmentation, degradation, land use planning need to be resolved over the course of the ADS and their resolution will require the participation of the farmers' organizations, cooperatives, and private sector in order to find equitable and efficient mechanisms for enhancing land productivity. Land productivity increases should be reflected in increased benefits for the farmers and the livelihoods of the rural households. Moreover, given the dominance of smallholder farmers in the agrarian structure of Nepal, promotion of farmer organizations and cooperatives will be fundamental to achieve economies of scale in marketing, finance, and logistics.

Table 4 Recommendations to Improve Agricultural Productivity

No.	Area	Recommendation
1.	Extension	Promote participation of private sector, cooperative sector, NGOs, and public sector in agricultural extension and adopt of a pro-poor decentralized extension system approach to dissemination and adoption of innovative and

No.	Area	Recommendation
		demand-oriented technology and know-how.
2.	Research	Restructure NARC with focus on decentralization and responsiveness to research needs of farmers and agroenterprises while fostering linkages within the Research-Education-Extension triangle.
3.	Education	A comprehensive package of measures to ensure closer integration with research and extension, improved capacity of the university, agricultural colleges, and vocational schools, and better response to the needs of farmers and agroenterprises.
4.	Land	Improve land use management and planning to promote a farming sector composed of adequately sized owner-operated, larger-size cooperatives and agro-business farms that use land efficiently and sustainably.
5.	Irrigation	Expand irrigable area by the most economic and equitable means while increasing irrigation efficiency and intensity, and improving irrigation management.
6.	Agricultural Inputs	Formulate and adopt consistent policies for input supply and distribution.
7.	Seeds	Ensure effective implementation of existing policies through sufficient investment in resources and capacity building.
8.	Fertilizer	Maintain fertilizer and other subsidies at 2011 level in the short term, review them in the medium term and remove them in the long term while initiating a number of measures to improve productivity and fertilizer use efficiency, promote organic/biofertilizer as supplementary and complementary to chemical fertilizer, and facilitate effective distribution and supply to meet demand.
9.	Animal breeds	Ensure the desired level of improved breeds of livestock, poultry, and fish.
10.	Mechanization	Support private sector led mechanization with awareness creation, demand stimulation, concessionary financing arrangements, capacity building, and taxation.
11.	Farmers' Resilience	Increase resilience of farmers to climate change events, disasters, and idiosyncratic shocks through the combination of measures such as adoption of stress tolerant crop and animal species, establishment of early warning systems (EWS), access to Farmers' Welfare Fund, and food reserves system.
12.	Green farming and GAP	Establish Good Agricultural and Veterinary Practices standards and promote adoption of good practices in integrated soil fertility, plant nutrients, pest management, and herd management while promoting renewable energies based on biogas and biomass utilization.
13.	Forestry	Develop subsistence production based forestry into a competitive, agriculture friendly and inclusive forest management practices in line with a holistic and community based landscape approach to natural resource management and livelihoods improvement.

3.2 Extension

The problem:

212. Government of Nepal had devolved its centralized extension service to the District Development Committees (DDCs) in 2002/03 in recognition of the need to inject good governance in Nepalese centralized public extension system and ensure citizen's participation in planning, implementation and monitoring of agricultural development programs at the district level. This was undertaken as part of government policy to strengthen decentralization in line with the spirit of the Local Self Governance Act 1999 (LSGA) which envisaged to devolve local bodies with political, institutional, fiscal and financial power and authorities for planning and management responsibilities at local level. Furthermore, this Act expects each DDC to establish agriculture and livestock sections by fulfilling the conditions set forth in Clause 257 of this Act.

213. While some DDCs were doing preliminary homework to take over extension functions, the term of the existing DDCs ended in 2002. After this, DDCs are being administratively managed by the Ministry of Local Development (MoLD) although extension functions have been devolved to the DDCs. This means that Nepalese extension system has been virtually operating under two ministries, namely the MOAD and MOLD with most of the power and authorities including recruitment, transfer and career development activities for the extension staff and allocation of budget (financial resources) being controlled by the first ministry. Though the Interim Constitution of Nepal, National Periodic Plans including Three Year Plan (TYP) and Agriculture policies and strategies are supportive of decentralized extension service, its effectiveness has still to be assessed.

214. The positive aspect of the current devolution in Nepal is that, in several districts, DDCs have begun to allocate some of their resources/revenues to the district extension service²⁴ and in certain cases, instructed the Village Development Committees (VDCs) to allocate the budget as provisioned in the DDC/VDC grant guidelines.

215. The problem of extension however is not just the issue of decentralization. Whether the extension system is centralized or not, it is still largely based on public sector system. There is considerable evidence that the public service provision of the systems is not satisfactory; at the same time there is evidence that alternative models of extension including private sector and NGOs might be appropriate to meeting the needs of farmers and enterprises.

216. The field studies carried out revealed that, in well integrated areas like Chitwan and Ilam, most of the commercial and large farmers have either made private arrangements to receive reliable and regular services from well qualified technical professionals. On the other hand, interviews with most of the small and marginal farmers reveal that they have hardly met and received advices from public extension agents. They say, "most of the time they will not be available for services and advice. When they are available by default, they have hardly anything to offer which is relevant to their problems and constraints."

The solution:

²⁴ Recently GoN has instructed VDCs and DDCs to allocate at least 15% of the total block grant to the agricultural development. What percentage of the total DDC and VDC budgets has been going annually to the extension component is not known in the absence of reliable recording and reporting system.

217. An extension system where service providers have the capacity of responding to the needs and demand of farmers and agroenterprises for improved technologies and know-how and users hold service providers accountable.

The recommendation:

218. Promotion of a pro-poor decentralized extension system approach while facilitating the movement towards commercialization. Key elements/pillars in this approach are:

- i. Targeting by type of farmers (subsistence, semi-commercial and commercial), by commodity, by market (domestic or international market), and by agroecological region.
- ii. Devolution to the lowest administrative level with option to decide whether such level is the district, the VDC or the municipality - based on resources and capabilities.
- iii. Major involvement of private and cooperative sector (including business community, cooperatives, NGOs, CBOs, individual resource persons, universities and training institutions etc) into various forms of public-private partnership modalities (PPP).
- iv. Establishment and capacity building of a network of village extension workers.
- v. Establishment of Community Agricultural Extension Centers (CAESC) in each VDC that are funded and managed by VDC or local communities or cooperatives and are linked to existing DOA/DLS service centers/subcenters for technical support and backstopping.
- vi. Promotion of a voucher system on a pilot basis that would empower farmers to buy the best available extension and advisory services that meet their demand. The approach might be replicated on a larger scale contingent on a favorable review of the pilot.
- vii. Target agricultural market centers to provide information and extension services.
- viii. Adopt multiple extension methods including farmer field schools and farmer marketing schools.
- ix. Facilitate linkages of farmer groups and organizations with other value chain actors and financial institutions, including commercial banks.
- x. Use of innovative forms of Information and Communication Technology (ICT).
- xi. Train JTA to be more GESI sensitive and build this into their incentive-based reward system.
- xii. Increase the representation of women in JTAs.
- xiii. Introduce nutrition into extension programs, particularly in extension programs targeted to women.

Box 2 Community Agricultural Extension Service Centers (CAESC)

Currently, the extension system under the management of the GON is organized through a network of Agricultural Service Centers (ASC) under the responsibility of DOA and Livestock Service Centers (LSC) under the responsibility of the DLS. The network does not reach all the VDCs in the country. In total there are 378 ASC and 999 LSC. In Nepal there are 3754 VDC and 99 municipalities

This limited number of service centers represents a constraint in reaching out the farmer population of Nepal. The limited number of service centers is aggravated by the limited resources available to carry out program and capacity building activities. As a result many VDC and many farmers are not reached out by the national extension system. Furthermore, even when farmers are reached by the existing extension system, there is no guarantee that the local needs are adequately met by the existing system. The agroecological and socioeconomic diversity of Nepal is extraordinary and represent a challenge for any fixed type of extension service provider to respond effectively to the needs of different types of farmers.

The idea of community-based service centers

To remedy this situation, the ADS proposes a different approach and institutional framework. Building on the existing network of ASC and LSC, the ADS will support the creation of CAESC that are managed by the communities in each VDC and funded by the combination of resources from the VDC, cooperatives, private sector, and GON.

The contribution of the GON to the CAESC consists of a seed funding that is intended to leverage local resources. For each amount xx provided by the GON as seed funding to the establishment of the CAESC, the local community (VDC, CSO, coops, private sector) will provide a multiple of xx.

The CAESC will be entirely managed by the community according to governance rules that are clearly established at the outset. The center will hire its own staff to provide extension services. The staff will be trained by the government staff either at the nearest ASC/LSC or at training centers of the DOA/DLS.

The CAESC will be linked to the ASC/LSC so that activities in each district can be better coordinated.

The outcome will be a network of extension service centers that have the chance of reaching all VDC in the country, are totally managed by the communities and therefore more likely to be responsive to the diverse needs of the farming population, and be responsible for raising funds and therefore more sustainable.

219. The approach requires considerable capacity building of service providers (NGOs, cooperatives, village extension workers, and private sector) to enhance their capacity of responding to the demands and needs of users. It will also require specific programs to target poor farmers, socially excluded, and the most marginal groups (women farmers, dalits, the uneducated, those living in remote areas).

Rationale:

220. The proposed *pro-poor decentralized approach to agricultural extension* challenges both the wide scale privatization which implies removal of state subsidy and the domination by the state of the delivery of services. The approach is focused on identifying appropriate public and private roles and partnerships between them.

221. Moreover, the approach facilitates and regulates the activities of private sector extension agents, reducing market imperfections as far as possible, and funding the provision of public goods type investments. On one hand, the approach introduces private-type performance and management practices into the public sector including charges for services and performance assessment by clients and an element of payment by results. On the other hand, in weakly integrated areas, there will be a need to identify and promote technologies which offer most employment opportunities at adequate rates of return and focus on those products having viable market products as well as of food and nutrition security value.

222. Furthermore, this approach envisages a greater role for the local government as it is more directly in contact with people's needs and opportunities than is the central government. This assumes that local government is more able and accountable to respond to poor people's needs and opportunities.

223. The promotion of the voucher system will empower farmers to choose the extension service providers of their choice. The system will be promoted initially as a pilot. The review of

the voucher system pilot will provide the basis for a possible extension of the system on a larger scale.

3.3 Research

The problem:

224. The key issues related to agricultural research in Nepal include the weak responsiveness to farmer and agrienterprises needs, eroding capacity, and limited funding. The issues are compounded by the limited number and capacity of agriculture research stations, weak coordination among education-research-extension, inadequate participatory technology development with community based resource centers, inadequate investment in agriculture research and capacity building, limited multi-stakeholder coordination and partnership, poor research facilities and their maintenance, and limited focus on commercial agriculture research.

225. Although NARC Act, 1990 has clearly identified Nepal Agricultural Research Council (NARC) as a lead agricultural research organization in the country the national agricultural research system (NARS) is still poorly coordinated. In most instances, NARC is unaware of research activities carried out by other research providers in Nepal.

226. Cereal research dominates over other subsectors in terms of technology generation, availability of human resources and investment in research projects. Only limited technologies are available in horticulture, livestock, commercial crops and fisheries. Field visits and interaction have vividly indicated the dearth of technologies in commercial crops, livestock and horticulture crops. Responding to the needs of processors and traders and demand driven technologies to meet markets needs has become essential to boost commercial production, income generation and livelihoods improvement of rural community.

227. NARC's capacity to conduct research has been seriously affected over the past several years by the withdrawal of external funding to the research stations, outreach programs, and human resource development program. The high level of funding previously received at research centers such as Lumle and Pakribas could not be sustained after the withdrawal of external funding. At present NARC is critically understaffed, with about 40 percent of its scientific positions vacant due to recruitment problems. The critical mass of scientists needed for multidisciplinary teams is simply not there at most centres. NARC is weak in various disciplines including horticulture, livestock, and postharvest technologies and agribusiness. NARC has recently recruited some scientific/technical staffs to mitigate the understaffing problems, but the organization has inadequate resources to attract and retain its staff. The issue is not just the salary of the researchers, but even more importantly the lack of facilities and resources needed to carry out research.

The solution:

228. A research system that is accountable, functional, participatory, inclusive and responsive to the needs of farmers, cooperatives, and agrienterprises.

The recommendation:

229. Restructure NARC with focus on decentralization and responsiveness to research needs of farmers, cooperatives, and agrienterprises.

230. NARC will not implement any research projects and programs. Its functions will include formulating agricultural research policies, maintaining international relations and linkages, setting national standards, coordinating with national and international research institutes and educational organizations.

231. Additional research funding however will be required to ensure that the research priorities can be addressed adequately with well managed and funded programs. This additional funding will come from both public and private sector and in partnership with international research organizations and academic institutions.

232. The basic research, long term strategic research, applied research and adaptive research will be the responsibility of National Research Institutes (NRIs) and agro ecologically based Regional Agricultural Research Stations (RARS), collaborative and action research will be the responsibility of the local research centers and only action research will be managed at village level. Local level research activities will be managed according to the standards of central government. Central and local level research centers will provide back up to local level stakeholders like community based centers, cooperatives, agroenterprises, and others. The investment in public research institutions will be for public goods in agriculture such as food and nutrition security, food safety, bio safety, mitigating effect of climate change, environment and biodiversity conservation and reducing poverty.

233. NARC has already developed a 20 years strategic vision for the period 2011-2030²⁵ which still remains to be reviewed and assessed by the GON. The final vision document should be consistent with the strategic directions of the ADS.

Box 3 Features of the proposed Restructuring of NARC

1. NARC will act as the apex institution in national agriculture research system, a policy body to coordinate, facilitate, consolidate, monitor and evaluate research projects, fund research projects and promote research linkages at national and international levels. National research institutes and RARS under NARC will act as the implementing bodies for carrying out research, training and managing human resources and institutions as indicated in the NARC proposed structure.
2. Establishment of National Agriculture Research Fund (NARF) integrated with NARC. The existing NARDEF will be merged with NARF.
3. Increasing number of national research institutes. In addition to the existing National Agriculture Research Institute (NARI) and National Animal Science Research Institute (NASRI), establish the National Horticulture Research Institute (NHRI), the National Animal Health Research Institute (NAHRI) and the National Aquaculture and Fisheries Research Institute (NAFRI).
4. Establish Agricultural Research Stations at different agroecological zones (high hills, mid hills, and terai) in the Far Western Region to complement the recent decision to transform the Agricultural Research Station in Doti into a Regional Agriculture Research Station (RARS) in Far Western Region.
5. Establishment of Agriculture Mechanization Centers in the terai (2), mid hills (1), and high hills (1) within existing research centers.
6. Consolidate research stations and programs that are physically located in the proximity and perform similar research activities. It will reduce administrative cost and duplication of resources especially operational expenses.

²⁵ NARC's Strategic Vision for Agricultural Research (2011-2030).

7. Establish functional linkages with educational institutions and with the extension service for the availability and sharing of their facilities including for educational purpose.

Rationale:

234. The recommendation recognizes the role of private sector and agricultural education institutions in research. Private sector will be involved in agriculture research and technology sectors through partnerships. An effective Intellectual Property Rights (IPR) regime will be in place to encourage private sector for increased investment and involvement in agriculture sector. Strengthening gene bank and animal genetic resource program need to be strengthened for the use of IPR.

235. Similarly agriculture education institutions will be used in academic research that promotes genetic enhancement and supports applied research through collaborative projects and research grants. The central research system provides funding for collaborative research projects to stakeholders. However, caution should be taken from possible misappropriation and theft of genetic resources, curtailing of farmers and local communities and indigenous communities rights over the resources and national sovereignty.

3.4 Education

The Issues

236. In spite of enormous needs of improving human resources for agricultural development, until very recently Nepal did not have an autonomous Agricultural University accredited to confer B.Sc., M.Sc., and Ph.D. degrees. In addition to the Agricultural University in Rampur, there are two Agricultural Colleges in the Western Region (at Paklihawa in the Terai and Lamjung in the Hills) that confer up to B.Sc. degrees; and a large number of Centers for Technical Education and Vocation Training (CTEVT) that provide technical education in livestock and crop agriculture up to 2 years after high school, traditionally for the training of JTA and JT staff in the MOAD system. The key issue for the agricultural education system in Nepal include: low capacity of trainers, education not integrated with research and extension, education not integrated with needs of farmers and agroenterprises,

Solution

237. A strengthened agricultural education system that is better integrated with institutions for agricultural research and extension, and better able to respond to the needs of farmers and agroenterprises.

Recommendation

238. A comprehensive package of measures to ensure closer integration with research and extension, improved capacity of the university, agricultural colleges, and vocational schools, and better response to the needs of farmers and agroenterprises. These measures will include:

- i. Improvement of facilities and capacity of Agricultural University
- ii. Establishment of an Agribusiness Department in the Agricultural University
- iii. Joint educational and research programs with NARC institutes
- iv. Joint extension programs with departments and district officers

- v. Identification of innovative ways for Agricultural University to partner with private sector (example renting/leasing facilities, training to private/community organizations)
- vi. Promote establishment of new agricultural/veterinary science colleges in other regions of Nepal
- vii. Support strengthening of capacity of CTEVT through curriculum improvement and training of trainers

Rationale

239. Accelerated growth of agricultural sector depends on various factors, among which education plays a key role in improvement total factor productivity. Underinvestment in this sector will slow down the capacity of Nepal to meet the challenges of agricultural transformation. For too long the agricultural education in Nepal has been left languishing and underinvested. To ensure ensure growth of agricultural sector, the declining trend has to be reversed.

3.5 Land

The problem:

240. The ownership and rights of tillers, tenants and sharecroppers, have dominated the political debate in Nepal for many years. Not less than 34 legislative acts and amendments relating to land rights and tenancy have been adopted since 1954 yet several land issues are still to be resolved.

241. It is a premise of the ADS that looking at land rights, tenancy and sharecropping in an isolated manner limits the holistic understanding and solution of the overall issues of (i) productivity of the agricultural sector by promoting more effective land use, (ii) sustainability of the sector by developing sustainable forms of farming enterprises and (iii) inclusiveness by increasing the number of tillers that own the land they till.

242. Issues of land fragmentation and haphazard land plotting (use of agricultural land for urban housing development without any planning and regulatory process) are also affecting overall agricultural productivity as they prevent consolidation of land oriented towards the adoption of more productive farming practices and result in the conversion of some of the most fertile lands into non-agricultural land.

243. The transformation of agricultural lands to non-agricultural land is not (yet) prohibited by law, yet detrimental to the availability of fertile lands for agricultural production. It also imposes a burden on infrastructure and utilities that need to be provided to un-planned settlements, particularly in peri-urban areas. The recently approved Land Use Policy proposes a land classification on the basis of which land category change requires permission, thus introducing some regulations of land use.

244. About 1.559 million ha of forest, 0.29 million ha of cultivated land (sloping terraces) and 1.75 million of rangeland/open land are poorly managed and degraded²⁶. Annually about 5324

²⁶ MOEST, 2006. Nepal: Third National Report on the Implementation of the UN Convention to Combat Desertification. Ministry of Environment, Science and Technology, Kathmandu, Nepal. Table 2.14 page 40

ha of cropland is damaged from flood and 589 ha from landslides²⁷. Large area of cultivated land in the hills and mountains is left idle or abandoned²⁸. Vast tracks riverbed particularly in the Terai and Inner Terai is dry and fallow during the period from October to May. These lands are not productively used yet²⁹.

245. The ADS recognizes that the solution of the land issues is critical to the success of the strategy. Unless resolved, these issues will continue to linger and fuel social problems that will retard the envisaged acceleration of growth of the ADS. To that purpose, the ADS will support the ongoing policy and regulatory effort to identify solutions to land use planning, land fragmentation, land tenure, land ceiling, etc, while protecting the interest of farmers and providing the framework for the commercialization of agricultural production. Farmer organizations, cooperatives, and private sector representatives will need to be involved together with the government in finding suitable solutions. Representatives of farmer organizations, cooperatives, and private sector will need to be members of any future land commission that the government might initiate.

The solution:

246. A farming sector composed of adequately sized owner-operated, larger-size cooperative and agro-business farms that use land efficiently and sustainably.

The recommendation:

247. A combined set of laws and regulations accompanied by programs for rehabilitating/restoring degrading land.

248. GON to adopt a formal decision (policy statement) to review or implement the existing legislation and policies pertaining to the land reform, including

- i. The level and the enforcement of the land ceiling;
- ii. the adjudication and registration of pre-1964 tenancy rights; and
- iii. the adjudication and determination of the dual ownership cases.

249. The implementation³⁰ thereof will be carried out by taking the following practical steps:

- i) Consolidation of the land management related functions (Land Revenue Office, Land Reform Office, District Survey and Measurement Office) under a Land Management Office (by issuing a Government Order under the Lands Act), which will fulfill the following functions:
 1. Land Survey;

²⁷ UNDP (2009). Global Assessment of Risk: Nepal Country Report. ISDR Global Assessment Report on Poverty and Disaster Risk 2009. Table 25 page 67.

²⁸ Khanal, N. R. and Watanabe, T. 2006. Abandonment of agricultural land and its consequences in the Nepal Himalayas: A Case of Sikles Area with Teiji Watanabe. *Mountain Research and Development*. VI. 26, No. 2, Feb. 2006. Pp 32-40

²⁹ This statement is partly based on the observation in the Terai and Inner Terai region (very wide river bed which is usually dry during non-monsoon season) and partly based on river bed farming project's report by Helvetas at <http://www3.helvetas.ch/nepal/wEnglish/projects/Riverbed/rbf.asp?na>.

³⁰ Implementation is the Achilles heel of many of the government decisions and is obviously not unique to land reform implementation. The solution for the Land Reform implementation can be found in the built-in mechanism for implementation monitoring of the ADS. Thus once implementation of the Land Reform is part and parcel of the ADS, one can use the implementation mechanism of the ADS also for Land Reform.

2. Cadastral Survey;
 3. Management of Public, government and Trust (Guthi) Land
 4. Land Ceiling Enforcement; and
 5. Land Registration
- ii) Establishment of land tribunals (i.e. specialized courts) to settle tenancy determination (i.e. that tenancy existed prior to 1964) and to decide dual ownership cases (i.e. 4th Amendment). To that end -
1. Enact amendment to Lands Act that transfer responsibility for determination of disputed pre-1964 tenancy rights and dual ownership cases (Article 26 B) from the Land Reform Officer or Land Revenue Officer (the “prescribed authority” under the Act) to land tribunals formed of a professional judge of the District Court flanked by a representative of the landowners and a representative of the tenants.
 2. Setting numerical goals for the settlement of these cases per year and region
 3. Determining sanctions upon District Land Management Offices that do not meet the targets.
- iii) Setting of numerical targets for the reduction of land holdings towards the permitted ceiling set under the Lands Act and determining sanctions upon District Land Management Offices that do not meet the targets.

250. Promote farming sector composed of owner operated small farms, multi-purpose farming cooperatives and larger-size agro-business farms with adequate wages for farm workers. To that end –

- i) Introduce incentives and disincentives to promote the prevalence of small-owner-operated farms and do so by reducing exploitative sharecropping arrangements³¹ and absentee landlord phenomena by -
 - a. Reducing the maximum permissible sharecropping ratio of 50 – 50 (Lands Act, Article 33) to a ratio that will induce the sale of tilled land from landlords (especially absentee landlords) to the tillers;
 - b. Imposing an increasing rate of land tax on lands left fallow;
 - c. Amend Lands Act to ensure that the acquisition of land by tillers through sharecropping arrangements will not lead to acquisition of tenancy rights, thereby protecting sellers of land
 - d. Providing financial incentives for the acquisition of land by landless tenants from absentee landlords
 - e. Clarify by policy statement that new tenancy rights will not be accrued.
- ii) Adopt alternative arrangements for land leasing / tilling - by
 - a. Formulating and enacting a Land Lease Act (could be part of a Contract Farming Act) which will allow a long-term leasing at fair terms (fixed rent or sharecropping) without acquisition of tenancy rights
- iii) Promote and encourage formation multi-purpose agricultural cooperatives and other communal or consolidated forms of joint farming including by -
 - a. Amending the Cooperatives Act and the Land Act to allow land pooling (with or without registration in name of cooperative, with protection against tenancy acquisition arrangements);

³¹ Keeping in mind that not all sharecropping arrangements are necessarily exploitative.

- b. Amending the Cooperatives Act to facilitate formation of multi-purpose cooperatives as well as other forms of communal/consolidated forms of farming rather than the single purpose formats, including for purposes of joint tilling and/or joint inputs (including FMIS), joint outputs and the enactment of an effective oversight body to ensure proper management;
 - c. Training and capacity building for multi-purpose cooperatives
 - d. Tax and financial incentives.
 - iv) Explore mechanisms of “land bank³²” to facilitate land leasing of currently unutilized land.
- 251. Prevent land fragmentation by -
 - i) Amending the traditional inheritance law (Mulki Ayn) - or amending the Civil Code - to allow leaving land by testamentary disposition to one heir only.
 - ii) Introduce legal, financial and tax incentives to reduce fragmentation by
 - a. Create lower limit on registration of sub-divisions of small agricultural plots to the effect that subdivisions of small plots because of inheritance (or sale)³³;
 - b. encourage non-tiller–heir (absentee landlord - heir) to sell his inherited plot to the heir that tills the land by introducing -
 - fallow land tax (see above),
 - soft loans,
 - protection of seller from acquisition of tenancy protection during the years that the tiller pays for the land to the absentee-heir
- 252. Enact contract farming act to promote agri-business operations, that includes *inter alia*
 - i) Collective bargaining arrangements with multiple small farmers
 - ii) Protection of the parties to the contract (farmers against exploitation through credit and accumulation of debt and contractors against unauthorized sales)
 - iii) Provisions on insurance of crops and livestock
 - iv) Implementation of the Secured Transaction Act by establishment of Pledge Registry for Movable Property.
- 253. Enact land-lease act (possibly as part of a Contract Farming Act) to provide for a viable alternative for the sharecropping (with concern that tenancy may be re-enacted) and inducing of sale by absentee landlords as well as a basis for agro-business farming arrangements that provides for -
 - i) Fair lease contracts (i.a. – fixed fee or reasonable sharecropping ratios)
 - ii) Measures to prevent acquisition of tenancy rights in long-term lease relations
 - iii) Ability to secure long-term leases for agro-businesses to enable them to cultivate land for the agro-business.
- 254. The preferred options for the implementation of the land zoning policy are

³² “Land bank” refers to the idea of a land leasing company that provides intermediation between owners of land and prospective renters of land. The intermediary company guarantees the right of the owners and facilitates long-term leasing of land by private individuals, cooperatives, or private enterprises.

