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# Good Agricultural Governance

A resource guide  
focused on smallholder  
crop production

Subash Dasgupta  
Indrajit Roy





# **GOOD AGRICULTURAL GOVERNANCE**

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Subash Dasgupta  
Indrajit Roy

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# Foreword

Good governance is a concept that is difficult to realize in its totality even in countries with strong institutions and an entrenched culture of democratic governance backed by sound political systems. It remains more of an ideal to which countries strive to come as close as possible by focusing efforts on bridging the gap between what is achievable and where they are now.

This task is particularly daunting for developing countries with fragile institutions, weak regulatory frameworks and inadequate administrative capacities. The increasing emphasis by development partners on good governance in project assistance is aimed at nudging countries to improve governance so that resources spent produce value and the benefits of development assistance reach the target beneficiaries as intended.

The issue of good governance in smallholder agriculture came under the spotlight in the wake of a search for more sustainable patterns of crop production intensification against the backdrop of shortcomings of the technologies advanced through the green revolution in the 1970s and 1980s. The FAO conference in 2009 adopted a new strategic framework in which Strategic Objective A outlined the concept and approach of sustainable crop production intensification (SCPI). The concept was later expanded and examined in more detail in FAO's policy document, *Save and grow – a new paradigm of agriculture*. The FAO strategic framework prepared as a follow-up for implementation of SCPI over the period 2010 to 2025 identified governance as a key element within the proposed strategy. This emphasis on governance was not coincidental. As an approach, SCPI is more knowledge-intensive and more location-specific than earlier approaches. It requires new managerial skills in the public sector agricultural administration services to forge unprecedented cross-sectoral coordination and engage multiple stakeholders at different levels.

In recognition of this challenge in governance, the FAO Regional Office for Asia and the Pacific held an expert consultation from 29 to 30 November 2010 on small farmer-focused good governance in crop agriculture. The experts reviewed the existing status of countries of the Asia-Pacific region with respect to key aspects of agricultural governance in the crop sector, in particular smallholder crop production systems. They also produced a set of recommendations for improving crop sector governance. This *Resource guide on good agricultural governance* has been prepared with inputs from this expert meeting and material drawn from relevant FAO documents. I hope it will contribute towards promoting the practice of good governance in crop agriculture and thus help in moving the countries of the Asia-Pacific region rapidly toward effective and efficient implementation of sustainable crop production intensification programmes and approaches.



**Hiroyuki Konuma**

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## Abbreviations and acronyms

ACIAR	Australian Centre for International Agricultural Research
ADB	Asian Development Bank
AOA	Agreement on Agriculture (WTO)
ASARECA	Association for Strengthening Agricultural Research in East and Central Africa
ASEAN	Association of Southeast Asian Nations
AusAID	Australian Agency for International Development
BRAC	Building Resources Across Communities
CA	conservation agriculture
CAAS	Chinese Academy of Agricultural Sciences
CGA	country governance assessment
CBD	Convention on Biological Diversity
CGIAR	Consultative Group on International Agricultural Research
CIAT	International Centre for Tropical Agriculture
CIDA	Canadian International Development Agency
CIFOR	Centre for International Forestry Research
CIMMYT	International Maize and Wheat Improvement Center
CIP	International Potato Center
CIRAD	Agricultural Research for Developing Countries
CSISA	Cereal Systems Initiative for South Asia
CSO	civil society organization
DFID	Department for International Development
EU	European Union
FDI	foreign direct investment
FAO	Food and Agriculture Organization of the United Nations
FFS	farmers' field school
GAP	Good Agricultural Practices
GM	genetically modified
GMP	Good Manufacturing Practices
GFSI	Global Food Safety Initiatives
HACCP	Hazard Analysis and Critical Control Points
HORTEX	Horticultural Export Foundation (Bangladesh)
HRLS	Human Rights and Legal Services (Bangladesh)
ICARDA	International Centre for Agricultural Research in the Dry Areas
ICT	information and communication technologies
ICRISAT	International Crops Research Institute for the Semi-Arid Tropics
IDEA	Institute for Democracy and Electoral Assistance
IDRC	International Development Research Centre

IFAD	International Fund for Agricultural Development
IFDC	International Fertilizer Development Centre
IFPRI	International Food Policy Research Institute
IITA	International Institute of Tropical Agriculture
ILRI	International Livestock Research Institute
IPCC	International Plant Protection Convention
IPM	integrated pest management
IPNM	integrated plant nutrient management
IPR	intellectual property right
IRRI	International Rice Research Institute
ITPGRFA	International Treaty on Plant Genetic Resources for Food and Agriculture
ISO	International Organization for Standardization
ISAAA	International Service for the Acquisition of Agri-Biotech Applications
LMO	Living Modified Organism
MDG	Millennium Development Goal
MIS	management information system
NARES	National Agricultural Research and Extension Systems
NGO	non-governmental organization
NMTPF	National Medium-Term Programme Framework
ODI	Overseas Development Institute
OECD	Organization for Economic Cooperation and Development
PBR	plant breeder's rights
PES	payment for environmental services
PGR	plant genetic resources
PGRFA	plant genetic resources for food and agriculture
PPB	participatory plant breeding
PPP	public-private partnership
PVP	plant variety protection
QDS	quality declared seed
SCPI	sustainable crop production intensification
SGACA	strategic governance and corruption assessment (Netherlands)
SIMILESA	sustainable intensification of maize-legume cropping systems for food security in Eastern and Southern Africa
SPS	sanitary and phytosanitary measures (WTO)
SRI	system of rice intensification
SSE	smallholder seed enterprises
SSNM	site-specific nutrient management
TRIPS	Trade Related Intellectual Property Rights (WTO)
TCP	Technical Cooperation Programme (FAO)
TLS	truthfully labeled seed



UK	United Kingdom
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNESCAP	United Nations Economic and Social Commission for Asia and the Pacific
UNCTAD	United Nations Conference on Trade and Development
UPOV	International Union for the Protection of New Varieties of Plants
USAID	United States Agency for International Development
WHO	World Health Organization
WGI	worldwide governance indicator
WGA	World Governance Assessment
WTO	World Trade Organization



# Overview

**Chapter 1**

What is governance?

**Chapter 2**

Principles of good governance

**Chapter 3**

Agricultural governance in the context of sustainable intensification of smallholder crop production

**Chapter 4**

Agricultural governance in the context of sustainable crop diversification

**Chapter 5**

Agricultural governance: Seed supply systems and plant genetic resources (PGR) management

**Chapter 6**

Agricultural governance: Access to inputs (other than seed) and improved production technology for sustainable crop production

**Chapter 7**

Agricultural governance: Improving food safety

**Chapter 8**

Improvement of governance: Control of corruption

**Chapter 9**

Improvement of governance: Enforcement of rights

**Annexes**

# Overview

This resourced guide is a follow up of the recommendations of the expert consultation on small-farmer-focused good governance in crop sector agriculture organized by FAO regional office for Asia and the Pacific from 28 to 30 November 2010. It has been designed as a resource guide for training senior level officials in the public sector agricultural services and for elected representatives responsible for the design, reform, and implementation of policies, laws, regulations and the allocation of resources in the management of their country's agriculture and rural development sector. The target audience also includes senior level managers in