³³ Once zoning is introduced in Nepal, any subdivision of existing plots will be subject a procedure that could prevent creation of unsustainable plot sizes.

- To introduce a simple zoning system on the basis of the already existing Land Classification prepared by the Ministry of Land Reform and Management (MOLRM) by Government Order to be issued under Article 51E (1) the Lands Act and the recently approved Land Use Policy, as required by the Lands Act (Chapter 9A) to be able to prevent land plotting.
- To formulate bylaws to accompany the recently approved Land Use Policy; determine in the bylaws that the Ministry of Local Development may not change municipal boundaries of lands that are classified as agricultural lands without the consent of the Ministry of Agriculture and Development and the Ministry of Land Reform and Management.

255. Survey degraded land and identify suitable areas for rehabilitation/restoration of river beds, eroded land, degraded forest.

256. Raise awareness on women's rights to land (such as through joint ownership, tax rebate policy if the land is registered under women's name, equal inheritance rights for women) through legal literacy and pro-GESI mechanisms to communicate with women and excluded groups.

Rationale:

257. The recommendations above are feasible and arguable would address the vexing problem of land in order to redress the problems of tenancy, fragmentation, and promote productive use of land by tillers and agroenterprises. Their implementation however will require strong policy commitment and broad support.

258. Land zoning is essential for the preservation of agricultural lands from their transformation into lands used for other, perhaps more profitable uses, such as residential uses. The vision therefore promotes the competitiveness and sustainability of the agricultural sector contributing to economic growth.

259. The implementation of land zoning should not detract from the institution of a land use policy which is the basis of a land use program for the nation. In our opinion a simple and enforceable zoning can be implemented also prior to the full implementation of the land use policy.

260. The notion of zoning is at present alien to Nepal. While there is a broad classification of lands with the MOLR Department of Survey (agricultural, industrial, commercial, forestry, residential and public) based on older surveys, the transformation to a land zoning system has far broader implications than merely protecting agricultural lands from being plotted. A zoning process will allow for systematic planning of the uses of land resources of country, including town planning and building permits, enable the valuation thereof for tax purposes and, in general, allow the Nepalese authorities to control land uses in the country.

261. Recently, with the support from Helvetas, efforts have been made to utilize dry river bed for farming in the Terai districts of far western Nepal. There is tremendous potential to utilize those degraded/abandoned lands for agricultural use and increase production with different intervention measures for its rehabilitation/restoration.

3.6 Irrigation

The problem:

Nepal has a markedly seasonal rainfall, a large and growing rural population and plentiful surface and underground water resources. Although efforts have been made to expand irrigated area over past decades, government investment has been limited. The main outcome has been an irrigated agriculture sector that mainly uses irrigation water to supplement monsoonal rainfall in the summer. While this is useful, through supporting grain yield particularly in dry years, the contribution of irrigation remains far below potential. Irrigation efficiency and intensity are suboptimal, with limited areas fully irrigated in the dry (winter and spring) seasons. Farm size is low, with less than 0.5 ha per farm household leading to a predominantly subsistence agricultural sector, widespread poverty and malnutrition and high levels of outmigration

The solution:

262. A more productive, commercial and sustainable irrigated agricultural sector, with well-planned, and managed water resources, contributing to increased food and nutrition security and higher rural income. Government should consider irrigation as a priority and allocate more resources to the sector.

The options:

263. The main objectives and options are summarized the following table:

Table 5 Objectives and Options for Irrigation Sector

Objective	Options
Expand irrigation by most feasible means	<ul style="list-style-type: none"> a. Complete already commenced surface schemes b. Construct new surface irrigation schemes c. Repair damaged surface systems d. Construct new tubewells e. Repair damaged tubewells f. Develop NCI and introduce efficient water application systems
Increase irrigable area on existing schemes	<ul style="list-style-type: none"> a. Increase irrigation efficiency b. Expand command area c. Improve water allocation, crop planning d. Construct permanent headworks in feasible sites and improve main canals on FMIS e. Construct STWs in the tail areas of water short systems (conjunctive use)
Increase irrigation intensity	<p>Increasing irrigation intensity will depend on a number of factors including crop profitability, but most importantly on increasing dry season river flow or water availability. The reasons for increased seasonality of river flow include climate change and catchment area degeneration. Options for increasing irrigation intensity thus include:</p> <ul style="list-style-type: none"> a. Improved catchment management, reforestation (eg program of Churia areas conservation) b. Constructing inter-basin transfer schemes to move water from permanent to seasonal rivers to augment supplies in water-short irrigation systems and generate hydropower
Focus on	Irrigation sector stakeholders and the ADS team consider that establishment of a

Objective	Options
irrigation system and on-farm water management	higher level institution (than the present Irrigation Management Division of DOI) is desirable in order to assist AMIS and WUAs to upgrade system and water management. Establishment of a new department is recommended. Options Establishment could be within MOI, through upgrading IMD to department status or under MOAD
Irrigation management transfer	Although some have questioned the ability of WUAs or WUA federations to manage medium to large-scale irrigation infrastructure in Nepal, it is likely to prove to be the optimal system in the medium to long term. Options include: <ul style="list-style-type: none"> a. Continued agency management b. Ownership and/or management transfer to WUAs c. Management by WUAs, through farmer owned company in case of FMIS d. Management contracted by WUAs to private company
Funding of Operation and Maintenance	At present, DOI is responsible for headworks and main canal management on AMIS. However, this may change within the 20-year ADS period. Options include: <ul style="list-style-type: none"> a. Full funding of main system O&M by government b. Partial funding of main system O&M by government c. Full funding of system O&M by irrigators. Whichever options are implemented, undertake needed preventative maintenance (for example on aqueducts) to prevent system collapse. . National policy needs to reflect the selected option.
ISF calculation	There are several options for defining and charging ISFs: <ul style="list-style-type: none"> a. On a land-owned basis b. Per crop or c. On a volumetric basic, eg, per megaliter (100 mm water applied to one ha)
Water resources management	IWRM needs to be introduced nationally, initially in water short valleys where there is inter-sectoral competition for or conflict over water. As part of the move to IWRM, consideration needs to be given to the geographical basis for water management. <ul style="list-style-type: none"> a. Hydraulic boundary (river basin) management or b. Administrative boundary management (as largely at present)

The recommendation:

Table 6 Recommended Options for Irrigation Sector

Options	Recommendations
<ul style="list-style-type: none"> 1. Complete already commenced surface schemes 2. Construct new large surface irrigation schemes 3. Repair damaged surface systems 4. Construct new tubewells 5. Repair damaged tubewells 6. Develop NCI and introduce efficient water application systems 	<ul style="list-style-type: none"> 1. Recommended 2. Not recommended unless justified by other purposes (such as hydropower) 3. Recommended 4. Recommended 5. Recommended 6. Recommended
<ul style="list-style-type: none"> 1. Increase irrigation efficiency 2. Expand command area 3. Improve water allocation, crop planning 4. Construct permanent headworks in feasible sites and improve main 	<ul style="list-style-type: none"> 1. Recommended 2. Recommended 3. Recommended 4. Recommended

Options	Recommendations
<ul style="list-style-type: none"> canals on FMIS 5. Construct STWs in the tail areas of water short systems (conjunctive use) 	<ul style="list-style-type: none"> 5. Recommended 6. Recommended
<ul style="list-style-type: none"> 1. Improved catchment management, reforestation 2. Constructing inter-basin transfer schemes to move water from permanent to seasonal rivers to augment supplies in water-short irrigation systems and generate hydropower 	<ul style="list-style-type: none"> 1. Recommended 2. Recommended, conditional on economic and environmental studies
Establishment of a higher level institution (than the present Irrigation Management Division of DOI) to assist AMIS and WUAs to upgrade system and water management. Establishment of a new department or directorate within DOI is recommended	<ul style="list-style-type: none"> 1. Recommended
<ul style="list-style-type: none"> 1. Joint management 2. Ownership and/or management transfer to WUAs 3. Management by WUAs, through farmer owned company 4. Management by state-owned corporatized entity or management contracted by WUAs to private company 	<ul style="list-style-type: none"> 1. Recommended for large schemes 2. Recommended 3. Recommended 4. Not recommended
<ul style="list-style-type: none"> 1. Full funding of main system O&M by government 2. Partial funding of main system O&M by government 3. Full funding of system O&M by irrigators. 	<ul style="list-style-type: none"> 1. Recommended 2. Recommended 3. Recommended
<p>There are several options for defining and charging ISFs:</p> <ul style="list-style-type: none"> 1. Charging ISF on a land-owned basis 2. Charging ISF on a per crop basis 3. On a volumetric basis, eg, per megaliter 	<ul style="list-style-type: none"> 1. Recommended
<ul style="list-style-type: none"> 1. Hydraulic boundary management or 2. Administrative boundary management (as largely at present) 	<ul style="list-style-type: none"> 1. Recommended 2. Not recommended

Rationale:

264. Nepal has well developed policies in the irrigated agriculture and water resources sector. Most required policies are in place, with more issues relating to implementation than to the policies themselves. However, decisions are required in some areas, as outlined in the following sections.

3.6.1 Expand irrigation by most feasible means

265. **Complete already commenced new surface schemes.** The government, mainly from its own resources, has commenced construction or expansion of several large irrigation schemes. Total area of new irrigation is around 100,000 ha costing \$477 million, indicating an average cost of \$4,800/ha, quite a high level for irrigation in lowland areas, where most of the schemes are located. In addition, two of the seven proposed inter-basin schemes are undergoing detailed design – Bheri Babai Diversion Project with a planned irrigable area of 60,000 ha and Sunkoshi Kamala Diversion Project (138,000 ha). It will be desirable to complete ongoing scheme construction, before commencing major new works. However, detailed design, and the securing of funding for new schemes needs to be undertaken progressively so that a reasonably regular construction program can be assured.

266. **Construct new surface irrigation schemes:** Most of the easy to construct and economic irrigation systems have already been constructed or are under development using national budget. Surface irrigation system development in Nepal is often expensive due to a number of factors, including (i) high irrigation duty often exceeding 2 l/s/ha due to poor water control and permeable soils, (ii) steep topography, particularly in hill areas, necessitating long idle canal length, and environmental problems like landslide (iii) costly diversions due to the need to protect from flash floods. As a result, new surface systems are likely to cost around \$5000-\$8000/ha in the hills and \$3000-5000/ha in the Terai. While these levels can be economically viable for double or triple cropped systems, they are non-viable where only monsoon cropping is feasible. They are also far more costly than STW irrigation systems which can cost as little as \$250/ha to develop. New river based surface systems are consequently not recommended as a focus under the ADS. An exception to this may be systems based on dams built for other purposes. If dams can be justified primarily on hydropower and flood mitigation benefits, the year-round irrigation they can provide can be economic.

267. **Construction of multi-purpose dams:** With its mountainous topography, Nepal offers numerous opportunities for the construction of multi-purpose high dams for electricity generation, irrigation and (possibly) flood control. Several have been studied over the period since about 1975, but so far few have been built. Reasons for this include (i) Indian opposition on the grounds that inflows to the Ganges would be reduced, (ii) no prioritization of the dams to be built, (iii) political opposition from some parties in Nepal who fear the social consequences of dam construction, (iv) lack of support from multilateral agencies, with World Bank for example pulling out of construction of the 400 MW Arun III dam in the mid-1990s and ADB from West Seti in 2011, (v) concerns about geological stability and susceptibility to earthquake damage, (vi) high cost and (vii) large resettlement requirements. In addition, the large glacier-based rivers carry high silt loads, which will shorten dam life. Improved catchment management could mitigate this to some degree, and the reforestation and rangeland management programs, suggested elsewhere in the ADS, are necessary to maximize economic dam life. Sediment control measures will be essential on any dams constructed.

268. Given the scale of the investment, need for external (and probably bilateral) funding and the extended time horizon that large dams inevitably incur, large dams are not recommended for inclusion in the ADS roadmap. However, if or when one or more large dams are completed, probably late in the ADS planning period, their integration into the irrigation network will occur, and should allow a major improvement in supply reliability and irrigation intensity.

269. **Medium pond/recharge basins.** These are basins that store water and recharge groundwater, for use by both irrigation and water supply. These systems are not adequately considered by GoN because no agency looks specifically after multi-purpose water resource development.

270. **Repair damaged surface systems:** Numerous surface systems, particularly in the hills, have been damaged by floods, by landslides blocking main canals, or by river bed deepening reducing water diversion. In other cases, siphons have been damaged or aqueducts collapsed. It is considered that high priority should be given to rehabilitating such schemes, based on the demand of affected farmers. The use of plastic pipes or covered canals may be required in landslide prone areas. In the first instance, an inventory of damaged systems would need to be

made, and estimates prepared of rehabilitation cost. A project could then be developed, using government or bilateral agency funds to bring the systems back to operable condition.

271. **Repair damaged tubewells:** A similar problem faces a proportion of shallow and deep tubewells. Particularly for STWs, many farmers prefer to construct a new tubewell close to a defunct well, since the boring and lining cost may be paid by the government. It is recommended that each GWRDB branch develops an inventory of tubewells that need repair. It may be feasible for GWRDB to map existing operational and non-operational tubewells and, using GPS, to plot their positions, ownership and status. The reasons for non-operation could be noted, and a project initiated to bring them back into production, based on farmers' demand.

272. **Construct new tubewells:** As mentioned above, an STW capable of irrigating 2.5 to 4 ha would cost around Rs70,000, including bore, lining, pump, pumpshod and water distribution hose (layflat). At between \$250 and \$400 per ha, an STW is less than 10% of the cost per hectare of a surface scheme. However, it is noted that farmers prefer surface schemes, since they have to pay the electricity, kerosene or diesel cost of pumping from an STW. However, the marked cost advantage of STWs indicates that top priority should be given to expanding the STW network under ADS, as it was under APP. New deep tubewells are not recommended, at least until the STW program is nearing completion, since they are far more expensive per hectare irrigated and have greater requirements for social organization. However in areas with no potential for surface or STW irrigation, limited numbers of DTWs could be considered.

273. **Develop non convention irrigation (NCI):** In hill areas (and some areas of the Terai), NCI is the optimal method for expanding irrigation coverage. As mentioned above, most of the easily developed surface systems have already been constructed, and there are few options left for constructing medium-scale systems (of say 100 to 500 ha). While areas can be found to develop small systems, of say 10 to 25 ha, these are likely to be costly on a per ha irrigated basis. In many of these areas, NCI based on small local water sources or water harvesting will be a preferable option. NCI including gravity piped, water harvesting and small-scale pumped systems, based on drip or sprinkler irrigation for high value crop production is consequently recommended as the focus of ADS irrigation sector investment in the hills. In the Terai, continuation of the treadle pump program is recommended, together with small lift pumping systems from nearby streams or other water sources.

3.6.2 Increase irrigable area on existing schemes:

274. **Increase irrigation efficiency:** Many schemes demonstrate low irrigation efficiency. While an efficient system in summer can operate at an irrigation duty of around 1 to 1.2 l/s/ha, many schemes draw 2 or up to 8 l/s/ha. The high level of irrigation can lead to excessive deep percolation and run-off losses, and cause water logging in nearby low lying areas. While in a water-rich scheme, this may be acceptable, in a water-short scheme, water may be insufficient to reach the tail of the system or the tail of even the higher branch and tertiary canals. In principle, it is therefore desirable to encourage WUAs and farmers to increase the efficiency of irrigation by (i) reducing losses in canal systems by lining and/or upgrading canals, (ii) improving water management and distribution through use of control structures, (iii) reducing over-watering through land-leveling, better management and reducing field to field irrigation through constructing distribution networks (field channels) and structures and (iv) use of piped water conveyance in special cases

275. **Expand command area:** Particularly where irrigation efficiency can be increased but also in other systems, the canal network may be expanded to increase the irrigable area served by an irrigation system. In some cases, for example Begnas east of Pokhara, the planned command area was not fully developed. It could be expanded if water losses from the system can be reduced. In many cases, where water supplies are adequate, expansion of the within-scheme irrigable area is a low cost method of increasing irrigable area.

276. **Improve water allocation and crop planning:** Water allocation needs to improve on many schemes, with better definition of water rotation to meet the needs of more irrigators. Improved crop planning can also improve irrigation management through promoting similar irrigation demand throughout a tertiary system, and (perhaps) by staggering plantings to spread irrigation demand over a longer period. Preparing cropping plans with involvement of representative farmers from all sections of the canal can also improve water distribution, crop productivity and equity which can ultimately contribute to strengthening WUAs.

277. **Construct permanent headworks and improve main canals on FMIS:** Government and donor funded programs to assist FMIS improve their main systems have been valuable and need to be continued. Constructing permanent intakes should not be a universal solution but has to be decided on the basis of site conditions and local hydrology.

278. **Construct STWs in the tail areas of water short systems (supplementary use):** In water-short surface systems with access to shallow groundwater, support construction of tubewells under the proposed tubewell development program to provide supplementary water to allow year-round cropping.

3.6.3 Increase irrigation intensity

279. Irrigation intensity is currently low. On surface systems, around 70% of the irrigable area is limited to supplementary monsoon season irrigation. Even the 68,000 ha Sunsari Morang system supplied from the permanent Kosi river can only irrigate half of its command area in winter and one quarter in spring, due mainly to river bed lowering reducing diversion volume. Pump irrigation systems are unable to irrigate in the dry seasons, due to unwillingness of farmers to meet electricity costs, combined with inefficient irrigation. Shallow and deep tubewell operators also often limit their irrigation to summer, with STW pump use averaging about 100 hours per year compared to around 1000 hours required for full triple cropping. One major problem relates to load shedding. Options for increasing irrigation intensity include: improved dry season water supply, improved extension, and the establishment of marketing clusters and systems to support high value cropping.

280. **Improved catchment management, reforestation.** Catchment degradation has resulted from deforestation and over-grazing. A degraded catchment has less ability to store water and release it over an extended period. The frequency of flash floods increases, probably due also to climate change. High erosion rates increase sediment loads in rivers, adversely affecting river characteristics in the Terai and adding non-productive sediments to canals and fields. Improved catchment management and restoration is thus highly desirable, and is primarily the responsibility of the Ministry of Forests and Soil Conservation including the program of Churia areas conservation.

281. **Inter-basin transfer (IBT) schemes:** These are designed to move water from snow fed rivers to seasonal rivers and generate electricity. Increased dry season water supply in seasonal rivers will allow expansion of winter and spring irrigation in downstream irrigation systems. IBT schemes are technically feasible where a perennial river passes close to another river and where the difference in altitude is sufficient to allow economic electricity generation. Only one scheme exists in Nepal at present – the relatively small Andhikhola system Galyang, Syangja which diverts water from the Andhikhola river to the Gandaki, via a 5MW power station and a 309 ha irrigation system. DOI has tentative plans for developing up to seven larger IBT schemes that technically, economically and environmentally feasible should be given priority..

282. IBT schemes have a number of advantages and drawbacks compared to multipurpose dams. Their pros and cons are summarized in [Table 7](#).

Table 7 Advantages and drawbacks of IBT compared to high dams

Advantages of IBT schemes	Disadvantages of IBT schemes
<ul style="list-style-type: none"> • Less prone to catastrophic earthquake damage 	<ul style="list-style-type: none"> • No flood control benefits
<ul style="list-style-type: none"> • Lifespan not limited by siltation 	<ul style="list-style-type: none"> • Potential adverse environmental impact on donating and/or receiving river
<ul style="list-style-type: none"> • No significant resettlement issues 	<ul style="list-style-type: none"> • Lower power generation potential than most high dams
<ul style="list-style-type: none"> • No loss of valuable farm land 	<ul style="list-style-type: none"> • Higher cost of turbine maintenance if desilting inadequate
<ul style="list-style-type: none"> • Non-removal of silt from donating river has beneficial effect on downstream farm land and deltas 	<ul style="list-style-type: none"> • Higher cost per MW
<ul style="list-style-type: none"> • May be more acceptable to riparian countries 	
<ul style="list-style-type: none"> • Can move water from east to west, assisting water short areas of India 	
<ul style="list-style-type: none"> • Provision of water to water-short valleys and irrigation schemes without need for long canals 	
<ul style="list-style-type: none"> • No need for fish ladders or trap and move (fish) 	

Source: ADS team.

283. Due to the resulting change in hydrology of both donating and receiving rivers, such schemes are prone to environmental and social problems. It is thus essential that careful environmental and social impact assessment is undertaken prior to approval and a viable environmental management plan defined and implemented.

3.6.4 Irrigation system and on-farm water management

284. **Government support:** The government could better support farmers in improving irrigation system and on-farm water management in a number of ways:

- Improving management of AMIS;
- Raising the skill level and management of WUAs;
- Ensuring that adequate levels of budget are available, either from national resources or the collection of adequate ISFs; and
- Providing advice and possibly funding to farmers to improve their irrigation systems and practices.

285. Currently these functions are the responsibility of Irrigation Management Division of DOI. Under ADS, it is recommended that its status is raised to that of Department, with DOI perhaps renamed Department of Irrigation Development. Alternatively a new directorate under DOI could be considered, but with substantially increased resources and responsibility.

3.6.5 Irrigation management transfer

286. WUAs or water committees are managing almost all of the 15,000 or so irrigation systems in Nepal. However, the main systems of 32 DOI developed irrigation schemes are managed by the Agency (DOI), with secondary and lower canals managed by WUAs and water user groups. A number of projects have supported IMT mainly focusing on the transfer of secondary and lower canals to WUA management. ADB's Irrigation Management Transfer Project (with TA provided by USAID) ended in 2004 and was rated partly successful by its PCR, experiencing problems in operation and maintenance and ISF collection. It was significantly under-funded in relation to the need for rehabilitation of major structures.

287. IMT has so far focused on the transfer of secondary and lower systems to WUAs. In future, it is considered to be desirable the WUAs also take on responsibility for main systems in all or most of the remaining AMIS. Options for future AMIS management may thus comprise:

- i. Joint (agency/WUA) management of main systems, but with greater responsibility passed to the WUA, for example in relation to employment of gatekeepers;
- ii. Full responsibility passed to the main system WUA or a federation of WUAs;
- iii. Creation of a farmer-owned company to be responsible for one or more schemes, with the WUA (or federation of WUAs) acting as the board; or
- iv. Contracting management to a new state-owned or (probably local) private company.

288. Option (i) Joint management will need to be continued for major schemes of for the foreseeable future but greater responsibility progressively passed to WUAs.. Option (ii) should be viable for medium schemes in the 5,000 to 10,000 ha range. Option (iii) is considered by ADS to have considerable potential merit for large and perhaps medium schemes. It has the advantage that it takes irrigation management to a professional basis, while still retaining farmer control through the WUA. It would allow a professional irrigation manager to be recruited (who could be a DOI engineer) who would be responsible for recruiting the management staff required to run the system, perhaps with a selection committee including WUA representatives for management positions. While the system has apparent advantages for larger schemes, it may be opposed by some WUAs who will see their power and financial base being eroded. It is therefore suggested that consideration is given to developing a new Irrigation Management Transfer project, with company formation as one component, to be attempted on a pilot basis for say two medium to large irrigation systems.

289. Contract management (option iv) is not considered likely to be viable, due to uncertainties about how a Nepali for-profit company would discharge its responsibilities (ie, it may put short-term profit above long-term development and sustainability). There appears also to be considerable resistance among WUAs to the concept. However, consideration could be given to a state-owned corporatized entity undertaking the management function, with a board comprising farmers, DOI staff and appropriate outsiders. This option would then be similar to the irrigation and drainage management companies in Viet Nam. However, creation of new state enterprises is unlikely to find favor with donors.

290. Whichever of the four options discussed in this section are adopted, it is recommended that consideration is given to ownership transfer as well as management. In the first instance, it would be necessary to define the legislative changes required for ownership transfer. Study would also be desirable of international experience, particularly in developing countries. If the recommended IMT project is implemented, TA could be commissioned to study the mechanisms for and pros and cons of ownership transfer.

3.6.6 Funding of Operation and Maintenance

291. On AMIS, DOI is responsible for headworks and main canal management, including O&M of the main system. WUAs are intended to contribute part of the ISF that they collect, but this is currently not effective in a large majority of schemes. Transparent systems need to be defined and implemented, so that both government and farmers/WUAs are aware of their rights and responsibilities. On most schemes, the government is responsible for most O&M on the main system, though it is intended that part of ISF should be allocated to main system O&M. Because budget is insufficient, maintenance is sub-optimal. Over the ADS period, it is recommended that this changes progressively to shared responsibility, and during the latter part of the ADS period to full O&M responsibility vesting with the WUAs.

292. In the short-term it is highly desirable that the level of ISF collection increases, to provide funds for O&M of the lower canals, and a contribution to main system maintenance. There are a number of ways in which ISF collection can be promoted or enforced.

1. Introduce incentives into the system, with (for example) government budget support proportional to ISF collection, with a time lag sufficient to allow the amount to be included in the budget request.
2. Introduce legislation to require a receipt for ISF payment to be attached to land tax payment. This option would require full or partial exemptions to be permitted when water cannot be provided to a particular canal or farmer.
3. As at present, require ISF payments to be brought up to date before a land sale can be registered.

293. **ISF calculation:** There are several options for defining and charging ISFs – per irrigable area, per crop, or per volume of water. The last of these is desirable, but impractical in almost all systems in Nepal at present, due to difficulties of volume measurement. However, it remains desirable as a long-term objective, and may be practicable on some schemes within the ADS period. Whether WUAs charge ISF per area or per area per crop is primarily their own decision. There are arguments favoring both – per area means that those who are unable or unwilling to grow two or three crops are effectively subsidizing those who do. However, it does provide some (though limited) incentive to double crop. Payment per crop should more nearly reflect the ability of the farmers to pay and in general is seen as preferable. In the longer term, a move to volumetric charging based on water release to secondary or tertiary canals could be considered. Given the minute plot sizes, measurement of water delivered to each farmer is impractical. However, if contract or group farming expands in an area, volumetric charging may become more feasible.

3.6.7 Water resources management

294. A national IWRM policy has been developed (by WECS) and needs finalizing as soon as practicable. As a corollary to IWRM, decisions will be required on whether irrigation system management is on a hydraulic boundary or political (DDC/VDC) basis.

3.6.8 Capacity Building of Women Farmers in Irrigated Agriculture and Water Resource Management.

295. All previous measures require capacity building of farmers. The programs to improve irrigation and water resources management designed under the ADS will include a capacity building module. In order to meet GESI dimension a program of capacity building for women farmers in how to build, manage, and maintain irrigation system will need to accompany other measures.

3.7 Agricultural Inputs

The problem:

296. Whether we talk of seeds and planting material, fertilizer, or animal breeds, the input sector in Nepal is often characterized by seasonal shortages, poor quality and weak quality assurance and compliance systems, lack of consistency in policy, and lack of access by the remote and marginal farmers.

297. In the past, the typical response of the government to this situation has been to provide subsidized distribution of inputs. The strategy apparently has not worked well, since the problems of scarcity and access to inputs have remained and the structural issues of supply and distribution of agricultural inputs has not improved much over the years, even though different administrations and different approaches (subsidies, no subsidies) have been tried.

The solution:

298. Timely access to quality agricultural inputs at affordable price.

The recommendation:

299. Formulate consistent policies for agricultural input supply and distribution. The policies might include support of subsidies provided that a clear understanding of the following issues is included in the policy formulation, namely:

- i. *Targeting*: who benefits from the subsidies? The poor, the women, the marginal, and the remote farmers should be targeted. In fact often the opposite takes place: the better off farmers, the more connected ones, and the one with better access to markets are the one who get most of the subsidies.
- ii. *Size of subsidies*: how big should the subsidy be? The size of the subsidy is important because it has trade-off relatively to other possible uses of public resources. For example, in the most recent budgets, fertilizer subsidies were about one quarter of the size of the overall investment in agriculture and amounted to 3 billion Rs (about \$40 million). Was this a rational use of the limited resources?
- iii. *Period of subsidies* (phasing out): is there a clear strategy of phasing out subsidies over time? If not, then subsidies either might generate a dependency or they might be withdrawn abruptly without the necessary adjustment.

- iv. *Affordability of subsidies*: Can the government afford subsidies at a par with India? And even if it could afford it, would it be worthwhile?
 - v. *Monitoring*: who will monitor the distribution of subsidies and ensure that subsidies are distributed according to the regulations?
 - vi. *Outcome and impact*: who will evaluate the outcome and impact of the subsidies?
300. Guidelines for such a policy in order to ensure consistency with the overall ADS are:
- i) *Consistency over time*: Do not create abrupt changes unless those are announced with sufficient lead time and an adjustment policy is well designed.
 - ii) *Promotion of private and cooperative sector*: do not use subsidies to promote parastatals at the detriment of the private and cooperative sector involved in the supply and distribution of inputs.
 - iii) *Periodic review of subsidy policy*. A periodic review of the subsidy policy should be conducted (eg every 5 years). On the basis of the study the level, area and duration of subsidy will be declared for the subsequent five years. Some subsidies might be phased out (if they have accomplished their objectives) and others might be introduced.
 - iv) *Promotion of competitiveness*: ensure that there are complementary measures to ensure competitiveness (for example demonstrations about effective and efficient input use).
 - v) *Promotion of sustainability*: ensure the sustainable use of input through improved practices and assured supply and distribution chains.
 - vi) *Promotion of quality*: ensure that agencies responsible to assure the quality of agricultural input have the capacity, resources, and authority of doing so.
 - vii) *Inclusiveness*: ensure that good and timely inputs are accessible to everybody particularly to the less favored groups.
 - viii) *Regressive nature of subsidies*: do not create a situation in which the greatest beneficiaries of the subsidy system are those who need the subsidies the least.
 - ix) *Establish voucher system* whereby targeted farmers are provided with a voucher that empowers them to purchase the input of their preference. First pilot the system and on the basis of a positive review of the pilot, replicate the system and upscale.

Rationale:

301. Rather than palliatives and short-term expedient measures that are quickly reversed with any new administration, there is a need for a consistent policy addressing input supply and distribution.

302. Consistency of policy implies that the rules of the game, the objectives, the implementation, and the enforcement mechanisms are clear and adopted within the context of an overall strategy for agricultural development.

303. Lack of consistency in the past on input supply and distribution has created confusion, raised expectations that were not fulfilled, and prevented the emergence of an input supply industry that is strong and efficient. For example, the seed, fertilizer, and animal breed industry are still small, not well organized, and its potential to meet the demand of a large farming population is largely unfulfilled.

304. The example of neighboring India, with its formidable system of subsidies for agricultural inputs is always in the minds of Nepali and is often presented as the main

explanation for the poor competitiveness of Nepal agriculture; high agricultural subsidies in India provide an argument for most farmer and political organizations in Nepal to lobby for subsidies at par with India.

305. In Nepal the discussion about access to agricultural inputs in order to improve productivity is immediately turned into the discussion of subsidies and India.

306. The discussion however rarely takes into account that the subsidy system in India has hardly achieved any of its intended effects. India agriculture by and large is not competitive, its productivity and growth are low even when compared with Nepal, subsidies do not reach small farmers but benefit mostly large farmers, often inputs are not available at the right time, and the main beneficiaries of subsidies in India are the manufacturing industry and intermediaries rather than farmers. Most importantly, it is often forgotten that performance of agriculture in India over the past 15 years has been poor and not better than Nepal, in spite of huge amount of subsidies.

307. It is important to put the discussion about inputs in its right context of agricultural development strategy and to understand what improvements in the current system in Nepal could be introduced to achieve the overall vision of agriculture.

308. To link subsidies on input to competitiveness is very important. Subsidies on research, extension, technology demonstrations, infrastructure, capital equipment, training, capacity building, innovations, etc are highly needed and should be used to a greater extent than currently is the case.

3.8 Seeds

The problem:

309. The National Seed Policy has been developed to effectively manage production, processing and testing of high quality seeds and their timely availability to the farmers. Its objectives are to ensure: (a) Availability of quality seeds of different crops in a required quantity; (b) Production of quality seeds and promotion of export; (c) Making seed business effective in view of the international market; and (d) Conservation of genetic characteristics of the indigenous seeds and maintain patent right.

310. Nevertheless, there are gaps observed in implementation of the policy including:

- *Availability of quality Seeds* of different varieties of cereals and vegetable crops, and feed crops is a persistent problem.
- *Production of Nucleus seed, Pre-basic seed, Breeders seed, Source Seed, Certified Seed and Improved Seed* are at a insufficient level. Therefore, seed multiplication efforts are limited and seed replacement rate is low.
- As per the Policy *the Seed Buffer Stock* provision is not established
- *Information on Demand and Supply Situation* of seed up to Farmers level is not established as outlined in the Policy.
- *Biodiversity Conservation of different local varieties* and establishing their Variety Right is not initiated.

311. The *Agriculture Bio-diversity Policy* has been framed in accordance with the objectives of National Agriculture Policy to protect, promote and utilize bio-diversity. It intends to benefit from protection and utilization of genetic resources for food security and poverty reduction. However, as in the case of the National Seed Policy there are several gaps into its implementation.

The solution:

312. Close the gaps between policy and implementation.

The recommendation:

313. Ensure effective implementation of existing policies including the Seed Vision 2025 through sufficient investment in resources and capacity building.

314. In order to address these gaps and to ensure timely availability of quality seed to farmers and develop a prosperous seed industry, consistently with the Seed Vision 2025, the ADS recommends addressing six main set of issues detailed below.

315. *Support to research stations to produce breeder and foundation seeds.* This will involve:

- Enhancing capacity of public research institutions and research stations, universities, and private sector industry through increased funding.
- Maintaining good quality land races and open pollinated varieties (OPVs) of different crops in remote areas dominated by subsistence agriculture and establish good linkages with international agencies.

316. *Promote private and cooperative sector and community based seed production.* This will involve:

- Promoting partnerships with relevant private and cooperative organizations, farms and nurseries for production of quality planting materials
- Encouraging private and cooperative sector to slowly take over the commercial production of saplings, seeds, while the role of government is that of facilitator, quality control, policy and regulations formulation, information provider, and monitoring and evaluation
- Providing breeder and foundation seed to private and cooperative seed growers
- Promoting private and private sector to produce breeder, foundation and hybrid seeds
- Promoting seed enterprise as an industry catering to the national needs and for export
- Promoting community based seed production and agro-biodiversity in inaccessible remote areas.

317. *Enforce quality assurance systems.* This will involve:

- Strengthening planting materials certification processes through improved capacity of concerned public organizations
- Enforcing compliance of nurseries with farm inputs quality standards
- Encouraging provision of quality control and certification from private sector as well as government
- Enforce legislation that compensates farmers when purchasing poor quality seed not complying with existing standards

318. *Promote production of hybrids.* This will involve:

- Allowing imports of suitable hybrids after necessary testing.
- Encouraging local hybrid seed production within GON organizations, the private and cooperative sector, and in partnership with foreign companies.

319. *Establish an information system about seed demand and supply.* This will involve an updated database available to the public containing timely information about seed production and seed stock for main crops with information about nurseries, breeding stations, and research centers. The database will also contain estimated demand by crop and area and information about suppliers and inspections. Ensure information is readily available to women, Dalit, Janajati/Adivasi, and Madhesi farmers.

320. *Fill the gap related to Biodiversity Policy Implementation.* This will involve filling the gap in implementation of the related policy. This will involve (i) strengthening collection, classification, and assessment of diversified bio resources relevant to agriculture, and support scientific report/ documentation; (ii) initiation system of registration of agro-biodiversity; (iii) develop regulation for the research and experimentation of Nepalese Bio-diversity and Genetic Resources; and (iv) develop regulation of GMO having negative impact on bio-diversity, genetic resources, and human health.

321. *Establish voucher system* whereby targeted farmers are provided with a voucher that empowers them to purchase the input (in this case seeds) of their preference. First pilot the system and on the basis of a positive review of the pilot, replicate the system and upscale.

Rationale:

322. The previous set of measures is in line with existing policies and bridges the gap between policy and implementation. The envisaged interventions require investment aimed at improving productivity, competitiveness, and sustainability of the sector. The role of public, private, and community sector is clearly specified. The demand and supply information system will facilitate monitoring of progress and identification of issues.

3.9 Fertilizer

The problem:

323. Fertilizer subsidies in Nepal refer primarily to chemical fertilizers, albeit the government provides some subsidies to organic fertilizer too. One alleged objective of fertilizer subsidies is to ensure access of smallholder farmers to this critical agricultural input. In the absence of subsidies, allegedly smallholder farmers do not have access to affordable fertilizer and as a result production and productivity, particularly of grains, will suffer, with negative repercussions on food security. Another alleged objective is to make agriculture in Nepal competitive with India; the argument is that given the heavy fertilizer subsidy prevailing in neighboring India, the absence of fertilizer subsidies in Nepal would greatly affect the competitiveness of Nepali agriculture negatively vis à vis India. A third objective of fertilizer subsidy is to make fertilizer available in remote areas where high transportation costs make use of fertilizer prohibitive.

324. There are several problems with the arguments in favor of fertilizer subsidies. First, there is an issue of affordability. Subsidies are already 25% of total budget to agriculture and amount to about \$40million. The questions are (i) whether Nepal can afford the subsidies and (ii) whether more productive use of the same resources can be found or not.

325. Second, there is the issue of targeting. In Nepal and in most countries where subsidies are implemented, the main beneficiaries of fertilizer subsidies are not the smallholder farmers, but in fact the opposite, namely the larger landholding farmers.

326. Third, Nepal experience (again similar to other countries) shows that every time fertilizer subsidies have been introduced, “scarcities” have been generated. During period of no subsidies, the great commotion of fertilizer shortages has been less pronounced than during period of subsidies.

327. Fourth, current subsidies are given exclusively to one parastatal organization (ACIL) to manage distribution. This monopoly opens the way to all sorts of mismanagement, delays, inefficiencies (for example whereas the private sector could import with a lead period of 3 months, the public sector requires 6 months), and lack of level playing field for private agribusiness.

328. Fifth, the critical issue of the contribution of fertilizer subsidies to competitiveness is often neglected. In the case of India, with one of the most subsidized systems in the region, the productivity and competitiveness of agriculture is quite low not only in absolute terms but also in comparison with Nepal: subsidies do not seem to contribute much to raise competitiveness of Indian agricultural products. The reason is not because of the fertilizer subsidies themselves but mostly because of the incredible inefficiencies that emerge when subsidies are introduced.

329. Several other arguments and counter-arguments could be presented. However, the problem in Nepal is that subsidies are probably too sensitive a topic to reach any clear consensus in the short term. Perhaps the most pragmatic solution would be to identify a strategy for the long-term removal of subsidies while a consistent set of improvements of productivity in the short and medium terms could be agreed and achieved.

The solution:

330. Find a pragmatic solution to fertilizer subsidies that is acceptable in the short-term, clearly indicates a strategy for the medium and long term, and aims at improving productivity.

The recommendation:

331. Maintain fertilizer and other subsidies at 2011 level in the short term, review them in the medium term and remove them in the long term while initiating a number of measures to improve productivity and fertilizer use efficiency. Complementary measures include:

- i) Conduct an aggressive campaign to demonstrate efficient use of fertilizer and educate farmers about the cost and benefit of efficient use of fertilizer.
- ii) Promote organic/bio-fertilizer at least at the supplementary or complementary level that can sustain the soil fertility and use inorganic fertilizers to attain higher production and productivity.
- iii) Explore feasibility of (i) establishing a fertilizer factory in the country under PPP arrangement; (ii) obtaining equity shares of fertilizers factory outside the country; (iii) establishing long-term contracts with foreign suppliers of fertilizer (both in India and third countries).
- iv) Establish and operate Fertilizer Buffer stock under PPP arrangement.

- v) Establish database and monitoring system of fertilizer use and distribution, including both official and informal import (the latter to be obtained through survey data).
- vi) *Establish voucher system* whereby targeted farmers are provided with a voucher that empowers them to purchase the input (in this case chemical or organic/bio-fertilizer) of their preference. First pilot the system and on the basis of a positive review of the pilot, replicate the system and upscale.
- vii) *Enforce quality assurance systems*. This will involve:
 - Strengthening fertilizer inspection through improved capacity of concerned public organizations
 - Enforcing compliance of importers and dealers with fertilizer quality standards
 - Encouraging provision of quality control and certification from private sector as well as government

Rationale:

332. The recommendation is needed because phasing out of subsidies over the life of the ADS will allow the agriculture sector to operate in a non-distortionary, economically efficient manner. This will also remove the competitive advantage that some businesses have because they receive the subsidy while others do not. Fully commercialized and well-run operations will not need the support by way of subsidies anyway, and the Government will be able to direct the funding elsewhere to needy causes.

333. What is new in this recommendation is the concept that subsidies on fertilizer and other items over the course of the ADS will no longer assist farmers in the purchase of essential agricultural inputs. As these farming businesses become commercialized and subject to income tax, VAT and other taxes, the suite of tax concessions described in other ADS recommendations will more than offset the loss of the benefit of the subsidies.

334. This proposal envisages the gradual withdrawal of subsidies in the final phase of the ADS (2025-2030) subject to whether India withdraws its subsidies at the same rate.

335. Complementary measures to promote efficient use of fertilizer, organic and bio fertilizers, fertilizer buffer stock and exploration of alternative supply schemes will ensure improvement in distribution and access to fertilizer based on an effective monitoring system for the sector.

3.10 Animal Breeds

The problem:

336. Despite a huge potential of increasing livestock productivity through improvement of the native breeds of livestock and poultry; the percentage of improved breeds is minimal. Breed improvement efforts are on ad hoc basis. There is a considerable gap between the demand and the availability of improved breeds. Moreover, a large number of livestock (eg goats and buffaloes) and livestock products are imported.

The solution:

337. A variety of improved breeds appropriate for the Nepal farming systems conditions are available to farmers.

The recommendation:

338. To ensure the availability of improved breeds the following measures are recommended,

- i. Develop livestock breeding policy
- ii. Support pure breeds production farms.
- iii. Promote private sector and cooperatives to produce improved breeds with proper recording of progeny, productivity, and efficiency.
- iv. Expansion of artificial insemination laboratories and service for the promotion of breeding programs for breeds improvement.
- v. Support private sector to establish grandparent stocks of poultry.
- vi. Support production of improved breeds to private sector.
- vii. Support recording and improvement of quality, health status, productivity of improved herds.
- viii. Support implementation of livestock insurance schemes.
- ix. *Establish voucher system* whereby targeted farmers are provided with a voucher that empowers them to purchase the input (in this case an animal breed) of their preference. First pilot the system and on the basis of a positive review of the pilot, replicate the system and upscale.

Rationale:

339. A combination of public and private measures will be required to ensure that improved breeds are available to producers. Improved breeds contribute to greater productivity and production of meat at affordable price, thus increasing the availability of meat for domestic consumption while lowering the import bill.

3.11 Mechanization

The problem:

340. Compared to other South Asian economies, Nepal is “under-mechanized”. Current estimates place Nepal’s mechanization rate at about 40% for tillage as compared to Bangladesh at over 80%. The problem has become more acute in recent years with the out-migration of youths to Kathmandu and foreign countries. This exodus of young workers has effectively increased the average age of farmers and access to mechanization is a significant input to increasing their productivity. The core operations to be mechanized in agriculture are tilling, reaping, threshing, pumping water for irrigation and the transport of agricultural inputs and outputs. The major platforms to perform mechanized operations are either the 4-wheel tractor or the 2-wheel power tiller. More recently a mini-tiller has been introduced that seems to be growing in popularity in the hills. It would not be the aim of any mechanization strategy to see every farmer owning a tractor but rather to see an expanded rental market develop so that more farmers have access to low cost options suited to their terrain, crop needs and financial means. We see this as the most cost effective way of moving from a 40% effective rate of mechanization to one in the upper ‘50s in the next 5 years and to the ‘60s by the end of the ADS.

The solution:

341. Ensure access to a range of mechanization options that would ease labor constraint and improved labor productivity.

The recommendation:

342. A private sector led mechanization strategy where the focus is on awareness creation, demand stimulation, a concessionary financing arrangement, technical capacity building of the dealer network, particularly for the 2-wheel power tillers and mini-tiller dealers throughout the country and some modifications in taxation.

343. In this case, the terai would see more farmers and service providers using the power tillers with multifunctional tilling options, the hilly areas would witness a gradual increase in the numbers of mini 2-wheelers (with some optional attachments) while in the mountains the approach would be oriented to labor-saving low energy implements and mechanized irrigation. There would be four components to this strategy:

- **Information Dissemination:** The private sector has already done a good job on the sales of 4-wheelers and last year approximately 4,500 tractors were sold in the country. But most farmers and potential clients of 2-wheelers have little information on 2-wheel tractor options and benefits. In fact most of them have a pre-conceived notion of it being beyond their purchasing capacity or even renting capability. Thus dissemination of information amongst the farming communities is a pre-requisite. As a first step it would be important to conduct a social marketing campaign on a cost sharing basis with 2-wheel tractor importers and dealers emphasizing the advantages of a 2-wheel tractor over the traditional forms of cultivation, harvesting etc. In effect there would be three separate campaigns one for the mountains, one for the hills and one for the terai. Each one of them would have the same aim, to inform farmers of the potential options and choices, however the orientation and relative weighting of these options would be different in the three different agro-economic zones.
- **Improving Customer Access to Finance:** Although 4-wheel tractors fall under the regular financing schemes of the commercial banks (hire-purchase), the 2-wheel tractors are largely ignored by bank financing and without license plates, the banks are hesitant to provide loans to the prospective owners of the mini-tillers. Likewise the importers and dealers of the 2-wheeled power tillers have yet to pursue the same kind of aggressive financing implemented by a few of the 4-wheel tractor dealers. Some commercial banks have shown a keen interest in financing 2-wheel tractor sales through dealer financing rather than through consumer financing. With the dealers and importers co-investing in providing loans to the prospective clients, it is expected that sales would increase significantly from the first year itself. Almost all dealers of 2-wheelers are extending credit though the amounts are small. Up to now none of them have had any defaults. Rather than conceiving of a financing project through retail banking and for end users it would make more sense and be far less costly, to finance dealers to on-lend to their customers. Commercial banks have expressed an interest in this type of financing and have propose two options: either to extend credit on commercial terms to dealers so that they can also on-lend at rates around 17%³⁴ or to access cheaper credit from the Rastra Bank's "deprived sector" lending program although there are restrictions on the targeting of end users.

³⁴ Commercial banks must lend up to 3.5% of their outstanding portfolio to agriculture or face fines of 16% on loans unallocated to this sector. They therefore have an incentive to constantly look for lending to this sector. Commercial bank also have the option to access concessionary financing for the "deprived sector" (cooperatives and micro-finance institutions) at 10-10.5%, but there are restrictions on how the funds are deployed.

- **Capacity Building of Service and Maintenance Providers:** Though the 2-wheelers' and mini-tillers' technical configuration is relatively simple and can be compared to that of the diesel pump sets or even motorcycles, the linkage with after sales service and spare parts is poor. Hence it is proposed that the dealers, instead of setting up their own repair workshops (as 4-wheelers have done), increase the technical capacity of the smaller existing workshops that are scattered through the countryside. These workshops could also stock spare parts and act as small brokers for some of the 30-35 dealers operating in major commercial centers. In addition we are proposing that, in connection with importers and dealers, that upwards of 1,000 farmer/service providers be offered technical training to enable them to become local experts in the impacts of mechanization (additional germination rates, cost saving implications, the advantage of zero leveling, the impact of seed drills etc.)

- **Introduce leasing program for agricultural equipment:** it is proposed to introduce an enabling environment for the development of a leasing market for agricultural equipment that would allow leasing companies to operate. To this end we are suggesting the following legal measures:
 - a. clarifying that the Banking Institutions Act does not restrict non-banking institutions to engage in leasing; and
 - b. form a pledge registry (under the Secured Transactions Act or under by amendment to the Contracts Act) to allow securing the financing for leasing operations by leasing companies

- **Revising Supporting Policy Conditions:** To accompany the three above mentioned components, we are suggesting the following supportive fiscal measures from the government.
 - Waiving the VAT amount and import duty on spare parts. The high cost of spare parts (over 28%) has seen the proliferation of sub standard spare parts brought illegally across the border. It has similarly impacted on the business of the local dealers and sub dealers.
 - Tractor owners cannot change their vehicle ownership for a period of 5 years. This has adversely affected in the transaction of tractor sales. Though this rule was enforced so as to control speculation, it has nevertheless discouraged the adoption of agricultural mechanisation as a whole, but particularly for that of 2-wheelers.
 - Although it is not possible to raise the import duty on 4-wheelers because of SAFTA agreements we see the justification to impose a 13% VAT on the purchase of 4-wheelers because the majority of these are being used exclusively for commercial transport rather than for agriculture. This modest tax increase would “nudge” buyers to more seriously consider their choice of this vehicle.
 - Currently the road tax is Rs. 2,900 for 4-wheeler and 2,300 for 2-wheelers. 2-wheel dealers claim that this is a disincentive for a 2-wheel purchase if it is to be used for agriculture and that it seems excessive in comparison to the 4-wheeler.
 - Given the low rate of attachment usage and their relatively expensive costs we recommend a 30% voucher subsidy on all attachments (for 2-wheelers and 4-wheelers). This would be extended to seed drills reapers, laser levelers, planters etc. We foresee this lasting just 3 years and to be accompanied by the above mentioned social marketing campaign.

Rationale:

344. This strategy needs little additional funding for its implementation but a lot of coordination with the private sector equipment providers and with the commercial banking sector.

3.12 Farmers' Resilience

The problem:

345. Temperature and precipitation variability is increasing. As a consequence, the frequency of droughts, inundations and other extreme weather events and incidence of pest and diseases are increasing. The agriculture sector is being affected and likely to be affected from stress of climate and weather stresses and pests and diseases associated with it. Communities are ill prepared to cope with extreme climate events like droughts and flood.

346. In addition to increasing climate change variability, Nepali farmers in general and poor farmers in particular are prone to a numerous shocks arising from diverse factors including crop failures due to pests and diseases, price volatility, losses of livestock due to disease, accidents, and health issues. Moreover, most households in Nepal (not only in rural areas) have no access to affordable life insurance, disability insurance, health insurance, accident insurance, or old age pension. As a result, several types of shock can affect most farmers in Nepal negatively and precipitate into a situation of poverty. The lack of safety nets results in great losses to the individuals, their households and society. The ADS can be seriously affected by the lack of resilience of farmers in Nepal.

The solution:

347. Development and adoption of preparedness and climate resilient measures to prepare adapt and cope with climate change and establishment of safety nets.

The recommendation:

348. A combination of research, technology and institutional mechanisms to strengthen farmers' resilience. The specific dimensions of this recommendation will include:

- i. Promotion of research on identification and adoption of stress tolerant crop, livestock and fish species for the development of climate resilient agriculture.
- ii. Establishment of early warning system and adoption of early warning information in managing climate change risk to mitigate risks in agriculture and food and nutrition security in the country.
- iii. ICT based climate information systems designed to provide information to farmers.
- iv. Crop yield forecasting system.
- v. Establishment of Farmers Welfare Fund that would provide assistance to farmers under distress through access to financial resources to overcome temporary losses of income.

- vi. Strengthen food reserve system to cope with emergency and food safety distribution to targeted farm households.

Rationale:

349. Very limited work has been carried out in identifying stress tolerant crop, livestock and fish species. Identification of such species and communication to farmers for adoption is necessary in order to develop climate resilient agriculture.

350. Systems to link weather forecast and climatic event to agricultural planning and forecast are still at a very early stage. Measures to improve resilience and reduce vulnerability of households to losses of assets, diseases, and access to food and income need to be established at the community level through appropriate programs of community based disaster risk reduction.

351. While the overall solution to vulnerability would require the establishment of social safety nets and benefits that currently do not exist for rural households, the ADS could support the movement towards the establishment of some initial steps that could create the conditions for increasingly self-reliant communities to assist the less fortunate.

352. The health/disability insurance and pension system are long-term solutions, but go beyond the scope of the ADS. A more modest effort is the one related to a Farmers Welfare Fund managed by the Communities (for example the welfare fund could be attached to the Community Agricultural Extension Service Centers or CAESC).

353. The welfare fund could function partly as a revolving fund managed by communities and could be given an initial seed funding from the central and local government and replenished by fees of its members.

354. The fund has to be distinguished by crop and livestock insurance (examined elsewhere in the report). Also, it is different from emergence relief during period of disasters.

3.13 Green Farming and Renewable Energies

The problem:

355. Erosion of topsoil and deficiencies of micro-nutrients have been reported from different ecological zones of Nepal. Farm yard manure is a major source of soil but most farmers do not use improved cattle sheds thus wasting a considerable portion of the potential nutrients. In most parts of the Terai, dung is used as source of fuel for cooking. Chemical fertilizer use per hectare is very low; however, when used, application is often inefficient and wasteful. Good practices to manage sustainably soil fertility, plant nutrients, and pests are just beginning to be known but the extension effort is still too limited. Use of chemicals in agriculture (fertilizers, pesticides, and herbicides) is either considered a panacea for achieving productive agriculture or a sure road towards dependency and destruction of the environment. Little balanced debate and knowledge is made available about sustainable practices that might entail both use of chemicals and organic methods.

356. The power deficiency in Nepal is extreme in spite of abundant water resources of the country. Use of nano and pico hydroelectric plants in the hills and mountainous areas has been

promoted for some time; similar programs in solar energy and wind energy are starting to be pursued. However other renewable energies directly related to agriculture such as biogas and biomass utilization (rice husk, grasses, and wastes, all products not competing with food) are still at an emergent phase.

The solution:

357. Dissemination and adoption of good agricultural practices (GAP) in integrated soil fertility management, integrated plant nutrient management, and integrated pest management and good veterinary practices (GVP) and herd management practices while strengthening of biogas and biomass renewable energy programs.

The recommendation:

358. Integrated soil fertility management, integrated plant nutrient management, integrated pest management, herd management, programs for renewable energies based on biogas and biomass utilization, farm sanitation and hygiene, and practices to prevent the use of hazardous chemicals in crops and regulations of use of antibiotic livestock production process.

Rationale:

359. Recently implemented sustainable soil fertility management and integrated pest management programs have shown promise. In the case of soil fertility, the major activities have included improved manure management, use of biopesticides, and integration of legumes into farming system and led to significant improvement in organic matter and nitrogen contents. Reduced or zero tillage practices (more generally Conservation Agriculture³⁵ practices) have also been introduced for wheat after rice in the Terai. The system was found to generate higher yields, reduce production cost, ensure 25% saving in water, and reduce soil erosion and other forms of land degradation. However, the coverage of these programs is still limited.

360. About 35-40% pre- and post – harvest losses are caused by pests. The incidence of pest and diseases is increasing and likely to increase in the context of climate change. The IPM system has been introduced in the country since 2009. However, many farmers still do not have knowledge of the system of integrated pest management and green farming.

361. Intensive livestock production is the best candidate for utilization of biogas; throughout the terai large volumes of biomass in the form of hay, stalk, unused grass, husk are primary candidates for digesters that could transform the biomass into gas available for energy generation.

3.14 Sustainable and Productive Forestry Sector

The problem:

362. Although Nepal's success in community based forestry in the hills is regarded as one of the best models of natural resources management in developing countries, the policy has not

³⁵ Conservation Agriculture (CA) refers to an array of technologies such as residue retention, zero- and reduced tillage, crop rotations, green manure cover crops, controlled traffic and raised beds. When used in combination these, over time, reduce, and often revert, the degradation of soil and water resources. Residue retention distinguishes conservation agriculture from conventional agriculture, and all conservation systems include at least a certain level of surface residue cover.

been successful in managing the Terai and high altitude forests. Overall performance of forestry sector in terms of productivity, competitiveness, and contribution to national economy and livelihoods is not satisfactory. Management of forests is dominated by subsistence production systems and is more protection oriented. Forestry practices have also not been able to address properly the new emerging second generation (poverty alleviation, social inclusion, equity and governance) and third generation issues (climate change). The driving component of forestry resource development, namely forest governance, is very weak in terms of legitimacy, effectiveness, and transparency.

The solution:

363. A competitive, agriculture friendly and socially inclusive decentralized, multiple-use forestry sector that contributes to commercial agriculture, improved livelihoods, and economic growth while managing natural resources sustainably

The recommendation:

364. Developing existing subsistence production based forestry into a competitive, agriculture friendly and inclusive forest management practices in line with a holistic and community based landscape approach to natural resource management and livelihoods improvement.

365. The option is articulated in several dimensions as follows:

- i. An enabling policy environment in place for developing, managing, and sustaining forest products and services in a more commercial and sustainable way. This will require the following measures:
 - a. Develop new forestry sector strategy aligning with changing political and institutional context.
 - b. Develop forest land use planning in line with the national land use policy.
 - c. Harmonize conflicting policies in line with overall national land use policy and forest sector policy, and international commitment of the Government and ensure ground actions.
 - d. Develop policy measures to control the forestry land use conversion, startup scientific forest management and enhance the forestry sector contributions.
 - e. Revise the policy and programs of community based forest managements to address their unintended negative effects on distant users, resource sharing, social inequity and traditional use rights of transhumance and transient graziers.
- ii. Developed and integrated productive, commercial, socially inclusive, agro-forest products production land use models into the existing forest management practices across the landscape/physiographic region. This will require the following measures:
 - a. Identify and prioritize the most socially and economically competitive forest products for each of the management regimes across the various landscapes and physiographic regions.
 - b. Develop multiple use context specific climate change friendly agro forestry modalities for each type of farmer (small to rich farmers).
 - c. Develop and scale up intensive management model for community based forestry for each landscape/physiographic region actively contributing to productivity of farming system, increasing social, economic and environmental benefits and achieving food security.

- iii. Economic enhancement and livelihood improvement through marketing and enterprises development. This will require the following measures:
 - a. Improve the value chain of forestry products (timber and non timber) to be promoted for each of management regimes of farm or forests across the landscape/physiographic regions.
 - b. Identify the role and involve stakeholders in the forestry sector management. Develop public-user-private partnership mechanism with well identified roles and responsibilities.
 - c. Promote the establishment of agro forestry based enterprises providing emphasis to the poor, community and private sector based on context and appropriateness.

- iv. Forestry social inclusion and food security addressed. This will require the following measures:
 - a. Strengthen the implementation of Gender and Social Inclusion Strategy of the forestry sector in all phases of program planning and implementation at all levels from center to the district levels.
 - b. Restore the degraded lands, enrich the public lands and increase the productivity of low yielding farm lands with appropriate pro poor agroforestry models to achieve the goal of food security, environmental sustainability and poverty alleviations.

- v. Biodiversity Conservation and Climate Change Adaptation and Mitigation through the following measures:
 - a. Support the Local Adaptation Plan of Action (LAPA) as implementation support for the National Adaptation Plan of Action (NAPA) for climate change and emphasize the role of forestry sector components for adaptation and mitigations.
 - b. Support revision and implementation of National Biodiversity and Action Plan (NBSAP) and scale up the interventions on soil conservation and watershed management.
 - c. Develop with policy decision, implement and scale up schemes related to payment of environmental services including carbon sequestrations.
 - d. Promote use of alternative/renewable energy and energy saving scheme among the local forestry groups

- vi. Institutional and Human Resource Development and Forest Governance improved through the following measures:
 - a. Restructure the forestry sector based on the new forestry strategy, periodically reorient the staffs and improve the service delivery mechanism.
 - b. Prepare and implement a comprehensive human resource development plan.
 - c. Democratize governance system of government, non-government, community and private institutions working in forests sector and making it inclusive, transparent and accountable.

- vii. Improved Research and Extension Programs through the following measures:
 - a. Develop and implement sustainable forest management research, communication, education and awareness raising strategies for national district and community level.
 - b. Collaborate between stakeholder agencies by clearly recognizing needs and priorities on forest research and carry out adaptive research with high-quality support from national and sub-national research institutes.

- c. Develop extension package on best forestry practices and test. The extension package includes reduction on forest threats including forest encroachment, grazing management, sustainable forest management and improved agricultural practices.
- viii. A collaborative sustainable investment plan in place through the following measures:
- a. Develop and implement district forest development funds management.
 - b. Develop strategy on public private partnership and increase the private sector investment in forestry
 - c. Develop National REDD plus strategy, Biodiversity Strategy and Action Plan, Strategy on Green Jobs and Investment plan for receiving benefits from regional and international funding schemes.
 - d. Create conditions for continuous and stable investments in the forestry sector through the process of realization of the new Forestry Strategy.
 - e. Develop coordination and for planned investments between private and state sectors, international and national donors.
 - f. Create the favorable climate for investments in the private and state sectors, international and national donors.
 - g. Improve law enforcement to decrease the negative impact on forest markets and increase the income for the sector that will ensure larger reinvestments in forestry.
 - h. Co-ordinate with the national and international financial assistance including international funds for support to sustainable forest management, to biodiversity conservation, protective functions of forests, payment of environment services and for carbon sequestration.
- ix. Develop joint platform for policy formulation and actions on ground through the following actions:
- a. Join –up the work of organizations to map and access policy initiatives for the agriculture and forestry sectors, and identify where the measures exist or are missing.
 - b. Work to embed a common understanding and language, generate shared messages on the need to adapt, and incorporate new, consistent messages on farming systems and priorities for action
 - c. Develop better information to help farmers consider the costs and benefits of capital investments that would improve their productivity
 - d. Build on existing knowledge and research to ensure that agriculture and forestry complementing each other.
 - e. Develop examples of good working practice and adding value to support decision-making engaging with the forestry user groups looking at existing and future schemes for forestry to support agriculture production
 - f. Develop critical capacity in research, expertise and the evidence base.

Rationale:

366. The integration of forest development with the ADS provides an opportunity to increase productivity of marginal communities and at the same time to improve watershed management and climate change.

4 COMMERCIALIZATION

367. The policy goal is to transform the agricultural sector from a substantial proportion of farming carried out solely for subsistence, and by default (i.e. no other livelihood or household food security options are available to the household), into a sector in which the vast majority of farming is carried out for commercial purposes and is connected to the local and national economy and markets.

368. This transformation towards a more commercialized agriculture requires a set of measures that focus not only on farmers, but, fundamentally on agroenterprises involved in the commercialization of agricultural products and services. These enterprises include input providers, producer companies, marketing cooperatives, storage operators, logistic companies, agroprocessors, importers and exports of agricultural and food products, distributors, traders, and agricultural service providers (including financial service providers, insurance providers, business service providers). In the previous chapter, we have seen how the ADS will promote the decentralization of research and extension services to involve private, cooperative, and NGO sector. In this chapter, the emphasis is on the private and cooperative sector.

369. The recommendations are related to the investment climate and a number of reforms to strengthen contractual arrangements, taxes, and financial services to promote and efficient commercial agriculture. The recommendations also emphasize the need of prioritizing a number of value chains to ensure they achieve scale economies and therefore have national income and employment impact. Finally, a number of physical and institutional infrastructure programs to promote commercial agriculture are also recommended (agricultural roads, market information and market intelligence systems).

Table 8 Recommendations to Improve Agricultural Commercialization

No.	Area	Recommendation
1.	Investment Climate	Improve investment climate for agricultural commercialization through structured dialogues of the government with farmer organizations, trade organizations, cooperative organizations, and other private sector organizations.
2.	Contracts	Strengthen contractual arrangements to promote agricultural commercialization through promotion of contract farming, land leasing, equipment leasing, and secured transactions for warehouse receipts.
3.	Taxes	Develop tax policy supportive of an efficient commercial agricultural sector with the long term objective of agricultural sector providing the government with an additional source of revenues.
4.	Finance	Promote development of diverse agricultural finance providers that supply a variety of competitive and demand-driven financial products.
5.	Value Chains	Prioritize the development of competitive agricultural value chains that increase value added and benefits to smallholder farmers
6.	Roads	Continue the development of rural roads and accelerate the expansion of the network of agricultural roads.
7.	Market Intelligence	Strengthen and rationalize existing systems of agricultural market information and establish new suites of ITC products for market

		intelligence.
8.	Rural Electrification	Support expansion of rural electrification programs through the promotion of renewable energies (water, solar, wind, biomass, biogas).

4.1 Investment Climate for Agricultural Commercialization

The problem:

370. In spite of a number of policies that proclaim support for agricultural commercialization, there are still several bottlenecks and obstacles to the establishment of an investment climate favorable to agricultural commercialization. Numerous gaps remain concerning regulations related to contract farming, land-leasing, and equipment leasing; market information; enforcement of existing laws; mechanisms to promote dialogue among commercial stakeholders and between government and stakeholders; taxation; and finance.

The solution:

371. Establish a mechanism to ensure that investment climate for agricultural commercialization improves.

The recommendation:

372. Promote formation of broad-based organizations that could monitor and dialogue with government on improved investment climate for agricultural commercialization.

373. These organizations are complementary to existing chambers of commerce and their federation, trade associations, cooperative federation etc in so far as they promote the formation of alliances across the value chain. Their structure could be similar to the Commercial Agriculture Alliance (CAA) in the Eastern Region in terms of broad coverage of actors such as farmer cooperatives, traders, input supplies, and agroindustry. In such a case, the monitoring and advocacy would be for a broader spectrum of commercial agriculture than other existing organizations.

374. Specific aspects of the investment climate that needs to be monitored and promoted include:

- Increased participation of agribusiness, cooperatives, and industry organizations in sub-sector planning and implementation.
- Appropriate regulation to promote larger scale commercial cooperative farming including merging of cooperatives across districts or regional boundaries; contract farming; lease farming.
- Level playing field of private sector with state enterprises in the distribution of agricultural inputs and outputs. For example, level playing field in the distribution of fertilizer, seed, artificial insemination, milk.
- Reformed land use policy to stimulate commercial agriculture, such as those land plotting, land fragmentation, land ceilings, land tenancy, land pooling (see section [3.53-4](#))
- Effective provision of information for commercial agriculture (e.g. crop gross margin and cash flow analyses).

375. Indicators to monitor investment climate should be agreed between the government and relevant organizations representing farmers, cooperatives, and private sector. A working group or sub-committee under CADIC could be held responsible for monitoring these indicators.

Rationale:

376. There are already commodity associations and industry associations in Nepal and some of them are active in lobbying the government for specific measures to benefit their members. The FNCCI and AEC are also organizations that aim at an improved investment climate in general and more specifically for agribusiness. The Agribusiness Division of MOAD also has a mandate to promote agribusiness, but its activities are limited in scope and effectiveness.

377. In fact, none of these organizations has a clear mandate to monitor and promote the investment climate for commercial agriculture. A focus on investment climate would result in specific indicators to measure progress and therefore more specific plans of actions and interventions to improve investment climate.

4.2 Contractual Arrangements for Commercial Agriculture

The problem:

378. The current business regime in Nepal does not contain sufficient contractual arrangements for the promotion of commercial agriculture. Agriculture business practices often lack the mechanism to generate added benefits and sharing of these benefits among the actors; this is a main constraint to the development of contractual arrangement in agricultural business.

The solution:

379. The existence of a functioning legal regime for contract farming as well as other legal mechanisms that facilitate various forms of contractual arrangements between farmers and agribusinesses, traders or suppliers.

The recommendation:

380. Regulatory framework for contract farming, land leasing, and leasing operations. Enact *contract farming act* to promote agri-business operations, that includes inter alia, (i) Collective bargaining arrangements with multiple small farmers; (ii) Protection of the parties to the contract (farmers against exploitation through credit and accumulation of debt and contractors against unauthorized sales); (iii) Provisions on insurance of crops; (iv) Implementation of the Secured Transaction Act (see below). Moreover, regulations and incentives to promote the larger scale adoption of livestock and crop insurance should be formulated.

381. *Implement Secured Transactions Act (SAT)* by establishing registry and commerce registration of movables as security - to (i) allow farmers to provide future crops as collateral for financing, whether as part of a contract farming arrangements or as collateral for farm credit or inputs; and (ii) allow development of hire-purchase or financial leasing for agricultural market³⁶.

³⁶ In a typical leasing operation, a leasing company serves as the middleman between the financial institution that provides the financing for the purchase of the equipment, and the farmer who leases it, from the leasing company. In order to obtain bank financing the leasing company needs to put up collateral. That collateral is the equipment that is leased to the farmer. Thus the owner of the equipment is the leasing company, the bank has a security interest (collateral) in the equipment and the farmer leases it. In the absence of the registry only land can be collateral (or vehicles that are registered with the motor

382. If implementation of STA proves impractical³⁷ one could amend Chapter 6 of the Contracts Act to ensure a simplified pledge procedure for the pledging of movables as security, including pledge registry.

383. **Enact land-lease act** (possibly as part of a Contract Farming Act) to provide for a viable alternative to the sharecropping (with concern that tenancy may be re-enacted) and inducing of sale by absentee landlords as well as a basis for agro-business farming arrangements that provides for (i) fair lease contracts (i.a. – fixed fee or reasonable sharecropping ratios); (ii) measures to prevent acquisition of tenancy rights in long-term lease relations; and (iii) ability to secure long-term leases for agro-businesses to enable them to cultivate land for the agro-business.

384. **Promote Leasing Operations** through: (i) providing for the formation of Leasing Companies to engage in financial leasing of farming equipment, by clarifying that Article 47(1)(d) of the BFIA which stipulates that FIs are permitted to engage in leasing operations does not limit non-FIs from engaging in leasing of farming equipment³⁸; and (ii) establishing pledge registry either under STA or by amendment of Contracts Act, as described herein above.

385. **Promote livestock and crop insurance** through appropriate legislation, incentives in the form of tax deductions for insurance companies and subsidies to premium at early stages of the system, and support of information database on accurate meteorological data and pests and diseases occurrences.

386. **Capacity building in commercial agriculture.** The promotion of commercial agriculture through improved contractual arrangements discussed above, value development (see section 4.5, and market intelligence (see section 4.7) requires the training and capacity building of farmers and their organizations (groups and cooperatives), agroenterprises and their organizations, and service providers (government, professional) in key concepts of agricultural commercialization and value chain development.

Rationale:

387. The recommendation envisages new legislation to facilitate contract farming arrangements as well as other possible commercial arrangement that will promote investment and trade in agro and agro-business products while protecting the parties to such agreements where necessary. Such would include the collateralization of crops against credit provided by traders to farmers in contract farming arrangement on the one hand and the limitation of such collateralization to avoid bondage by farmers to traders. In addition, legislation is required to enable leasing and hire-purchase arrangements, including liens on to allow farmer to purchase or lease mechanical farming equipment that cannot be purchased in a simple purchase.

vehicle registration. The equipment cannot be registered as collateral and financing will not be forthcoming to the Leasing Companies. Since financial institutions (FIs) are usually not familiar with leasing operations FIs will not become lessors.

³⁷ We have noted that the STA is a rather complex legislation which may not be suitable as an initial mechanism for using movables as collateral.

³⁸ In the undersigned's view the language of Article 47(1)(d) should not prevent non-FIs from engaging in leasing operations, but as the Rastra Bank apparently believes it does, one may have to resort to a legislative (or judicial) clarification that leasing operations may be conducted by non-FIs.

4.3 Tax Policy for Commercialization

The problem:

388. The core problem for agricultural taxation is that effective tax incentives are not in place to support the commercial transformation of the sector over the next 20 years. The causes of this problem are: (i) the range of income tax incentives for the agricultural sector may not be appropriate or sufficiently targeted to support its commercialization; (ii) high levels of subsidies in India, which reduces Nepal's competitiveness. Nepal may not be able to afford an equivalent level of subsidy to India; and (iii) political parties may be under pressure to keep economically inefficient fertilizer subsidies in place because of the popularity of subsidies.

389. Agribusiness entities which are taxable now, or will be taxable in the future, may be able to take advantage of some of the existing general tax concessions; however, there is no current suite of incentives designed specifically to support the agricultural sector itself.

The solution:

390. Tax policy to support the development of an efficient commercialized agricultural sector through providing subsidies and targeted tax incentives, until the sector has reached a sufficient level of maturity and sustainability that those subsidies and incentives may be phased out. In the long term the agriculture sector will provide government with an additional source of revenue for mobilization.

The recommendation:

391. A rationalization of all tax incentives with specific termination dates and including the following:

- i. Consider specific income tax concessions to stimulate investment in farm plant, machinery, irrigation equipment, and the like.
- ii. Consider tax incentives for the insurance industry to stimulate the growth of agricultural insurance contracts.
- iii. Consider tax incentives for the banking industry to stimulate the growth of agricultural loans.
- iv. Consider changes to the way land is taxed using capital gains tax (CGT) and integrated property tax (IPT).

Rationale:

392. The recommendation (i) is needed because as agricultural entities are commercialized and move into the taxable sphere, concessions will reduce the financial burden of taxation through the start-up period and encourage spending on machinery, infrastructure etc they require. The need for incentives for green technology will assist in reducing the sector's carbon footprint and alleviate climate change. What is new in this recommendation is that it replaces blanket, lifelong exemptions with targeted concessions with termination dates (in accordance with the recommendations in IMF Country Report No. 11/319 of November 2011).

393. The recommendation (ii) is needed because agricultural insurance (on crops, livestock etc.) is not currently offered by insurance companies, but if they did so this would assist in the development of agribusiness. What is new in this recommendation is that there are currently no

tax incentives for the insurance industry (plus insurance companies are subject to 30% income tax as against the standard rate of 25% and the concessional rate of 20% for favored industries).

394. The recommendation (iii) is needed because banks are currently reluctant to lend to the agriculture sector, which is hampering the development of agribusiness. What is new in this recommendation is that it would provide an incentive for banks to make agricultural loans (for purchase of equipment, construction of infrastructure, working capital etc.).

395. An agribusiness may borrow to purchase land itself for cultivation or livestock. Land has a high credit rating and is accepted as effective and reliable collateral for borrowing from banks and financial institutions. For land to be used effectively as collateral a consolidated record of property of land and houses is required. The recommendation (iv) is needed because land is currently being taxed in an inefficient manner. What is new in this recommendation is that it drives consideration of new revenue sources such as capital gains tax.

396. A capital gains tax (CGT) on sales of land (both urban and rural) would raise substantial revenue and encourage tax compliance by those wealthy taxpayers who may be avoiding income tax. Exemptions for family residences, allowances for inflation, a high threshold and low tax rate would cushion the impact of introducing the tax. For the tax to be effective all property transactions would have to be reported to the Inland Revenue Department, which would require accurate land titles records and administration. A complementary inheritance tax on property not already subject to CGT (or imposing CGT on property acquired by way of inheritance) would ensure that all gains were captured in the tax net.

397. Taxes on property at the sub-national level (those imposed by municipal and village bodies) could be improved through an Integrated Property Tax (IPT), a single tax which replaces the many taxes currently imposed. This would lead to simplicity for taxpayers and certainty for sub-national governments as to their revenue streams. For the IPT to be effective capacity would have to be built in local bodies, as well as their records of landholdings; and valuations conducted every 5 years to ensure that up-to-date taxable values were available to the local government tax authorities.

4.4 Agricultural Finance

The problem:

398. The issues relating to rural finance in general and agricultural finance in particular include: (i) Excessive involvement of Government and poor performance of key public-sector rural financial institutions; (ii) Lack of appropriate legal and regulatory framework for microfinance; (iii) Limited capacity of rural financial institutions; (iv) Lack of innovative financial intermediation models necessary for remote areas, especially the hills and mountains; and (v) Lack of or limited outreach of supporting financial sector infrastructure and institutions.

399. A major problem in the agricultural finance sector is the pervasive influence of the Government in financial institution ownership and management, and politicization of lending. Majority public-sector owned financial institutions (ADBL, SFDB, and the five Grameen Bikas Bank or GBBs) dominate the sector. In spite of their extensive rural network, they have not made the most of their potential because of weak governance and management, limited staff capacity, and limited attention to profitability and sustainability. In addition, the Government has for

many years engaged in directing financial institutions to lend in what it regards as priority sectors. The current DSL program, the burden of which on financial institutions has recently been increased, distorts the normal working of the finance sector. It also makes only a limited contribution to agricultural credit. This, in addition to poor performance of Government microfinance initiatives, such as the RSRF (which after 20 years currently serves less than 26,000 clients), has undermined market incentives by discouraging MFIs from expanding their outreach through efficiency improvements and innovation.

400. Although MFDBs, SCCs, FINGOs, and semi-formal financial institutions are the most important credit providers in rural areas and for low-income households, they too for the most part suffer from weak capacity, and limited outreach and scale of operations, especially in more remote areas, that adversely affects their viability and sustainability. Most lack suitable accounting, reporting, and MIS capacity. In the absence of regulatory requirements for accountability and transparency, microfinance institutions have not been able to improve their accounting and internal controls and boost their operating capacity.

401. The legal and regulatory framework for microfinance institutions, which are the major formal sector providers of agricultural finance, especially to small farmers is weak. Although NRB has in recent years strengthened its role in the finance sector as a whole, its supervisory capacity remains limited and covers only licensed financial institutions. The proposed transfer of the supervision of Class D financial institutions (MFDBs, SCCs and FINGOs) to a new regulatory authority will improve the supervision of those institutions (as well as enhance NRB's focus on the major financial institutions). However, the vast majority of SCCs, FINGOs and similar financial institutions will remain unsupervised, posing a threat to public confidence in the finance sector.

402. The evolution of rural finance in Nepal has been primarily supply-driven by Government to accelerate agriculture production, and address rural poverty. Together with a lack of autonomy and weak governance, this has undermined the development of efficient, viable and sustainable private-sector financial institutions. As a result, financial institutions have not been able to develop their capacity for portfolio management, accounting and reporting, business planning, and risk mitigation.

403. This limited capacity and the absence of a level playing field has constrained innovation within financial institutions, both in terms of delivery mechanisms and financial products. The Government set a precedent in the establishment of the GBBs using the Grameen model, which most rural financial institutions have also adopted in the absence of proven alternatives. This model is not, however, considered to be universally applicable, especially within more remote areas including the hill and mountain areas. Financial products other than credit (and savings) are almost non-existent within microfinance institutions. Products such as leasing and, to a lesser extent insurance services have not made an impact in rural areas because of (i) limited opportunities for viable operations, (ii) limited client information to assess risk, (iii) high transaction costs due to widely dispersed clients, and (iv) weak contract enforcement.

404. The above issues and the remoteness and topographical characteristics of many districts have constrained outreach of formal and semi-formal financial institutions. Households in remote areas, especially hills and mountains, rely almost entirely upon the informal sector for credit.

405. A related constraint facing the sector is a lack of supporting infrastructure and institutions to (i) provide information to financial institutions and clients, (ii) provide effective credit and deposit guarantee services, and (iii) limited capacity building and training services for financial institutions, other than commercial banks, that are relevant to rural finance in general and agricultural finance in particular. There is also a widespread lack of financial literacy, especially with regard to rural finance, within Government, NRB, financial institutions, and the general public amongst who there is limited financial awareness and a weak credit culture.

The solution:

406. A collection of diverse, private-sector, autonomous, viable and sustainable agricultural finance providers that supply a variety of competitive, demand-driven financial products readily available to all actors within agricultural value chains.

The recommendation:

407. A combined set of measures supporting ongoing policies and reforms in the finance sector, expediting and/or revising them as appropriate to ensure that the provision of financial services to agriculture (predominantly credit) is commensurate with the contribution of the sector to the Nepalese economy.

408. Supporting ongoing policies and measures in the finance sector including a number of specific measures such as:

- i. Provision of long-term finance through leasing. The leasing of agricultural equipment offers a viable alternative to credit for investment in agricultural technology, especially where the availability of collateral represents a constraint.
- ii. Expedite implementation of already established government policy to restructure financial institutions (ADBL and GBBs) and divest government shareholding to achieve full private sector ownership in financial institutions.
- iii. Ensure that all financial institutions have autonomy in the appointment of board and management team members, in management functions and in their commercial operations subject to prevailing prudential regulations. The strategy to ensure financial institution autonomy recognizes that it will be difficult to overturn DSL policy and directive to allocation of credit to agriculture and energy within their current timeframe (to 2015). Thereafter, the impact of these policies will be reviewed and appropriate action recommended. In the meantime, the strategy is to propose revisions to the 2012 directive to ensure a minimum share of 5% is allocated to agriculture.
- iv. Achieve financial institution viability represented by consistent profitability, notwithstanding periodic, unforeseen losses, and sustainability in terms of their long-term financial health demonstrated by profitability, ability to mobilize deposits, and ability to raise equity through capital market mechanism. Support ongoing efforts by NRB to promote consolidation of financial institutions through selective licensing of new financial institutions and through the merger of weak financial institutions. Implement the provisions of the Microfinance Act to establish a second-tier regulatory authority for MFIs that will facilitate improved viability and sustainability, and governance, in the microfinance subsector.

- v. Facilitate the development of a range of financial products, subject to prevailing prudential regulations, that better serve the diverse needs of agricultural enterprises. This will potentially entail the revision, based on in-depth review, of existing regulations that limit loan terms and conditions and the timely processing of loan applications. It will also investigate the scope for new products (such as those based on information and communication technology [ICT]), and products that are readily available in many countries' financial systems but are effectively untried in Nepal (such as and warehouse receipts).
- vi. Facilitate increased supply-side penetration of financial institutions into the agricultural finance market by providing incentives, rather than directives, to promote an increased volume of lending. On the demand side, the strategy is to enhance agricultural enterprise creditworthiness through improved financial literacy. On the supply side, the capacity of financial institutions to better understand agricultural finance and appraise agricultural credit needs to be improved.
- vii. GESI and Finance. Facilitate access to finance of women and socially/geographically excluded groups through a number of measures such as:
 - a. Increase awareness on available financial services for both women and men farmers and entrepreneurs.
 - b. Organize awareness, training and advocacy for banks and financial institutions to make services available and accessible to women farmers from poor and excluded backgrounds.
 - c. Complement improved access to financial services with planning, business skills, capacity development and access to markets.
 - d. Offer special assistance to help deal with complicated processes involved in gaining access to credit by women, Dalits and members of other excluded groups with lower education levels and less experience in dealing with bureaucracies of various types.

Rationale:

409. Over several years, the finance sector has been undergoing reform though progress has been mixed and has in some cases stalled. The strategy for achieving the proposed solution for agricultural finance is to support ongoing policies and reforms in the finance sector, expediting and/or revising them as appropriate. The strategy recognizes that in the short-term (within 5 years) it is not realistic to overturn existing policies that, although they may be regarded as ineffective, have been in place for several years and/or have been extended by recent directives.

4.5 Value Chain Development Program

The problem:

410. In Nepal, there are very few agriculture and food value chains that are effective at establishing mutually advantageous linkages among their stakeholders. In most cases, value chains remain localized, poorly integrated, hardly innovative, and lethargic in their capacity of generating value added and meeting the increasing urban and international demand. Multiple constraints inhibit value chain development and operation across all stages of the value chain – from production, to post harvest operations and processing, marketing, and final consumption. In spite of several projects aimed at value chain development, the efforts remain limited in

success at best. Most initiatives on value chain development have a bias towards production, with less attention paid to improving quality and on marketing issues. Greater focus is observed on the push side of the chains as compared to the pull aspect: there is a pronounced focus on working with farmers to “push’ products than on working with traders or businesses to ‘pull” products into markets.

411. Most initiatives see support for cooperatives as an important strategy for increasing farmer bargaining power. There are good examples of cooperatives integrating into agri-business value chains (for example, in orthodox tea, and dairy). However, cooperative governance is an issue that requires more attention. The lack of integration and effective linkages in the value chain is also reflected in limited access to value chain finance. Commercial farmers and entrepreneurs face difficulty in accessing credit; hence there is a clear need to think beyond micro-credit when addressing needs of commercial farmers and agribusinesses. Moreover, the distribution of benefits within the value chain has not been adequately addressed. It is not clear the extent to which smallholder farmers (and even disadvantaged groups) are integrated with the value chain and what is the benefits they receive.

The solution:

412. Development of competitive and inclusive value chains of national importance.

The recommendation:

413. Market for the poor approach applied to prioritized value chain. Establish prioritized national value chain programs. Priority will be give to a very limited number of value chains (5 value chains) selected through a process that takes into account the following criteria: (i) Poverty reduction potential;; (ii) Growth potential (or potential for increasing growth and access); (iii) Intervention potential; and (iv) Cross-cutting issues (social inclusion and gender, environmental sustainability, matching with national and regional strategic priorities, balance of trade (import substitution and export), and geographical spread).

414. The value chain national programs are intended to achieve concrete results and show the way to other possible value chain development. It realizes that it is not possible to implement programs for a large number of value chains. Other interventions (eg research and extension) will be broader and not necessarily focused on specific value chain development. Initial prioritization shows the following value chain ranking:

Commodity/Product	Rank
Maize	1
Dairy	2
Vegetable	3
Tea	4
Lentil	5
Rice	6
Goat	7
Poultry	8
Potato	9
Wheat	10
Ginger	11

Cardamom	12
Oilseeds	13
Coffee	14
Lowland Fish	15

415. The goals of the intervention include:
- Provision of support to government entities to be better able to accelerate and sustain growth and development of various value chains in agriculture sector to enhance its contribution towards export and import substitution.
 - Enhance the development of the selected value chain through production, post harvest, marketing and policy/ institutional support.

Rationale:

416. In the absence of a concerted effort at commercializing value chains and establishing national value chain programs, value chain interventions will remain scattered at will achieve at most limited success and localized impact, rather than strategic and national impact. The prioritized national value chain development program proposed in the ADS will put Nepal on a new path of commercialization that was never achieved in the past. It will open the way for other similar programs to be developed in order to transform the commercialization outlook of Nepali agriculture.

417. **Characteristics of the 5 prioritized value chains.** Maize is an important staple food with increasing potential in the livestock feed industry. Dairy is a relatively mature value chain with growing demand within Nepal and for import substitution. Lentil is an important pulse and food staple in Nepal with a large and growing export market. Tea and more particularly orthodox tea has considerable possibilities as an export crop where there is high demand for a quality product. Vegetable is a growing sub-sector with high importance as regards to human nutrition, for import substitution, and also has increasing potential for export to India.

418. **Potential for development.** An assessment was made of the potential for the development of the value chains and the associated business services. The current status of the value chains will impact on development potential of the value chains. Both dairy and tea are relatively more mature as regards the links between the producer and the processors, in contrast to the other three sub-sectors where the chains are under-developed with poor vertical links and weak input supply systems.

419. **Bottlenecks.** The constraints that affect all of the value chains applies across the main links in the chain, and exposes the enormity of what is required on the part of government and the private sector stakeholders to further develop these commodities/products. The government policy as it stands at present is almost non-existent in three of the value chains namely - lentil, maize and vegetables, where programming for these sub-sectors is urgently required in order to provide guidance to the key stakeholders. For dairy and tea policies exist but further work is required to make them more appropriate to the current situation.

420. **Employment potential.** Considerably larger number of people involved in the production of maize and lentil, and to a certain extent vegetable, as compared to dairy and tea. However, further along the value chains the situation was reversed with more involved in the post harvest and processing stages in dairy and tea. One critical issue for all value chains is the

negative impact that migration (mainly males and youth) is having and the need for government to address this during the implementation of the ADS.

421. **Opportunities for investment.** Investments will be critical at the production and input supply stages for all the five value chains. But more particularly maize, lentil and vegetables are in dire need of support, because of the low levels of productivity. Investments in processing and post harvest operations are especially important for dairy and tea. Marketing for all the value chains would benefit from greater private sector support and a better enabling environment for agribusiness from government.

4.6 Agricultural Roads

The problem:

422. Road density in Nepal is among the lowest in SAARC and Asia. As a result, connectivity is low, particularly in those remote areas where the national strategic network (or motorable roads) does not yet reach the districts. As the majority of the poor people live in remote villages that are virtually inaccessible during the rainy seasons, it is very difficult and expensive for them to reach the markets to sell their agricultural products. Limited accessibility has also cut off small-scale farmers from sources of inputs, equipment and new technologies. The situation is further aggravated by the fact that many farmers have access only to small land for cultivation.

423. Within each district the rural road network is improving, but it remains still underdeveloped both in terms of density and in terms of quality of roads. Over the past 20 years, the road network has expanded considerably, albeit from a very low basis. Over the next 20 years, it is likely that this trend will continue and improve connectivity of rural areas. However, more systematic effort needs to be focused on not just rural roads, but more specifically on agricultural roads, namely rural road connecting agricultural production centers to market centers. The development of agricultural roads will provide momentum to the development of other agricultural and income generation activities in rural areas.

424. Current programs of building agricultural roads are conducted under the rural road program implemented by DOLIDAR and DDC/VDC.

The solution:

425. Accelerate the program of development of agricultural road while improving their quality and maintenance.

The recommendation:

426. Establish a new section for agricultural roads in District Technical Office (DTO) under the DDC headed by a separate Senior Engineer in all 75 districts to implement new agricultural roads policy and clarify division of responsibilities between center and subnational levels for implementation of the policy. Include separate funding for development and maintenance of agricultural roads. Involve private sector and communities in the development and maintenance of roads.

427. DADO will support the DTO in the identification of road infrastructure needs of farmers and therefore will provide key input to the DTO.

Rationale:

428. Current policy for rural roads does not explicitly target agricultural roads and connectivity of agricultural production centers to market centers. The building of agricultural roads could also be better coordinated with other market infrastructure programs to strengthen the agricultural supply chain.

4.7 Market Information and Market Intelligence Systems

The problem:

429. Well functioning markets and value chains depend on the flow of information between different value chain stakeholders located at different points in space and time. Nepal has improved market information system through various programs that involve MOAC as well as AEC. These systems are usually reporting prices of some major agricultural commodities in different parts of the country and they are accessible either by internet, radio, or newspapers. Some attempts at using mobile-based technologies have been tried but no system has yet emerged. In practice, as the mobile density is increasing, more and more actors, including smallholder farmers, traders, and processors are using the mobile to learn about prices.

430. However, market information is more than just price information. Even more essential than market information is market intelligence, the capacity of knowing and understanding the opportunities for exchange and investments and, based on this information, interpreting it in order to take decisions about trade and investment.

431. There are no well organized market information systems and no market intelligence system. The spread of mobile and internet is making possible a revolution in connectivity that could greatly affect the efficiency of the market and supply chains.

One of the major limitations of the existing systems is that they are expensive to establish, expensive to maintain, and as consequence they are not sustainable.

The solution:

432. Establish a well functioning system of market information and market intelligence that is easily accessible to smallholder farmers, traders, and enterprises.

The recommendation:

433. Promote the development of a suite of products for market information and market intelligence using ICT products and involving private sector and incentives for the users to pay.

Rationale:

434. Missed opportunities for exchange and resulting losses during harvest particularly for perishable products due to limited information about demand and supply. Systems based on basic and accessible ICT are already changing the way trade is conducted and will further increase connectivity of smallholders. The ADS needs to coordinate these efforts and provide a unified sense of direction so that they applications of ICT may generate a sustainable system of market information and intelligence.

4.8 Rural Electrification

The problem:

435. Although there is tremendous hydropower potential, only about 40% of Nepal's population has access to electricity. Most of the power plants in Nepal are run-of-river type with energy available in excess of the in-country demand during the monsoon season and deficit during the dry season. The bulk of the energy of country's need is fulfilled by fuel wood (68%), agricultural waste (15%), animal dung (8%) and imported fossil fuel (7%) and only about 2% by electricity. At present, several hydropower projects are being constructed by Nepal Electricity Authority (NEA) as well as private sectors and it is envisaged that the electricity generation will increase substantially within few years.

436. The current power development scenario indicate the following: (i) A substantial portion of the population live in remote areas and it would be either not feasible or extremely expensive to provide them electricity through the national grid; (ii) About 25% of the VDCs are still not connected with electricity; (iii) Energy from petrol, diesel and kerosene is very costly and not very cost effective for agriculture except in few cases; (iv) Renewable energy could play an important part in agricultural development; (v) Micro Hydropower (capacity ranging from 8 kW to 100 kW) provides a suitable source for generating power in some rural areas of Nepal.

437. DoA does not have the technical manpower for development of hydropower or renewable energy. The department should hire the technical persons from outside if it intends to develop electricity for agriculture purposes. Agencies like Energy Sector Assistance Programme (ESAP), Alternative Energy Promotion Centre (AEPC)³⁹, Mini-Grid Support Programme (MSGP) are the potential power developers in rural areas and their role will be crucial for agriculture development. Community Based Rural Electrification Program (CBRE) and Community Based Operation and Maintenance Program (CBOM) could be the most suitable program for agriculture development also. Under CBRE and CBOM, 80 percent of the capital cost of electrification is be provided by the government, provided that, the community bears the balance 20 percent of the cost. Similar funding arrangement could be requested for agriculture development purpose. MOAD could make a long term agreement with AEPC, ESAP, MSGP etc for technical support.

The solution:

438. A combination of hydropower and renewable energies development to assure that the bulk of the population and farmers has access to electricity.

The options:

1. Continue the existing practice whereby all power development aspects are in the hands of NEA, AEPC, ESAP etc. Under this policy the MoA will not contribute any support (financial and technical).
2. Establish a separate power development unit under Infrastructure Section in districts, regions and center. Under this policy, budget as well as technical support for rural electrification will be provided by MoA.
3. Establish a separate liaison section and create a fund especially for power development in MoA. Make the section responsible for assisting the farmers' community to: (i) reach

³⁹ Currently phased out; instead the National Rural and Renewable Energy Program (NRREP) has been established.

NEA, AEPC, ESAP, MSGP etc for power supply (ii) plan, design, procurement, implementation and maintenance and iii) provide financial support (in some cases) for power generation.

The recommendation:

439. Establish a separate liaison section and create a fund especially for power development in MOAD. Make the section responsible for assisting the farmers' community to: (i) reach NEA, AEPC, ESAP, and National Rural and Renewal Energy Program (NRREP) for power supply (ii) plan, design, procurement, implementation and maintenance and iii) provide financial support (in some cases) for power generation.

440. The advantage of this option is that a specific office for completing formalities by farmers will greatly assist them in planning, designing, implementing and maintaining their energy projects. Differently from option 2 there is no need to create a separate office with substantial funds and the need to hire and train lot of manpower.

Rationale:

441. Electric energy plays a very important role for development of agricultural production and agro-base industries in many ways:

- i. Mills, threshers, fodder choppers etc. are machines whose most efficient use would be through electric motors.
- ii. In rural terai context electricity for pump irrigation which can expand land under crops, allow double or even triple cropping or make high yielding varieties.
- iii. Energy can be utilized for lighting purposes in dairy, livestock and poultry farms.
- iv. Energy is needed for refrigeration/cooling of: i) meat ii) milk iii) vaccines iv) processed foods etc.
- v. Energy can have information (knowledge) dissemination effects on agricultural modernization. These effects might include, driving film projectors, listening to radios and watching televisions which may transmit information useful to farmer and agroenterprises.

5 COMPETITIVENESS

442. Accelerated agricultural growth represents the best way out of poverty for the millions in Nepal still living below the poverty line. Agricultural-based growth is 2 to 3 times more effective at reducing poverty than similar level of growth originating from other economic sectors. Experience from Asian economies has demonstrated that one of the most successful ways to stimulate growth in agriculture is by creating a conducive investment climate for agricultural entrepreneurs and by creating increased access to the critical knowledge and inputs needed to achieve higher levels of productivity. For growth to be sustainable it needs to be rooted in structural changes and improvements that do not evaporate with fluctuations in global prices, disappear after a bad monsoon or depend on concessional external funding. The ADS has consequently placed its core focus on *competitiveness*. Competitiveness is founded on: a competent, hard-working and efficient work force; a clear understanding of what makes Nepal unique in the global market place; and, the determination and entrepreneurship to maximize productivity and innovate with new products and processes based on the country's natural endowments.

443. To achieve this vision, the energy and inventiveness of the private sector is essential. Since the design of the APP, many years ago, the private sector in Nepal has made considerable investments in agriculture and created thousands of sustainable jobs and incomes; the poultry sector "leapfrogged" Indian technology and now outcompetes them in its cost of production, nursery investors in Banepa reach out to 20,000 farmers and collectors of medicinal herbs, commercial milk production is gradually replacing subsistence dairy, and the dramatic expansion of the vegetable sector is the product of small and medium investments in sustainable supply chains that link primary producers with viable markets. This emergence of the private sector in agriculture is no casual accident; it is happening on a global stage as well as in India, Bangladesh and Pakistan. The age of communications and better education has enabled Nepali producers to learn better practices and access market information, while stability, rising market prices for land and remittances have created the disposable cash to make these investments.

444. These changes demand an approach to agricultural promotion and competitiveness that acknowledges the vital role of the private and cooperative sector, without conceding the critical function of the government to oversee, regulate and facilitate growth that is both competitive and pro-poor. This blending of private and cooperative sector energy and innovation with the steady hand of government to ensure positive public outcomes is often called public-private partnerships. The essence of these partnerships is to create some form of "additionality" that would not have been possible without the other's involvement. From the public point of view it affords the opportunity to leverage its funds and channelize outcomes while for the private and cooperative sector the addition of public funds reduced the perceived exposure to investing in high-risk high-potential projects.

Table 9 Recommendations to Improve Agricultural Competitiveness

No.	Area	Recommendation
1.	Market Infrastructure	Promote development of market infrastructure through the combination of public investment, PPP and community participation, focused on the development of prioritized value chains

2.	Innovation	Promote innovative agribusiness enterprises through the combination of tax incentives, innovation matching grant funds, and agribusiness incubators.
3.	Export Promotion	Strengthen trade negotiation capacity; strengthen capacity building to improve ability to apply and comply with SPS, AD, and CVD measures; reduce/eliminate pro-manufacturing bias in tariff structure; and review and assess the policy of pegged exchange rate with India and its impact on the agricultural sector.
4.	Quality and Safety	Strengthen regulations and institutions for enhancing food safety and quality standards.

5.1 Market Infrastructure for Agricultural Competitiveness

The problem:

445. In addition to the availability and functioning of basic infrastructure (transport, power, and communication), agricultural competitiveness depends on the existence and well functioning of market infrastructure such as collection centers, wholesale markets, packing houses, storage facilities, and agribusiness parks. Unfortunately, market infrastructure in Nepal is very poor. As in many other developing countries, the major problems in market infrastructure are insufficient investment and low efficiency of investment and use.

446. The low level of investment is partly due to insufficient investment level by the government and partly due to the marginal contribution of the private and cooperative sector. The low efficiency of infrastructure investment has different dimensions including bad quality, poor operation management and maintenance, mismatch between provision and demand, and fund leakage; the low efficiency is also partly the result of weak citizen participation and lack of governance.

447. The needs for improving market infrastructure are immense. Traditional approaches based on government investment will not yield the necessary investment for meeting the challenge. Both volumes and efficiency of infrastructure investment have to be improved. There is an emerging consensus that weak citizen participation and lack of public private partnerships may be important reasons for lack of efficiency and insufficient level of investment. It is also increasingly realized that public financing does not equate with public provision.

448. Different options to finance rural infrastructure include:

1. Public sector investment
2. Private and cooperative sector investment
3. Public private partnerships (PPP)
4. Community-driven development (CDD).

449. While the public and private and cooperative sector investment options are relatively clear, a few words on PPP and CDD might be needed to clarify the concepts.

450. The general principles for designing PPPs are: (i) a clear and measurable common goal of both public and private partners to ensure that success can be properly tracked; (ii) a basic and honest recognition of the capacities and competencies of each of the partners at an early stage, so that expectations are dealt with before moving into implementation; (iii) the identification of a common strategy to embark on the solving of the commonly agreed objective; and (iv) a clear and early division of roles and specific inputs as a way to establish trust between the two partners.

451. The instrument that is typically used to move beyond large individually-structured PPP deals to many smaller ones with wider outreach is called the “matching grant” or “competitive matching grant” where several smaller projects are planned and implemented with private partners that share objectives with the managers of the matching grant scheme. Several of these schemes are currently in operation in Nepal’ agriculture sector today through different projects such as PACT, CAA, HVAP, and HIMALI⁴⁰.

452. The perspective of CDD consists in endowing the community and its residents the right on resources disposal and decision making. The community and beneficiaries can decide what to be implemented and how to implement development plans and programs by themselves so as to realize the objectives of self-organization, self-management, self-supervision and self-development. The core of CDD is the transfer of decision and management from government to community and beneficiaries. As a consequence, it is expected that CDD will improve efficiency of investment and even mobilize investment.

The solution:

453. Increased investment by public and private and cooperative sector in market infrastructure and improved efficiency of investment and use.

The recommendation:

454. Given the variety of market infrastructure, the recommendation is to promote development of market infrastructure through the combination of public investment, private and cooperative sector investment, PPP, and community participation, focused on the development of prioritized value chains.

455. Example of PPP involving different types of infrastructure include:

- i. Promotion of on-farm storage, cool/cold/CA storage
- ii. Creation of new markets and improvement of existing ones
- iii. Network of collection centers linked by hub and spoke system to wholesale markets
- iv. Creation of new agroindustrial parks and improvement of existing ones

456. Different schemes for PPP are possible. One could be based on matching grants; another one based on back-end subsidies linked to credit. The most appropriate one will depend on the size of the investment, the risk involved, and the ownership structure.

457. One key contributing factor to the effectiveness of PPP investment is the clearly delineation of roles of different actors and improved capacity in managing market infrastructure

⁴⁰ A short assessment of using competitive matching grants is presented in the background report on *Private Sector Development* as a way to capture the lessons of past schemes and to plan future schemes for more specific public outcomes.

as part of a supply chain. Hence, any investment in market infrastructures needs to be accompanied by capacity building programs to improve management and governance.

Rationale:

458. Private sector will not be enough to mobilize the resources to build the needed infrastructure. Similarly, public sector by itself will have difficulty in making the investment, and more importantly it will face difficulty in assuring the efficiency of the investment.

459. In the absence of well functioning market infrastructure, value chain development will be limited and competitiveness will remain an elusive goal. Market infrastructure suitable to the comparative advantage of Nepal will require a number of innovations including rural markets and collection centers, packing houses, mobile collection centers, cold storage and controlled atmosphere storage in order to exploit the opportunity of horticultural and high value products. Improved market infrastructure will also enable to reduce postharvest losses that vary between 15% for cereals to 35% for horticultural products.

460. In order to ensure effectiveness of the investment and reduce possible interferences in the selection of locations for market infrastructure, the main criterion will be the expected impact of the infrastructure on the development of the prioritized value chains (see section 4.5)

5.2 Innovation

The problem:

461. Innovation is crucial to competitiveness. There are however various constraint to the emergence of innovative agroenterprises in Nepal. Ideas to develop and commercialize new products, processes, or institutional mechanisms are frustrated by the unfavorable investment climate, the lack of incentives, the lack of capital, and the lack of a supporting nurturing environment for innovation to emerge.

The solution:

462. A nurturing environment for the growth of innovative agro-enterprises.

The recommendation:

463. A combination of tax incentives, agribusiness incubators, and matching grants schemes.

464. **Tax Incentives.** The range of tax concessions considered may include, but is not limited to:

- the tax free threshold for income tax, and whether agriculture and agro-based activities should have a separate exemption limit;
- the income tax rate;
- accelerated depreciation;
- investment allowances;
- full deductibility of research and development costs;
- carry forward of losses;
- graduated level of concessions for developed, under-developed and undeveloped regions;
- special incentives for foreign investors in agricultural research and development in Nepal.

465. **Agribusiness Incubators.** These are organizations that foster the start up of companies through direct one-on-one engagement with them. Business incubators operate through the provision of mentoring services, mutual support services from fellow incubatees, recent graduates and the provision of facilities. The heart of a business incubator is the business support service that it provides to companies it supports during their typically limited incubation period. However the incubation period is typically laid out in the performance agreements which codify relationships between incubator and incubatee at the beginning of an incubatee's tenure. The enforced discipline of these agreements acts as an introduction to commercial reality for many clients. In lieu of even tougher market competition, incubators cultivate a non excuse performance culture among their clients through the hard budget constraints and tough incentives which they enforce on them.

466. **Matching grant to innovators.** There is sufficient evidence both in Nepal and internationally to give credibility to matching grants as an instrument of public-private partnerships. Nevertheless different potential schemes could be envisaged in the context of the ADS.

- a. The first one, an “**Outreach**” fund, would be oriented to support public private partnerships at the district level. The core criteria for its usage would be: that the proposal generates “additionality” in outreach to more farmers or primary producers with some form of innovation (product development, process, or technology) that leads to a measurable income increase for producers. This fund would be available to private entities and coops.
- b. The second matching-grant scheme, for the time being called “**Applied Agricultural Research**” would be aimed at directing agricultural research more towards factor improvements. Criteria for this scheme would include the need for proposals to have some matching funds (not necessarily 50-50) from the private sector and coops as a way of ensuring that the research had relatively short term impact. Another criterion would be related to strengthening the linkage between this research and the dissemination of its results, assuming that they are relevant.
- c. **AgroEntrepreneurship Programs.** In this case the matching grant will target different groups in rural areas who intend to establish agroenterprises linked to farmers. The matching grant can be combined with an agroentrepreneurship capacity building program. Three examples of AgroEntrepreneurship Programs are:
 - i. Youth Agro-Entrepreneurship Program
 - ii. Women Agro-Entrepreneurship Program
 - iii. Disadvantage Group Agro-Entrepreneurship Program

Box 4 Youth Agro-Entrepreneurship Program (YAEP)

The exodus of youth from the rural areas has been occurring at an accelerated rate over the past 10 years as a result of various factors: the civil conflict ended in 2006, low job and income enhancing opportunities in rural areas, the opportunities offered by overseas employment (particularly in Gulf countries), better prospects and living conditions in urban areas, the weak infrastructure in rural areas, the lack of programs specifically addressed to the youth.

Reversing the youth exodus from rural area to urban areas or overseas will not be easy, given the factors highlighted above. To a large extent, the movement from rural to urban areas is a phenomenon that is part of the process of agricultural transformation and is part of economic development. The peculiarity of Nepal is that the movement is proceeding at an accelerated rate and often entire villages and rural areas are deprived of their youth, particularly male population.

To help addressing this situation, the ADS proposes a program to improve capacity and give incentives to the youth to establish agroenterprises. The Youth Agro-Entrepreneurship Program (YAEP) will consist of:

1. A capacity building component in which young prospective entrepreneurs are trained and mentored in establishing agroenterprises
2. A competitive matching grant fund through which young entrepreneurs can get access to seed money for establishing agroenterprises in rural areas.
3. A revolving fund under DLSO/DADO/DFO

Rationale:

467. The ADS recognizes the critical role of innovation to improved competitiveness of agricultural sector. It also recognizes the critical role of agroenterprises (small, medium, and large) and cooperatives in spearheading innovations in products, processes, and technology. Currently however there is no nurturing environment for agroenterprise to bring innovative ideas into development and commercialization.

5.3 Agricultural Export Promotion

The problem:

468. Despite various policy initiatives, including announcement of trade policies, preparation of trade integration strategies, membership in multilateral, regional trading arrangements and bilateral trade treaties, the trade performance of Nepal in recent past has been miserable. Though the rate of growth of exports has revived during 2005-08 period, the growth of imports has outpaced the growth of exports. In addition, export growth rates could not catch up with the GDP growth rates and the export/GDP ratio declined and coverage of imports by exports also fell. As a result, trade deficits increased to the tune of 20.82 percent of GDP during the period 2005-08.

469. Nepal experienced a structural change in its export and import structures between the mid-1990s and the current decade. The share of agriculture and food items in trade increased whereas the share of manufacturing goods declined. The structural change has been more pronounced in export than in imports. Export performance in agriculture is better than overall export performance. The growth rate of agriculture exports remained at double-digit level and surpassed overall export growth rates as well as import growth rates of agricultural products. The share of agriculture exports in agricultural gross domestic product (GDP) reached 4.45 percent in 2009/10 and the share of agricultural imports in gross domestic consumption was 4.18 per cent.

470. Nepal exports agriculture goods in primary forms and without any substantial value addition. Top ten food and agricultural export products at HS-6 digit level include lentils, vegetable, cardamom, tea, non-alcoholic beverage, betel nuts, ginger, plant roots, juice and pasta. The major destination markets are India, Bangladesh, China, USA, EU and UAE. The export structure of agriculture products indicates that there is limited forward and backward linkage with export sectors, including low utilization of local materials and inputs. Nepal is having comparative advantages in export markets in resource- and labor-intensive low technology agriculture products such as dried vegetables, coffee, tea, vegetable and roots, ginger, cardamom etc. However, for vegetable fat, animal feed, sugar and confectionery, molasses the

growth rate is negative and there is high risk of eroding comparative advantage in future in these products. Looking at the global market structure, Nepal is competing with low/medium level income countries, such as Bangladesh, India, Pakistan, China, Vietnam and Thailand in the export markets.

471. Six key constraints are identified in the promotion of agriculture trade and enhancing competitiveness of agriculture sector: supply side constraints, high transport and transit costs, market access barriers, low support measures, unfavorable provisions in Nepal-India trade treaty and exchange regime. The major binding competitiveness-related supply-side constraints are inadequate infrastructure for efficient production and transportation of goods; lack of human capital endowed with education and skills to process exportables; limited access to credit due to conventional/conservative banking practices that rely more on collateral than on the feasibility of business ventures; limited use of technology in the production processes which impedes the prospects of what is known as “moving up the value-chain ladder”; and virtual absence of trade facilitation measures which causes delays in the shipment of goods. Being a landlocked country and inadequate domestic transport network, the cost of transit and transport is high. The tariff faced by Nepalese agriculture products is about 5 times higher than the tariffs for non-agriculture products. In addition to high tariffs in export markets, human, health, environment and technical standards and requirements for agricultural products have become more frequent and stringent in export markets. Nepal-India trade treaty which provides reciprocal duty free market access on selected agriculture and primary products has resulted in displacement of agricultural products in domestic market as evident from the increasing trend of the share of imports of food items in the food consumption. The pegged exchange rate with the Indian Rupees has de fact implied an overvalue Nepali Rupees that penalize agricultural exports towards its major partner.

472. Additional constraints on the export of agricultural products include:

- i. Product Coverage – i.e. the regional trade agreements (BIMSTEC and SAFTA) contain negative products lists (sensitive lists) that limit Nepali exports.
- ii. Technical Barriers – the trade agreements contain technical barriers in form of restrictive customs controls, dry ports etc.
- iii. Non tariff barriers (NTBs) - the list of agricultural products that can be exported to India with Nepali SPS certification (2003 Plant Quarantine Order - India) does not correspond to the Nepali export potential.
- iv. Implementation of trade agreements - the 2009 Treaty of Trade with India is unfavorably interpreted by Indian Customs Officials, inter alia in determining Indian content in Rules of Origin calculations.
- v. Nepali products do not meet internationally accepted SPS standards, thereby allowing Nepal’s trading partners to refuse entry of Nepali produce.
- vi. Under the Export – Import (Control) Act 2013 (EICA) Nepal cannot apply Anti-Dumping Duties (AD) in case of imported products that are sold below their production costs to eliminate competition and Countervailing Duties (CVD) against imported products that can be sold at non-competitive prices because of having received a governmental subsidy, this in absence of a trade act that would regulate these matters. Nepal has notified the WTO thereof.

The solution:

473. Strengthened capacity to promote exports and negotiate more favorable trade agreement, backed by an adequate and functioning import/export regime, including the ability to apply and comply with SPS, AD and CVD measures.

The recommendation:

474. A combination of (i) Legislative Measures; (ii) Institutional Measures; and (iii) international measures aimed at improving agricultural trade regime.

475. **Legislative Measures** related to trade and foreign investment. In trade, the ADS Team proposes to enact a modern Trade Act to create an environment that is conducive to exports and regulates imports. The proposed Trade Act will include (i) the regulation of imports in terms of the ability to take fair and non-fair trade protection measures permitted under the WTO regime but not enacted yet such as measures for BOP reasons or to counter import of subsidized (CVD) or dumped (AD) products that harm the Nepali producers; and (ii) the formation of an agricultural products export promotion body either as part of the MOCS or in the MOAD.

476. Measures to promote **foreign investment** should distinguish between mid-term and short-term. In the short-term, the recommendation is to (a) Prescribe Rules under Section 8 of the FITTA to promote Foreign Investment by granting incentives and proclaim incentives through annual Budget Acts; and (b) Reduce the number of agricultural sectors that are currently “closed” for FDI (fisheries, poultry breeding and bee-keeping). In the mid-term, enact a new Investment Act that includes the promotion of investments, by providing for incentives for foreign investments in agriculture and agro-businesses. ADS should interact closely with the Investment Board to contribute to improve the investment climate, formulate an investment Law to facilitate and regulate FDI, promote and attract FDI in agricultural sector.

477. **Institutional Measures** include the creation within MOAD of an International Agricultural Trade Division including a section on WTO (currently under the Division of Agribusiness Promotion and Statistics), a section to work as SPS Inquiry Point (currently under DFTQC), and a section on International Trade Promotion. The latter section could serve as a focal point for Nepali exporters of agricultural products, in matters of information about standards, export conditions, export incentives, etc. This section would be focusing on policy issues differently from the existing program for international trade promotion under the Directorate of Agribusiness Promotion and Market Development under DOA (which focuses more on extension to farmers); similar function needed from Market promotion directorate of DLS and would coordinate with the Trade Facilitation unit with the MOCS. Additional measures include strengthening trade negotiation capacity through (i) providing training to negotiating teams; (ii) conduct studies on the implication of negotiation agendas; and (iii) institutionalize stakeholder’s consultations. Finally, a review and assessment of the policy of pegged exchange rate with India and its impact on the agricultural sector in Nepal will provide a critical input into the macroeconomic policy on exchange rate that goes beyond the scope of the ADS.

478. **International Measures** also are different for the short and medium-long term. In the short term: (i) Promote the export of products currently enjoying preferential treatment pursuant to existing agreement; and (iii) Engage in dialogue (joint seminars for customs officials) with trading partners on correct implementation of trade agreements. In the medium-long term conduct a review of the **following aspects of** the trade agreements of Nepal: (i) Tariff and quota exempt product coverage in bilateral and multilateral trade agreements of Nepal (reduction of

sensitivity list); (ii) Technical barriers to Nepali exports; (iii) Nepali SPS certification recognition by 3rd parties; (iv) Exclude cereals horticulture products from reciprocal duty free list of Nepal India trade treaty; (v) Take out agriculture products from negative list of trading partners under SAPTA; and (vi) Conclude bilateral preferential trade agreements with the countries of the region; (vii) Reducing / eliminating pro-manufacturing bias in tariff structure; and (viii) Reviewing export incentive system

Rationale:

479. In order for Nepal to be able to improve its agricultural exports there is a need to both augment the trading arrangements to which Nepal is party as well as to enact suitable legislation that will give effect to the trade agreements and create an enabling environment that would allow Nepal to competitively export its agro-produce.

480. Nepal has adopted only a limited number of SPS standards. There is a need for Nepal to adopt sufficient internationally acceptable SPS standards as those that are contained in the Codex Alimentarius to allow exporters to meet internationally accepted standards and to control imports of sub-standards foodstuffs into Nepal. A successful introduction of such standards will apply also to the domestic market and contribute to national trade in safe and quality controlled agro and agro-business products.

5.4 Quality and Safety of Agricultural and Food Products

The problem:

481. One of the major obstacles in enhancing exports from Nepal is the inability of the exporters to meet the SPS and other NTB standards imposed by third countries importers, especially those in developed countries. This is caused both by the inadequacy of the legislative framework, including the absence of agreements on the application of NTBs with Nepal's major trading partners as well as by the absence of suitably accredited laboratories in Nepal to test and certify exported agricultural products and sufficient knowledge on applicable NTBs and standards.

482. The 1996 Food Act (and similar acts such as the Black Marketeering Act and the Consumer Protection Act) does not provide the authorities with sufficient tools to create an environment whereby food safety and quality measures are an integral part of the food processing industry, both for local as well as export markets. The standards of "adulterated and unsafe foodstuffs" are insufficiently defined in the relevant Acts and are not based on internationally adopted SPS and Codex standards. The Food Act also takes reactive rather than a pro-active approach, one of imposing sanctions for violations of the Act rather than creating an enabling environment for a preventive approach. As such the Food Act is not conducive to the promotion of FSQ standards for trade and export in agricultural products.

483. Nepal has adopted only a limited number of FSQ standards and those that were adopted are not always consistent with internationally acceptable standards, such as those in the Codex Alimentarius.

484. The responsibility for FSQ implementation, to the extent existing, rests with the DFTQC under the MOAD. The DFTQC has only limited enforcement powers (i.e. it tests foodstuffs upon the request of authorities that have revealed possible violations of the law. It is subject to the

MOAD and does not have a multi-sectoral reach to include other relevant agencies and is not independent. The departmental status of the DFTQC also limits its ability to attract sufficient funding to play an active role in the development of a modern food safety and quality service.

485. There is no legal framework for the accreditation of laboratories in Nepal and Nepal (or the DFTQC) is not connected to the International Laboratory Accreditation Cooperation organization. This has two consequences. Exporters need to contact overseas laboratories in order to obtain certification for their exports and the establishment of any laboratories in Nepal requires a contact with an overseas accreditation organization.

486. More generally, compliance with global SPS requirements needs national specialists in surveillance, risk analysis, testing, diagnostics, pest identification, standards, conformity assessment, good agricultural practice (GAP), good veterinary practice (GVP), good hygiene practice (GHP), good manufacturing practice (GMP) and quality assurance management (such as hazard analysis critical control point - HACCP) – all of which Nepal presently lacks and which (in part at least) must come from the graduates of an upgraded national higher education system.

The solution:

487. Internationally compatible food quality and safety standards are adopted and implemented.

The recommendation:

488. A combination of legislative, capacity building, and institutional measure.

489. In order to allow Nepali export products to compete in international markets on the one hand while protecting the Nepali consumers from consuming unsafe food products, the following steps have to be taken:

- i. Enact a modern Food Act, prescriptive rather than reactive, that creates an enabling environment conducive to the development of internal trade and export market of agricultural and agro-business products as well as ensures that all foodstuffs sold meet acceptable standards. The new Food Act should include provisions on the following matters:
 1. The formation of an independent Food Authority that is affiliated to but not part of structure of ministry with authority to issue standards and enforce these, including food quality standards
 2. The stipulation that the DFTQS (or the Food Authority once established) is authorized to issue SPS standards for local and exported food products. The authority to issue SPS standards by a simplified procedure in case that the SPS standards are internationally accepted standards, such as those of the *Codex Alimentarius*.
- ii. Formulate, adopt and implement FSQ standards that meet international SPS standards to avoid import restrictions by trading partners for SPS reasons. Set numerical goals for proclamation of new standards
- iii. Adopt legislation on the accreditation of national laboratories for FSQ certification;
 1. Establish Nepali accreditation body
 2. Join ILAC to establish recognition of Nepali accreditation body
- iv. Strengthen and update to internationally accredited level the following laboratories:
 - Food Quality Control Laboratory and its regional laboratories under DFTQC
 - National Veterinary Diagnostic Laboratory and regional laboratories under DLS

- National Veterinary Quality and Medicine Management Office Laboratory under DLS
- Feed Analysis Laboratory under DLS
- National and Regional Plant Protection Laboratories under DOA
- Soil/fertilizer Analysis Laboratories under DOA
- Seed Quality Control Laboratories under DOA
- National Avian Disease Diagnostic Laboratory in Chitwan under DLS

490. Institutional measures in the short term include: (i) Strengthen the capacity of the DFTQC under the MOAC, in terms of transforming it to become a pro-active rather than reactive body, with annual plans and targets for the proclamation of FSQ standards, enforcement of FSQ standards and public awareness; (ii) Implement agreement with India on recognition of DFTQC as certified laboratory by India; and (iii) Clarify functions and avoid overlapping between different agencies (for example regulation of animal feed and veterinary drugs should be under the jurisdiction of the DLS)

491. In the mid-term: (i) Form Food Agency under new Food Act with full authority to proclaim FSQ standards and enforcement thereof; and (ii) Establish Nepali accreditation body for laboratory certification.

492. In order to build surveillance and monitoring capacity for plant pests and diseases, survey-based data gathering and management will be strengthened and diagnostic and analytical services will be improved (through investments in facilities, equipment, supplies and human capacity). Necessary interventions will be targeted at raising the capacity of the Plant Protection Center (PPC) to better carry out pest and disease surveillance activities, including: (i) crop pest surveillance; (ii) diagnostics and taxonomic identification; (iii) post-entry quarantine (PEQ) for seed and other propagative plant materials; and, (iv) response to plant pest and disease outbreaks. There is a need to move from an ad hoc approach to the implementation of a sustained and planned program of surveillance on priority crops, with scheduled completion dates. More robust taxonomic identification of survey specimens will be promoted (with regional support, and access to external support for difficult specimens) to expedite the diagnostics component of the survey. PPC staff will be given on-the-job training. There will be upgrading of current laboratory and equipment.

493. For animal health, adopting *One Health Approach*, strengthening surveillance programs involves (firstly) enhancing the National Animal Health Center (NAHC)'s TAD surveillance, diagnostic and response capacity. NAHC's ability to survey, test and respond to diseases of economic importance, emerging and reemerging including two priority diseases (FMD, CSF) will be strengthened in target areas with potential for production and exports. The main objective is to improve control of these diseases on a selective geographic basis, while simultaneously strengthening NAHC's generic surveillance and response capacity. Response for FMD and CSF outbreaks will utilize targeted vaccination and movement control measures. Other achievements will be as follows: (i) improved diagnostic capacity and testing (increased testing volumes based on upgraded NAHC equipment, refresher diagnostic training, etc); (ii) a surveillance program in target areas (based development on proper procedures, epidemiology staff training etc); (iii) more frequent and regular surveillance visits and public awareness campaigns; (iv) improved response capacity (and accessing vaccines from regional stockpiles).

Rationale:

494. Lack of compliance with SPS will preclude Nepal from tapping opportunities in global trade and effectively reduce competitiveness of its products.

6 SUBSECTOR IMPLICATIONS OF THE POLICY OPTIONS

6.1 Introduction

495. The four pillars of the ADS and the recommendations in each pillar have implications for the development of subsectors of the agricultural sector. This chapter makes these implications explicit; moreover it provides strategic objectives for each subsector. The subsectors presented below include food crops, high value crops, livestock and dairy, fishery, and agribusiness. The forestry sector has already been included explicitly under the Productivity pillar (see section 3.14).

6.2 Food Crops Subsector in the ADS Policy Options

496. The food crop subsector includes food grains (rice, wheat, maize, millet, barley etc.), pulses, oilseeds, and potato.

6.2.1 Objectives

- Increase productivity of all food crops
- Increase production of food grains and potato to meet domestic demand
- Increase export of lentils and other emerging potential crops
- Reduce postharvest losses
- Adopt sustainable production practices
- Modernize the sector through improved value chain linkages and market infrastructure

6.2.2 Approach

497. **Appropriate technologies.** Although the major increase in production of food grains will come from the terai, the ADS will also promote and support productivity improvement of food crops in the hills and mountainous regions in order to assure national and local self-sufficiency. This will require a combination of technology packages that are appropriate to the agroecological diversity of Nepal and the socioeconomic development of different areas (eg remote areas, sloping areas, areas with little connectivity to markets and modern inputs).

498. The **self-sufficiency** objective is within reach of the current agricultural system. Although Nepal is occasionally importing moderate quantities of rice and wheat, larger quantities of maize are imported to meet the requirements of its feed industry. The improvements of productivity required to achieve self-sufficiency and import substitution are moderate and perfectly attainable with a consistent investment in the development of research, extension, inputs system, and irrigation. The self-sufficiency in foodgrains should not be interpreted as a strategy against trade and closure to imports. Rather, it is an objective to increase productivity and production to meet domestic demand. Trade will continue to be an important mechanism to ensure food security and fill the gap between domestic demand and domestic supply in situation of shocks to production or demand.

499. **Access to inputs.** Access to seeds, access to a balanced source of nutrients (chemical and organic fertilizers), access to water (mostly conventional irrigation methods, either through

surface of groundwater) and efficient use of water play all an important role for the improvement of productivity at the farm level. Good agricultural practices will be disseminated through different providers (private, cooperatives, NGOs) using a variety of approaches (eg farmer field schools, farmer marketing schools, demonstration, study tour) and information and communication technologies (ICT). Vouchers to targeted farmers will improve access to timely and quality inputs.

500. **Seed improvement** includes both open pollinated varieties and hybrids (particularly in the case of maize). The agricultural research system including NARI and the regional and local research stations, private sector, cooperatives, and community-base seed production have a key role to play in the seed improvement program including conservation and protection of indigenous varieties. The ADS will support production of breeder and foundation seeds, promote private sector and community-based seed production; enforce quality assurance systems; promote hybrid seed production within private sector and GON; and establish information systems for seed demand and supply.

501. **Fertilizer.** In order to improve the fertilizer supply situation, the ADS will review the existing subsidy mechanism, establish a voucher system with fertilizer as one of the options to provide fertilizer to targeted farmers, initiate demonstration in partnership with private sector to disseminate efficient methods of fertilizer use and testing of soil fertility, promote a level playfield for competition between public and private sector in the distribution of fertilizer, conduct regular monitoring of the fertilizer situation, enforce the inspection of adulterated fertilizer, establish a fertilizer reserve stock, and promote production and use of organic and bio fertilizer.

502. **Irrigation.** The ADS will support expansion of irrigable area on existing systems, increasing irrigation intensity, improving on-farm water management, improving irrigation management, and funding for operation and management of irrigation system.

503. **Mechanization** will be supported through awareness campaigns on use of machinery (eg tractors, cultivators, harvesters, threshers of different size), improve access to finance (eg leasing), and enhance the capacity for repair and maintenance.

504. **To mitigate the effect of climate change,** the ADS will support the identification and promotion of stress/diseases tolerant crops; encourage water efficient production systems; adoption of good agricultural practices; and support integrated soil fertility management, integrated plant nutrient management and integrated pest management programs.

505. **Land.** Mechanism to overcome current fragmentation will be supported through legal and institutional mechanisms including cooperative and collective farming, contract farming, tax incentives, land leasing, land banks, and restoration of degraded land. Some of these land measures will also accelerate the adoption of mechanization to overcome the labor scarcity in rural areas.

506. **Decentralization of research and extension and empowering the farmer.** The ADS strongly supports a demand-responsive research and extension system. The key research institutions aimed at food crops include NARI and the local research stations; competitive grants will also allow other non government actors (private sector, NGOs, cooperatives, community

organizations) to engage in action research. In extension, the ADS proposes the utilization of a variety of actors (including government extension technicians, NGOs, cooperatives, and private service providers) in order to better respond to the needs of farmers at different level of development, socioeconomic status, and connectivity to the market. A voucher system will empower farmers to utilize the most appropriate technology and extension service for improving productivity of food crops.

507. **Community-managed Service Centers.** The research and extension system will be decentralized. In particular, the existing network of agricultural and livestock service stations will be Strengthened in its capacity and the coverage will be expanded through the establishment of VDC-based and managed service station that will be funded by the VDCs, cofinanced by the central government, and supported technically by the existing service stations and DOA and district and regionally-based agricultural experts.

508. **Commercialization.** Bridging the yield gap requires the combination of better seeds, plant nutrients, and effective use of water. In addition to the role played by technology, there is an important role that can be played by better functioning markets, through access to inputs and output markets. This will involve a key role for private agroenterprises and cooperatives in the production and distribution of seeds, chemical and organic fertilizer, plant protection measures, irrigation equipment and techniques, storage technologies, transportation and logistics, processing, and distribution of food products in a variety of convenient and safe formats. A number of tax incentives will promote investment by entrepreneurs.

509. **Value chain development.** The technology development activities will be integrated with value chain development activities through the establishment of national or local programs. The initial national value chain development programs of the ADS will focus on maize and lentils; other national programs that might be supported over the course of the ADS include rice, wheat, and potato. The national programs will consist of several integrated projects that aim at having a strong impact on the value chain from seeds to final product delivery. Value addition at each stage of the value chain will be improved to benefit farmers, enterprises, cooperatives, and consumers. Competitiveness of the value chain will rely on the combination of technologies, market infrastructure, quality and safety assurance systems, and marketing intelligence. The value chain program will go beyond the limitations of the geographic pocket approach and integrate the key actors in the value chains including input providers, producers, processors, traders, and service providers across pockets and districts.

510. **Infrastructure.** In addition to value chain infrastructure, the ADS will promote investment in market infrastructure (eg collection centers, market places, logistics system), agricultural roads, and expansion of electricity to make value chain infrastructure viable.

511. **Innovations** to improve competitiveness will be promoted through the establishment of an Innovation Fund, agribusiness incubators, accelerated system of depreciation and other tax incentives for entrepreneurs.

512. **To support export promotion of commodities** (eg lentils), the ADS will strengthen capacity to comply with SPS requirement, promote traceability systems, and establish institutions to support agricultural export promotion (eg an Agricultural Trade Promotion Division in the MOAD). National and regional laboratories for seed quality control, soil/fertilizer

testing, plant protection, and pesticide residue will be strengthened and upgraded to the international accredited level.

513. **National and local programs.** The national programs will coexist with local programs that are funded by local agencies (eg VDC, community based organization), private sector and cooperatives and integrated with national programs. The ADS will encourage local governments to establish and fund local programs that address the specific local needs that cannot be addressed by national program. In the case of food grains, there might be special food crops that are of high local significance, but have little national significance. In addition to the funding from the local agencies, additional sources of funding to local programs could be raised through application to NARF, the Innovation Fund, and the Youth/Women/Disadvantaged Groups Agro-Entrepreneurship Programs.

6.3 High Value Crops Subsector in the ADS Policy Options

514. The high value crop subsector includes horticultural products (vegetables, fruit), spices, beverages (tea, coffee), industrial crops (sugarcane, jute, rubber), mushrooms, medicinal and aromatic plants (MAPs), nuts (betel nuts, cashew nuts, walnuts), flower and ornamental plants, and seeds.

6.3.1 Objectives

- To achieve overall trade balance in short term and net exports in medium to long term
- Export promotion of seeds, fruit (eg citrus), vegetables, spices, MAPs, and beverages (tea, coffee)
- Reduce post harvest losses
- Modernize the sub-sector through improved value chain linkage and market development.
- Formulate a Horticulture Development Masterplan

6.3.2 Approach

515. High value crops from Nepal have a huge potential for exports that, if appropriately tapped, could ensure the country become a net exporter of agricultural products as a whole. The ADS considers the development of high value crops in Nepal a key strategy to meet the aspirations of Nepal society for higher income for farmers and agroenterprises derived from commercialization of agriculture, exports growth, and access to a more nutritionally balanced diet. High value crops include both annual crops (eg vegetables) and perennial crops. From the point of view of farmers or agroenterprises, the technology and investment requirements are usually higher for high value crops than for food crops. The development of the high value crops subsector requires an integrated strategy that includes technology and value chain development, agricultural extension and research, and finance.

516. **Appropriate technologies.** The extraordinary diversity of Nepal allows the cultivation of high value crops throughout its agroecological zones. The mountains, the hills, and the plains of Nepal have pockets that are suitable for a variety of high value crops. The ADS will promote and support productivity improvement through a combination of technology packages that are appropriate to the agroecological diversity of Nepal and the socioeconomic development of

different areas (eg remote areas, sloping areas, areas with little connectivity to markets and modern inputs).

517. **Access to inputs.** Access to seeds, nutrients (chemical and organic fertilizers), and water (mostly non conventional irrigation methods, such as drip irrigation) plays all an important role for the improvement of productivity at the farm level. Good agricultural practices will be disseminated through different service providers (private, cooperatives, NGOs) using a variety of extension approaches (eg farmer field schools, farmer marketing schools, demonstration, study tour) and information and communication technologies (ICT). Vouchers to targeted farmers will improve access to timely and quality inputs and empower farmers to choose the inputs most important to them.

518. **Seed improvement** in the ADS will include both open pollinated varieties and hybrids (eg vegetables). The agricultural research system will benefit from the proposed new horticultural research institute and its regional and local research stations. In addition to the research establishment, the private sector, cooperatives, and communities have a key role to play in the seed improvement program including conservation and protection of indigenous varieties. The ADS will support production of breeder and foundation seeds; promote private sector, cooperatives, and community-based seed production; enforce quality assurance systems; promote hybrid seed production within private sector and GON; and establish information systems for seed demand and supply.

519. **Fertilizer.** In order to improve the fertilizer supply situation, the ADS will review the existing subsidy mechanism, establish a voucher system with fertilizer as one of the options to provide fertilizer to targeted farmers, initiate demonstration in partnership with private sector to disseminate efficient methods of fertilizer use and testing of soil fertility, promote a level playfield for competition between public and private sector in the distribution of fertilizer, conduct regular monitoring of the fertilizer situation, enforce the inspection of adulterated fertilizer, establish a fertilizer reserve stock, and promote production and use of organic and bio fertilizer.

520. **Irrigation.** The ADS will support expansion of irrigable area on existing systems, increasing irrigation intensity, improving on-farm water management, improving irrigation management, and funding for operation and management of irrigation systems. Given the presence of high value crops in environments in which water is scarce or not suitable to conventional methods (surface or groundwater), more innovative non-conventional methods and efficient use of water for high value crops need to be adopted.

521. **Mechanization** will be supported through awareness campaigns on use of machinery (eg tractors, cultivators, harvesters, threshers of different size), improve access to finance (eg leasing), and enhance the capacity for repair and maintenance.

522. **To mitigate the effect of climate change,** the ADS will support the identification and promotion of stress/diseases tolerant crops; encourage water efficient production systems; adoption of good agricultural practices; and support integrated soil fertility management, integrated plant nutrient management and integrated pest management programs.

523. **Land.** Constraints such as fragmentation and small landholding size will be overcome through legal and institutional mechanisms including cooperative and collective farming, contract farming, tax incentives, land leasing, land banks, and restoration of degraded land. Some of the land measures will also accelerate the adoption of mechanization to overcome the labor scarcity in rural areas.

524. **Decentralization of research and extension and empowering the farmer.** The ADS strongly supports the emergence of demand-responsive research and extension system. The key research institutions aimed at high value crops include the establishment of the National Horticulture Research Institute (NHRI) and its local research stations; competitive grants will also allow other non government actors (private sector, NGOs, cooperatives, community organizations) to engage in action research. In extension, the ADS proposes the utilization of a variety of actors (including government extension technicians, NGOs, cooperatives, and private service providers) in order to better respond to the needs of farmers at different level of development, socioeconomic status, and connectivity to the market. A voucher system will empower farmers to utilize the most appropriate technology for improving productivity of high value crops.

525. **Community-managed Service Centers.** The research and extension system will be decentralized. In particular, the existing network of agricultural service stations will establish technical link with new VDC-based and managed service stations that will be funded by the VDCs, cofinanced by the central government, and supported technically by the existing service stations and DOA and district and regionally-based agricultural experts.

526. **Commercialization.** In addition to the role played by technology, there is an important role that can be played by better functioning markets, through access to inputs and output markets. This will involve a key role for private agroenterprises and cooperatives in the production and distribution of seeds, chemical and organic fertilizer, plant protection measures, irrigation equipment and techniques, storage technologies, transportation and logistics, processing, and distribution of high value products in a variety of convenient and safe formats. A number of tax incentives will promote investment by entrepreneurs. Reduction of postharvest losses will be an important dimension of the development of high value crops which are highly perishable.

527. **Value chain development.** The technology development activities will be integrated with value chain development activities through the establishment of national and local programs. The initial national value chain development programs of the ADS for high value crops will focus on vegetables and tea; other national programs that might be supported over the course of the ADS include ginger, cardamom, and coffee. The national programs will consist of several integrated projects that aim at having a strong impact on the value chain from seeds to final product delivery. Value addition at each stage of the value chain will be improved to benefit farmers, enterprises, cooperatives, and consumers. Competitiveness of the value chain will rely on the combination of technologies, market infrastructure, quality and safety assurance systems, and marketing intelligence. The value chain program will go beyond the geographic limitations of the pocket approach and integrate the key actors in the value chains - including input providers, producers, processors, traders, and service providers - across pockets and districts.

528. **Infrastructure.** In addition to value chain infrastructure (eg cold and Controlled Atmosphere or CA storage facilities, packhouses, processing facilities), the ADS will promote investment in market infrastructure (eg collection centers, market places, logistics system), agricultural roads, and expansion of electricity to make value chain infrastructure viable.

529. **Innovations** to improve competitiveness will be promoted through establishment of an Innovation Fund, agribusiness incubators, accelerated system of depreciation and other tax incentives for entrepreneurs.

530. **To support export promotion of commodities** (eg vegetables), the ADS will strengthen capacity to comply with SPS requirement, promote traceability systems, and establish institutions to support agricultural export promotion (eg an Agricultural Trade Promotion Division within MOAD). National and regional laboratories for seed quality control, soil/fertilizer testing, plant protection, and pesticide residue will be strengthened and upgraded to the international accredited level.

531. **National and local programs.** The national programs will coexist with local programs that are funded by local agencies (eg VDC, community based organization), private sector and cooperatives and integrated with national programs. The ADS will encourage local government to establish and fund local programs that address the specific local needs that cannot be addressed by national program. In addition to the funding from the local agencies, additional sources of funding to local programs could be raised through application to NARF, the Innovation Fund, and the Youth/Women/Disadvantaged Groups Agro-Entrepreneurship Programs.

6.4 Livestock and Dairy Subsector in the ADS Policy Options

532. The livestock and dairy sector comprises cattle (including yak), buffaloes, goats and sheep, swine, poultry.

6.4.1 Objectives

- Accelerate growth of the livestock and dairy sector as a strategy for income growth and poverty reduction in rural areas.
- Achieve production growth in meat (goat, poultry, swine and buffalo), milk, and eggs to meet domestic demand.
- Promote exports of selected livestock products (cheese, hides and skins).
- Prevent and control of economically important and emerging diseases.
- Institutionalize *One Health* approach for the prevention and control of zoonotic diseases and ensuring the production of healthy livestock products.
- Attain a more balanced diet, rich in animal proteins.
- Modernize the sub-sector through improved value chain linkages and market development
- Formulate a Livestock and Dairy Development Masterplan

6.4.2 Approach

533. The livestock and dairy sector in Nepal have the potential of making an enormous contribution to GDP, both in agriculture and agribusiness. Moreover, the development of the subsector has remarkable implications for income growth in rural areas and poverty reduction. The availability of animal proteins in the form of dairy products, eggs, and meat can greatly contribute to improve nutrition of the population. Socially, dairy production has the potential of accelerating the formation and strengthening of farmer organizations such as dairy cooperatives that could organize smallholders into effective value chains.

534. **Appropriate technologies.** The ADS will promote and support productivity improvement by strengthening the service delivery system through;

- Participation of private suppliers/agro-vets, private vets, NGOs and public sector for livestock extension.
- Establishment of community service centers at VDC level focused on providing livestock and animal health services.
- Upgrading and decentralizing quality regulation, inspection and certification of farms and their products.
- Introducing voucher system for improved breeds, equipment, and artificial insemination and veterinary services support.
- Use of ICT for information and communication related to disease surveillance and reporting.

535. **Access to inputs.** Access to improved breeds, vaccines, medicines, feed, forage and fodder pasture seeds play all an important role for the improvement of productivity of livestock at the farm level. Good Livestock production and veterinary practices will be disseminated through different providers (private/agrovets, cooperatives, NGOs) using a variety of extension livestock and veterinary service delivery approaches (eg farmer field schools, farmer marketing schools, demonstration, study tour) and information and communication technologies (ICT). Vouchers to targeted farmers will improve access to timely and quality inputs and empower farmers to choose the inputs most important to them.

536. **Animal breeds** will involve the combination of the following:

- Ensure the availability of suitable improved breeds.
- Support pure breed production farms and stations.
- Promote private sector and cooperatives to produce improved breeds.
- Expand Artificial Insemination programs.

537. **Fodder seed improvement.** The ADS will support production of breeder and foundation seeds for forage and pasture seeds; ensure hybrid maize and soybean seed for feed crop production; promote private sector, cooperatives, and community-based seed production; enforce quality assurance systems; promote hybrid seed production within private sector and GON; and establish information systems for seed demand and supply.

538. **Mechanization and processing** will be supported through awareness campaigns on use of machinery in production (eg tractors, cultivators, harvesters, milking equipment, feed mixer, watering equipment), processing equipment (milk processing – chilling van/vats, milk tankers, dairy plants; meat processing, skin and hides processing), improving access to finance (eg leasing), and enhancing the capacity for repair and maintenance.

539. **To mitigate the effect of climate change**, the ADS will support the identification and promotion of stress/diseases tolerant livestock species and management practices; encourage water efficient production systems.

540. **Land.** The ADS will facilitate the establishment of biosecurity areas for the safe production of livestock and processing of livestock products. Special areas for livestock and poultry farming, feed production, slaughterhouses and meat processing, processing of hides and skin, and livestock markets will be established consistently with the application of the land use planning policy.

541. **Forest and Rangeland.** The ADS will promote appropriate mechanisms to address unintended negative effects of community based forest management on traditional use rights of transhumance and transient grazers. Moreover, the ADS will promote effective management of rangelands by formulating the legal and institutional framework needed for the implementation of the Rangeland Policy.

542. **Decentralization of research and extension and empowering the farmer.** The ADS strongly supports the emergence of demand-responsive research and extension system. The ADS will strengthen the National Animal Science Research Institute (NASRI) and its local research stations; and establish and strengthen the National Animal Health Research Institute (NAHRI). Through research programs consistent with NARC Vision 2020 and competitive grant that will allow other non government actors (private sector, NGOs, cooperatives, community organizations) to engage in action research, the ADS will promote research on genetic animal resources, fodder and pasture species, reducing the emerging and prevalent diseases impact, and livestock product diversification for industrial development. In extension, the ADS proposes the utilization of a variety of actors (including government extension technicians, NGOs, cooperatives, and private service providers) in order to better respond to the needs of farmers at different level of development, socioeconomic status, and connectivity to the market. A voucher system will empower farmers to utilize the most appropriate technology for improving productivity.

543. **Community-managed Service Centers.** The research and extension system will be decentralized. In particular, the existing network of livestock service stations will be strengthened and will be linked with community based and managed service stations that will be funded by the VDCs, cofinanced by the central government, and supported technically by the existing service stations under DLS and district and regionally-based livestock and animal health experts.

544. **Commercialization.** In addition to the role played by technology, there is an important role that can be played by better functioning markets, through access to inputs and output markets. This will involve a key role for private agroenterprises and cooperatives in the production and distribution of inputs (agrovet inputs, breeds, feed, vaccines, AI services); animal products (dairy products, meat, egg, hides and skins); storage facilities, slaughterhouses, transportation and logistics, processing, and distribution of animal products in a variety of convenient and safe formats. A number of tax incentives will promote investment by entrepreneurs.

545. **Livestock insurance.** Building on the successful experiences in livestock insurance of a number of cooperatives and farmer groups, the ADS will support the implementation of the recent directive on crop and livestock insurance and the formulation of a law and regulations on crop and livestock insurance.

546. **Value chain development.** The technology development activities will be integrated with value chain development activities through the establishment of national and local programs. The initial national value chain development program of the ADS for livestock and dairy will focus on dairy; other national programs that might be supported over the course of the ADS include goat and poultry. The national programs will consist of several integrated projects that aim at having a strong impact on the value chain from breeds to final product delivery. Value addition at each stage of the value chain will be improved to benefit farmers, enterprises, cooperatives, and consumers. Competitiveness of the value chain will rely on the combination of technologies, market infrastructure, quality and safety assurance systems, and marketing intelligence. The value chain program will go beyond the geographic limitations of the pocket approach and integrate the key actors in the value chains - including input providers, producers, processors, traders, and service providers - across pockets and districts.

547. **Infrastructure.** In addition to value chain infrastructure (eg cold and CA storage facilities, hatcheries, slaughterhouses, feed mills, processing facilities), the ADS will promote investment in market infrastructure (eg livestock markets, milk collection centers, market places, logistics systems), agricultural roads, and expansion of electricity to make value chain infrastructure viable.

548. **Innovations** to improve competitiveness will be promoted through establishment of an Innovation Fund, agribusiness incubators, accelerated system of depreciation and other tax incentives for entrepreneurs.

549. **To support export promotion of commodities** (eg cheese), the ADS will strengthen capacity to comply with SPS requirement, promote traceability systems, and establish institutions to support livestock products export promotion. National and regional disease diagnostic laboratories, veterinary quality control and medicine management laboratory, feed analysis and quality control laboratories will be strengthened and upgraded to the international accredited level.

550. **National and local programs.** The national programs will coexist with local programs that are funded by local agencies (eg VDC, community based organization), private sector and cooperatives and integrated with national programs. The ADS will encourage local government to establish and fund local programs that address the specific local needs that cannot be addressed by national program. In addition to the funding from the local agencies, additional sources of funding to local programs could be raised through application to NARF, the Innovation Fund, and the Youth/Women/Disadvantaged Groups Agro-Entrepreneurship Programs.

551. **Quality and the safety** of livestock and dairy products will be enhanced through the combination of the following measures: (i) Good livestock production and animal health practices; (ii) Quality standards of the livestock, livestock products and livestock production inputs; (iii) Harmonization of quality standards of production inputs and the livestock products

with international standards; and (iv) Harmonization of SPS measures and the quarantine protocols with OIE guidelines.

6.5 Fisheries Subsector in the ADS Policy Options

552. The fisheries sector includes both aquaculture and capture fish in rivers, lakes, and other water bodies.

6.5.1 Objectives

- Accelerate growth of the fisheries sector as a strategy for income growth in selected rural areas.
- Achieve production growth in fish production to reduce imports and meet an increasing share of domestic demand.
- Attain a more balanced diet, rich in animal proteins.
- Modernize the sub-sector through improved value chain linkages and market development.
- Formulate a Fisheries Development Masterplan

6.5.2 Approach

553. The fisheries sector in Nepal has the potential of making a contribution to diversify and increase income in rural areas. Aquaculture can be developed in different parts of the country and integrated with irrigation systems. The availability of animal proteins derived from fish can greatly contribute to improve nutrition of the population.

554. **Appropriate technologies.** The ADS will promote and support productivity improvement by strengthening the service delivery system through;

- Participation of private sector, NGOs and public sector in fish production extension.
- Establishment of community service centers at VDC level focused on providing fish production, health and marketing services.
- Upgrading and decentralizing quality regulation, inspection and certification of fish farms and their products.
- Introducing voucher system for improved fingerlings/fryers, equipment, and veterinary services support.
- Use of ICT for information and communication related to fish disease surveillance and reporting.

555. **Access to inputs.** Access to suitable varieties of fish, fingerlings/fryers in production farmers and stations, feed, and water plays all an important role for the improvement of productivity at the farm level, in ponds, and water bodies where aquaculture is possible. Good agricultural practices will be disseminated through different providers (private, cooperatives, NGOs) using a variety of extension approaches (eg farmer field schools, farmer marketing schools, demonstration, study tour) and information and communication technologies (ICT). Vouchers to targeted farmers will improve access to timely and quality inputs and empower farmers to choose the inputs most important to them.

556. **To mitigate the effect of climate change,** the ADS will support the identification and promotion of stress/diseases tolerant fish species and management practices; encourage water efficient production systems.

557. **Land.** The ADS will facilitate the establishment of areas for the safe production of fish. Special areas for fish farming in community ponds will be established consistently with the application of land use planning policy. Facilitate the following:

- i. Community-based integrated fish/ fingerlings in water bodies in mid-/far western Terai;
- ii. Intensification of pond fish culture in private land in Terai;
- iii. Homestead aquaculture in Terai and Hill regions;
- iv. Utilization of dead arms of rivers for aquaculture through fishers' communities;
- v. Enhanced fish production in Sraphu lake by community in-cage fish culture, and its replications in irrigation barrages and hydro-power reservoirs.

558. **Decentralization of research and extension and empowering the farmer.** The ADS proposes a combination of strong support to demand-responsive research and extension. The ADS will establish and strengthen the National Aquaculture and Fishery Research Institute (NAFRI). Through research programs consistent with NARC Vision 2020 and competitive grant that will allow other non government actors (private sector, NGOs, cooperatives, community organizations) to engage in action research, the ADS will promote research on genetic fish resources, reducing the emerging and prevalent diseases impact, and fish product diversification. In extension, the ADS proposes the utilization of a variety of actors (including government extension technicians, NGOs, cooperatives, and private service providers) in order to better respond to the needs of fisherpersons at different level of development, socioeconomic status, and connectivity to the market. A voucher system will empower fisherperson to utilize the most appropriate technology for improving productivity.

559. **Community-managed Service Centers.** The research and extension system will be decentralized. In particular, the existing network of agricultural service stations will be expanded through the establishment of VDC-based and managed service station that will be funded by the VDCs, cofinanced by the central government, and supported technically by the existing service stations under DOA and district and regionally-based fisheries experts.

560. **Commercialization.** In addition to the role played by technology, there is an important role that can be played by better functioning markets, through access to inputs and output markets. This will involve a key role for private agroenterprises and cooperatives in the production and distribution of inputs (fries, fisherlings, feed); cold storage facilities, transportation and logistics, processing, and distribution of fish in a variety of convenient and safe formats. A number of tax incentives will promote investment by entrepreneurs.

561. **Fisheries insurance.** Building on the successful experiences in livestock insurance of a number of cooperatives and farmer groups, the ADS will support the implementation of the recent directive on crop and livestock insurance and the formulation of a law and regulations on crop and livestock insurance that could also applies to fisheries.

562. **Value chain development.** The technology development activities will be integrated with value chain development activities through the establishment of national and local programs. The initial national value chain development program of the ADS for fisheries will focus on lowland fisheries. The national programs will consist of several integrated projects that aim at having a strong impact on the value chain from breeds to final product delivery. Value

addition at each stage of the value chain will be improved to benefit farmers, enterprises, cooperatives, and consumers. Competitiveness of the value chain will rely on the combination of technologies, market infrastructure, quality and safety assurance systems, and marketing intelligence. The value chain program will go beyond the geographic limitations of the pocket approach and integrate the key actors in the value chains - including input providers, producers, processors, traders, and service providers - across pockets and districts.

563. **Infrastructure.** In addition to value chain infrastructure (eg cold storage facilities, hatcheries, feed mills, processing facilities), the ADS will promote investment in market infrastructure (eg fish markets, logistics systems), agricultural roads, and expansion of electricity to make value chain infrastructure viable.

564. **Innovations** to improve competitiveness will be promoted through establishment of an Innovation Fund, agribusiness incubators, accelerated system of depreciation and other tax incentives for entrepreneurs.

565. **National and local programs.** The national programs will coexist with local programs that are funded by local agencies (eg VDC, community based organization), private sector and cooperatives and integrated with national programs. The ADS will encourage local government to establish and fund local programs that address the specific local needs that cannot be addressed by national program. In addition to the funding from the local agencies, additional sources of funding to local programs could be raised through application to NARF, the Innovation Fund, and the Youth/Women/Disadvantaged Groups Agro-Entrepreneurship Program.

566. **Quality and the safety** of fisheries products will be enhanced through the combination of the following measures: (i) Good fish production and health practices; (ii) Quality standards of the fish, fisheries products and fisheries production inputs; (iii) Harmonization of quality standards of production inputs and the fisheries products with international standards; and (iv) Harmonization of SPS measures and the quarantine protocols with international guidelines.

6.6 Agribusiness in the ADS Policy Options

567. The agribusiness sector in the ADS includes all agribased enterprises including small, medium, and large enterprises and commercial cooperatives involved in input distribution, trading, storage, processing, import and export, wholesaling and retailing related to food and agricultural products.

6.6.1 Objectives

- To accelerate the growth of agribusiness sector from 50% of agricultural GDP to 200% of agricultural GDP
- A structure of vibrant and well organized agroenterprises able to generate higher value added, contribute to branding of food and agricultural products of Nepal, and higher exports.

6.6.2 Approach

568. The ADS promotes the emergence and growth of agribusiness enterprises including both private sector and cooperative sector. The growth of the agribusiness sector is critical to

the structural transformation of the economy towards one society relying more on value addition to agricultural production than on agricultural production. In order to achieve this transformation, the ADS will improve the investment climate through a structured dialogue leading to policy initiatives to support trade organizations, cooperative organizations, farmer organizations, and other private sector organizations. Specific measures to promote the growth of agribusiness include the following.

569. **Contracts.** Strengthen contractual arrangements to promote agricultural commercialization through promotion of contract farming, land leasing, equipment leasing, and secured transactions for warehouse receipts.

570. **Taxes.** Develop tax policy supportive of an efficient commercial agricultural sector with the long term objective of agricultural sector providing the government with an additional source of revenues. In particular: (i) Consider specific income tax concessions to stimulate investment in farm plant, machinery, irrigation equipment, and the like; (ii) Consider tax incentives for the insurance industry to stimulate the growth of agricultural insurance contracts; (iii) Consider tax incentives for the banking industry to stimulate the growth of agricultural loans; and (iv) Consider changes to the way land is taxed using capital gains tax (CGT) and integrated property tax (IPT).

571. **Finance.** Promote development of diverse agricultural finance providers that supply a variety of competitive and demand-driven financial products including leasing, value chain finance, microfinance, kisan cards, and e-banking and mobile banking.

572. **Value Chains.** Prioritize the development of competitive agricultural value chains that increase value added and benefits to enterprises and smallholder farmers. National programs on selected value chains will promote investment by agroenterprises and facilitate linkages among value chain actors.

573. **Infrastructure.** Continue the development of rural roads and accelerate the expansion of the network of agricultural roads. Support expansion of rural electrification programs through the promotion of renewable energies (water, solar, wind, biomass, biogas). Promote development of market infrastructure through the combination of public investment, PPP and community participation, focused on the development of prioritized value chains.

574. **Market information and Intelligence.** Strengthen and rationalize existing systems of agricultural market information and establish new suites of ITC products for market intelligence.

575. **Innovations** to improve competitiveness will be promoted through establishment of an Innovation Fund, agribusiness incubators, accelerated system of depreciation and other tax incentives for entrepreneurs.

576. **Youth Entrepreneurship.** Promote young agroentrepreneurs through a program that includes capacity building and access to funds from a Youth Agro-Entrepreneurship Fund.

577. **Women Entrepreneurship.** Promote women agroentrepreneurs through a program that includes capacity building and access to funds from a Women Agro-Entrepreneurship Fund.

578. **Export Promotion.** Strengthen trade negotiation capacity; strengthen capacity building to improve ability to apply and comply with SPS, AD, and CVD measures; reduce/eliminate pro-manufacturing bias in tariff structure; and review and assess the policy of pegged exchange rate with India and its impact on the agricultural sector.

579. **Quality and Safety.** Strengthen regulations and institutions for enhancing food safety and quality standards.

580. **Research and extension.** The ADS promotes decentralization of research and extension activities and involvement of the private sector in the delivery of services. Funds for research will be available to private companies and cooperatives on a competitive basis. Extension services provided by private companies, cooperatives, and farmers groups will also be encouraged.

581. **Input markets.** Private sector and cooperatives will be encouraged in the ADS to produce, distribute, import, and export agricultural inputs such as seeds, breeds, plant nutrients and plant protection inputs, feed and forage, veterinary medicines, machinery and equipment.

582. **Innovations** to improve competitiveness will be promoted through the establishment of an Innovation Fund, agribusiness incubators, accelerated system of depreciation, carry forward of losses and other tax incentives for entrepreneurs.

7 NEXT STEPS

7.1 Current status of the ADS TA

583. The submission of the Policy Options Report completed Phase 3 of the ADS preparation. During this phase, the Steering Committee has been enriched with the participation of new representatives from the Farmer’s Coalition, an association of Farmer Organizations with broad political base. The ADS team and the Farmer Coalition representatives have worked together during the latest part of Phase 3 of the ADS and will continue to do so during the last Phase of the ADS preparation.

584. Most of the consultants engaged in the preparation have completed their input and only a small group of consultants are left to complete the ADS preparation. Some studies undertaken with support of DANIDA (on value chains), DfID (on private sector participation), and USAID (fertilizer demand), World Bank (Farmer Managed Irrigation Systems), and UNWOMEN (on GESI in the ADS) have been completed. Additional work on land issues and rangelands with support of World Bank is going to be undertaken during Phase 4.

585. Five regional workshops on ADS were organized by the Farmer Organizations and MOAD and one national workshop was held on September 16th to discuss about the Policy Options. Various consultations with NPC, cooperative federations, NGOs, development partners, NRB, MOF, and the Right Honorable Prime Minister were undertaken to receive guidance about the ADS formulation. Monthly dialogues with civil society, media, and farmer organizations have also been initiated.

7.2 The Food and Nutrition Security Plan of Action

586. The Food and Nutrition Security Plan of Action (FNSPA) is a 10-year plan has been prepared with the support of FAO is currently reviewed by the ADS Team. The understanding between GON, FAO, and ADB was that the plan would be closely coordinated with the ADS so that the FNSPA would constitute a chapter of the ADS so as to ensure full integration with the ADS. The FNSPA also benefits from synergies with the Multi-Sectoral Nutrition Plan for Accelerating the Reduction of Maternal and Child Under-nutrition in Nepal (MSNP), an initiative supported by UNICEF and GON.

587. Over the course of Phase 4 of the ADS, it is expected that the FNSPA will be harmonized with the ADS so that one joint document will emerge.

7.3 Additional Consultations

588. AusAID has provided additional support to the ADS to ensure that the process of consultation and consensus building around the ADS can continue and be enhanced. A number of consultations will be undertaken during Phase 4 and include:

- i. Monthly dialogues with farmer organizations, civil society, and the Media
- ii. Regional consultations

- iii. National consultations
- iv. Policy Roundtables
- v. NPC briefings
- vi. Thematic Group Meetings

7.4 Completion of the ADS

589. The Steering Committee has decided to extend the date of ADS to March 2013 and to complete the report of the ADS team by April 12, 2013.

8 REFERENCES

- ACI (2003), "Fertilizer use study", Agrifood Consulting International, Bethesda, Maryland, US.
- ADB (2011a), "Outlook for Nepal". ADB Resident Mission, Kathmandu, 2011
- ADB (2011b), "Demonstrating Enhanced Productivity of Irrigated Agriculture System through Multifunctional Water Users' Associations". ADB RETA 6498, Manila 2011
- ADB (2011c). "Update for Nepal". ADB Resident Mission, Kathmandu, February and May 2011
- ADB (2010a), "Nepal: Community Irrigation Project" Report and Recommendation of the President. Asian Development Bank, Manila.
- ADB (2010b), "Nepal: Community Irrigation Project" Mission Response to Comments from OPR on Water Use Efficiencies, Asian Development Bank, Manila.
- ADB (2010c), "Water Operational Framework 2011-2020 Draft 2", Asian Development Bank, Manila.
- ADB (2010d), "Nepal: Operational Strategy and Program for Water Resources, Assessment Report". Singh, Achyut Man, Asian Development Bank, Manila.
- ADB (2010e), "Development and Dissemination of Water-Saving Rice Technologies in South Asia", TCR, RETA 6276-REG, ADB Manila 2010.
- ADB (2009), "Country Assistance Program Evaluation: Nepal—Delivering Assistance in a Challenging Environment". Manila. 2009
- ADB (2008), "Rural micro-finance loan project 1998-2007". TCR, ADB Manila 2008
- ADB (2006), *Report and Recommendation of the President to the Board of Directors: Proposed Sector Development Program Cluster of Loans, Asian Development Fund Grant, and Technical Assistance Grant to Nepal for Rural Finance Sector Development Cluster Program*. Manila (Loan 2268-NEP, for \$56 million, approved on 26 October).
- ADB (2000), Technical Assistance to the Kingdom of Nepal for Agriculture Sector Performance Review. Manila (TA 3536-NEP, for \$600,000, approved on 4 December).
- Adhikari, D. (2010). *Promoting Nepal's Trade in the perspective of Bilateral and Multilateral Trade*. Economic Policy Network II (ADB TA 7042-NEP), Ministry of Finance, Kathmandu 2010.
- ANZDEC (2006) "Agricultural Sector Study on Commercialization, SPS and Quality Control", Interim Report, MOAC, Kathmandu.
- ANZDEC, ACI, and CMS (2002) "Agricultural Sector Performance Review" ADB TA No. 3536-NEP, Final Report, Asian Development Bank, Manila.
- APP (1995a), "Agriculture Perspective Plan": (APP), Kathmandu: Agricultural Projects Services Centre, Kathmandu (APROSC) and John Mellor Associates. Inc. Washington DC (JMA).
- APP (1995b), "Agriculture Perspective Plan: Irrigation and Water Control: Background Technical Paper by Sharma CK and Poudel SN", Kathmandu: APROSC/JMA.
- APP (1995c), "Agriculture Perspective Plan: Irrigation Management, On-farm Water Use and Water Pricing CB Shakya", Kathmandu: APROSC/JMA.
- Asian Development Bank, World Bank, Department for International Development of the United Kingdom, and International Labor Organization. (2009). "Country Diagnostic Studies—Nepal: Critical Development Constraints." ADB, Manila 2009
- Bhattarai, T.C. (2005). "Opportunities and Constraints in Nepalese Poultry Industry", March 2005, Kathmandu and Nepal Hatcheries and Feed Association, 2005.

- Birendra Basnyat (2010). "Improving seed security through the expansion of seed multiplication farms in the public, private and cooperative sectors in Nepal". Economic Policy Network II, MOF/ADB, Kathmandu December 2010
- Birner, R. and D. Resnick (2010): The Political Economy of Policies for Smallholder Agriculture, in: World Development, Vol. 38 (10): 1442-1452.
- CIWEC (1990), "Master Plan for Irrigation Development in Nepal, Canadian International Water and Energy Consultants & East Consult
- CMIASP (2010), Mid-term Review
- Development Vision Nepal (2006), "Shallow Tube Well Impact Assessment Study, Kathmandu. Nepal (March 2006)
- DOI (2005), "Nepal: Irrigation Development Vision, An action plan for irrigation development for the period 2005-2012" , Kathmandu
- Energy Minister's Statement (2011). Nepal Electricity Conference. Ministry of Energy, 19 May 2011.
- ESCAP (2011). "Economic and Social Survey". UN Economic and Social Commission for Asia Pacific. Bangkok, 2011
- Export Statistics (2011). Trade and Export Promotion Center, Ministry of Commerce and Supplies, Nepal 2011.
- Federation of Community Forestry Users Nepal, from the database of www.FECOFUN.org.np accessed July 2011
- GDC (1994), "Reassessment of Groundwater Development Strategy for Irrigation in the Terai" (A discussion paper).
- Goletti , F. (2001). "The Impact of Fertilizer Subsidy Removal in Nepal". ASPR Discussion Paper No.1, TA 3536-NEP. ADB Manila 2001
- Goletti, F., Bhatta, A., Gruhn, P. and U. Dulal (2001). "Farmer Survey Report", Discussion Paper No.4, TA 3536-NEP, ADB Manila 2001
- Guimbert, S. and Sailesh Tiwari (2007). SIMPLE MACROECONOMIC MODEL FOR NEPAL, June 2007, Report No. SASPR-11
- Hancock, I. (2010). "Agribusiness and Value Chains Report". In RRP Supplementary Technical Annexes, ADB TA 7928-NEP, Manila 2010.
- IFAD (2006) "Nepal Strategic Opportunities Programme". IFAD Rome 2006
- IFPRI. (2010). *Nepal Food and Nutritional Security*. New Delhi: IFPRI 2010
- Irz, X, Lin Lin, Thirtle, C and Wiggins, S. (2001). Agricultural Productivity Growth and Poverty Alleviation." Development Policy Review. 19(4):449-466.
- Kalu IL et al. (2004), "OFWMPP, DOI Nepal: Impact Assessment Study Report,
- Kansakar, D.R. (2006), "Ground Water Irrigation Development Vision", DOI Nepal
- Karmacharya, B.K. (2010). *A Study on cross Border Informal Trade between Nepal and India on Selected Agricultural Commodities*. FAO/ Nepal Council for Development Research, Kathamandu 2010.
- Landon-Lane, C. (2011). "Meeting notes: AIC Ltd.", ADB TA 7762(NEP): Preparation of the Agricultural Development Strategy, Kathmandu, June 2011.
- Michaud, M. (2011). "Report on Lessons Learned EU Food Facility INGO Projects, EU Cooperation Office, Kathmandu 30 June 2011
- MOAC (2004), "National Agriculture Policy? Kathmandu
- MOAC (2005), "Statistical Information on Nepalese Agriculture, Agri-Business Promotion and Statistics Division 2004/05, Kathmandu

- MOAC (2010), “National Agriculture Sector Development Priority (NASDP) for the Medium-Term (2010/11 - 2014/15) Kathmandu (reviewed abstracted)
- MOAC, WFP, FAO (2009). *Winter drought in Nepal: Crop and Food Assessment*. Kathmandu: WFP 2009
- MOCS (2011), Revised Legislative Action Plan
- MOSC (2010). Trade Conference Proceedings. MOSC Kathmandu 2010.
- MOSC (2010). *Nepal Trade Integration Strategy and Action Matrix*. MOSC Kathmandu 2010.
- MOE (2010, National Adaptation Programme of Action (NAPA) to Climate Change, Ministry of Environment
- MOI (2003) “Irrigation Policy, Kathmandu
- National Dairy Development Board (2001). “National Milk Marketing and Strategy Study”, NDDB, Kathmandu March 2001
- NDHS (2006) Nepal Demographic and Health Survey . Ministry of Health and Population, New ERA, and Macro International Inc. Kathmandu, Nepal.
- Nepal Tea Association (2000). “National Tea Policy”. Kathmandu, 2000
- NPC (2004). “Rural Infrastructure Policy”, National Planning Commission, Kathmandu 2004
- NPC (2010). “Base Paper of Three-Year Plan 2010/11 – 2013/14”, National Planning Commission, June 2010
- OneWorld (2010) “Effects of Climate Change - Nepal briefing. September 2010. <http://uk.oneworld.net/guides/nepal/climate-change>
- Pandey, P. R. (2009). *Trade Policy as an Instrument to Ensure Food Security: A case study of Nepal*. Asia-Pacific Trade Economists’ Conference of Trade-Led Growth in Times of Crisis. UNESCAP, Bangkok 2009
- Perry, S. (2000). *Enabling Development: Food Assistance in Nepal*. World Food Program, Nepal 2000.
- Pyakuryal, B., Y.Thapa, D. Roy (2005). *Trade Liberalization and Food Security in Nepal*. MTID Discussion Paper no.88. IFPRI, Washington DC. 2010.
- Sapkota, C. (2009). *Nepal’s Long Term Direction in Global and Regional Trade Policy*. UNESCAP, Bnagkok 2009.
- Shakya, B. (2010). *Exports of Ayurvedic Herbal Remedies and SPS Issues*. Managing the challenges of WTO participation: Case Study 31. WTO 2010;
- Sharma, S., M. Karkee, L. Gautham, Eds. (2007). “Implications of the WTO Membership on Nepalese Agriculture”. FAO/ MOAC, Kathmandu 2004
- Thapa, G. (2009). *Smallholder Farming in Transforming Economies of Asia and the Pacific: Challenges and Opportunities*. Discussion Paper, IFAD
- Thapa, G. and R. Gaiha (2011). *Smallholder Farming in Asia and the Pacific: Challenges and Opportunities*. IFAD conference on New Directions for Smallholder Agriculture, IFAD: Rome.
- Thapa, Y. (2006), “Constraints and Approach for Improving Fertilizer Supply for Meeting Domestic Demand.” Economic Policy Paper No.30. Economic Policy Network, MOF/ADB, Kathmandu. 2006
- USAID (2010). Ensuring Food and Nutritional Security in Nepal: A Stocktaking Exercise. International Food Policy Research Institute USAID, Kathmandu.
- World Bank (2004), “Approach to mitigation of groundwater arsenic contamination including new groundwater legislation 2004/09/01 38812 Working Paper (Numbered Series) 30. The World Bank.
- World Bank (2008), “Irrigation Sector Project” Project Performance Assessment Report. Report No.: 44438.

World Bank (2010), Water and Development: An Evaluation of World Bank Support 1997-2007.
World Bank (2011), Large-Scale Migration And Remittance In Nepal: Issues, Challenges, And Opportunities, No. 55390-Np, Poverty Reduction and Economic Management Sector Unit

South Asia Region

WECS (2002), Water Resources Strategy Nepal, Kathmandu: Singh Durbar.

WECS (2005), National Water Plan (in Nepali), Kathmandu: Singh Durbar

APPENDIX 1. PROBLEM TREE

The Core Problem:

Low productivity, commercialization, competitiveness, and implementation capacity

Causes of the Problem

1. Low Productivity

Description of the problem: huge gaps between potential and actual land and labor productivity in agricultural sector

1.1. Inadequate production inputs

- 1.1.1. Limited access to improved genetic resources (seed, planting material, animal breeds, fingerlings)
- 1.1.2. Poor access to quality and timely fertilizer, genetic resources, and plant protection materials
- 1.1.3. High cost of inputs
- 1.1.4. Lack of input quality assurance system
- 1.1.5. Limited access to stable supply of feed
- 1.1.6. Limited number of competent personnel in agricultural extension
 - 1.1.6.1. Inadequate extension budget
 - 1.1.6.2. Limited participation of non-government extension providers (private, NGO, lead farmers,...)
- 1.1.7. Limited outreach of extension system (public, private, NGOs) at the VDC level
- 1.1.8. Under-utilized involvement of private sector in extension
- 1.1.9. Poor integration between research, extension, and agricultural education
- 1.1.10. Limited research that is responsive to farmers and enterprises demand
 - 1.1.10.1. Inadequate research budget
 - 1.1.10.2. Low incentives for researchers
 - 1.1.10.3. Unfocused research programs

1.2. Low workforce skills

- 1.2.1. Outmigration of rural skilled labor
- 1.2.2. Limited incentives to invest in agricultural business/production skills
- 1.2.3. Limited vocational training oriented to farmers skills
- 1.2.4. Feminization of agricultural labor force without corresponding increase in programs to improve women skills
- 1.2.5. Poor nutrition with unbalanced diet low in micronutrients and proteins

1.3. Low mechanization

- 1.3.1. Limited information
- 1.3.2. Distorted tax systems favoring 4WD rather than 2WD Tractors

1.4. Inefficient land and water use management system

- 1.4.1. Excessive land fragmentation as a consequence of inheritance laws
- 1.4.2. Tenancy issue: land left fallow to avoid tenancy rights
- 1.4.3. Statutory sharecropping arrangements not conducive to investment
- 1.4.4. Land is being transformed from agricultural to residential uses (land plotting)
- 1.4.5. Inadequate soil fertility management leading to loss of soil fertility
- 1.4.6. Land degradation

1.5. High losses due to plant and animal disease

- 1.5.1. Limited access to plant and animal health services
- 1.5.2. Very limited access to affordable livestock insurance

1.6. Low irrigated agricultural production

- 1.6.1. Limited year-round irrigation coverage
- 1.6.2. Inefficient use of irrigation water
- 1.6.3. Increasing maintenance deficit
- 1.6.4. O&M underfunded
- 1.6.5. Low collection of ISF
- 1.6.6. Limited collaboration between MOAC and MOI

1.7. Vulnerability to Shocks

- 1.7.1. Limited assets (land, equipment, livestock, forest, etc.)
- 1.7.2. Lack of disaster risk reduction systems
- 1.7.3. Climate change impacts on agriculture
- 1.7.4. Very limited safety nets

1.8. Social and Geographic Exclusion

- 1.8.1. Exclusion from access to productive assets (land, equipment, education)
- 1.8.2. Lack of participation in planning, implementation, and monitoring of development programs
- 1.8.3. Lack of participation in the benefits from development programs

2. Low Commercialization

Description of the problem: a considerable share of agricultural production is for subsistence or not well integrated with national and international markets. Agriculture does not provide sufficiently attractive economic incentives.

2.1. Limited integration of farmers with value chains

- 2.1.1. Lacking legislation and regulations for contract farming
- 2.1.2. Poor marketing infrastructure (collection centers, packing houses, grading centers, storage facilities, market centers)
- 2.1.3. Poor road and transport connectivity

2.2. Lack of effective farmers and enterprises organizations

- 2.2.1. Limited capacity of agricultural cooperatives and farmer groups
- 2.2.2. Limited capacity of trade associations

2.3. Lack of security for commercial land use

2.4. Limited access to finance and insurance

- 2.4.1. Limited competitiveness and efficiency of public financial institutions
- 2.4.2. Excessive presence of the government in ownership and management of financial institutions
- 2.4.3. Perceived high risk in microfinance
- 2.4.4. Prevalence of inefficient, low-skilled microfinance institutions
- 2.4.5. Limited number of rural finance institutions in the hills and mountain areas
- 2.4.6. Disincentives for rural finance institutions for outreach expansion
 - 2.4.6.1. Limited effectiveness in debt recovery
 - 2.4.6.2. Inefficient risk management in rural finance institutions
 - 2.4.6.3. Lack of supporting financial infrastructure
- 2.4.7. Lack of appropriate livestock and crop insurance regulation
 - 2.4.7.1. Scarcity of meteorological information to establish weather index crop information

2.5. Limited advisory support services for agroenterprises

2.6. Limited practice of community forest enterprises

2.7. Lack of supportive regulations and tax incentives

- 2.7.1. Unsustainable subsidies
- 2.7.2. Lack of adequate tax incentives for agricultural investment
- 2.7.3. Lack of tax incentives for commercial banks lending to agricultural sector
- 2.7.4. Lack of tax incentives for insurance industry to offer agricultural insurance

2.8. Poor investment climate for domestic and foreign direct investment in agriculture

- 2.8.1. Political instability
- 2.8.2. Lack of continuity and frequent transfers of public servants
- 2.8.3. Lack of discipline, strikes, bandhs, chaka-jam, and office locking
- 2.8.4. Rampant corruption
- 2.8.5. No elected body in local government
- 2.8.6. Poor security

3. Low Competitiveness

Description of the Problem: Low share of agricultural exports in agricultural gross domestic product and widening agricultural trade deficit

- 3.1. Weak Infrastructure system (road, energy, communication, clean water)**
- 3.2. Limited presence of innovation systems and practices**

- 3.2.1. Low risk bearing capacity for adopting innovations
- 3.2.2. Education system prioritizing rote learning versus innovative thinking
- 3.2.3. Lack of institutions focused on promoting agroenterprise innovation

- 3.3. Weak capacity in meeting stringent SPS requirements and technical standards**
 - 3.3.1. Lack of agricultural and food products quality and safety assurance systems

- 3.4. Market access barriers**

- 3.5. **Unfavorable trade treaty with India:** absence of reciprocal duty free market access in agriculture and primary products

- 3.6. Fixed peg with Indian currency**

- 3.7. Poor logistics systems**

- 3.8. Weak postharvest system and high losses**
 - 3.8.1. Limited capacity in postharvest technology
 - 3.8.2. Low outreach of postharvest technology information
 - 3.8.3. Lack of monitoring systems for postharvest losses
 - 3.8.4. Lack of demonstrations of alternative effective postharvest technology solutions

- 3.9. Low value addition**
 - 3.9.1. Limited processing capacity
 - 3.9.2. Lack of Nepali brands, or geographic indications

- 3.10. Traditional retail system not focused on quality, safety, and innovation**

- 3.11. Inadequate trade facilitation**
 - 3.11.1. Weak institutional structure for trade facilitation
 - 3.11.2. Limited skills for trade facilitation

4. Low Implementation Capacity

Description of the Problem: Policies are not translated into adequate plans and plans are not translated into appropriate actions.

- 4.1. Disconnect between annual plans, periodic plans, and long term plans**

- 4.2. Lack of coordination and integration of projects and programs**

- 4.3. Poor quality, disconnected, and limited coverage of M&E**

- 4.4. Lack of result-oriented monitoring system**

- 4.5. Lack of agricultural policy analysis, evaluation, and formulation**
- 4.6. Weak planning capacity at DDC level**
- 4.7. Limited public funding for agricultural sector and mismatch between sectoral priority and resource allocation**
- 4.8. Frequent changes at the senior management level of agencies involved in implementation**
- 4.9. Limited involvement of communities, NGOs, and private sector in planning, implementation, and monitoring of agricultural programs**
- 4.10. Lack of clear subsector policies**
- 4.11. Confusion in roles and responsibilities of different actors (local and central) in the devolvement process**
- 4.12. Weak accountability systems**

Impacts

- 1 Food Insecurity
- 2 Rural Outmigration
- 3 Trade Deficit
- 4 Low and highly variable income
- 5 Vulnerability to disasters
- 6 Low living standards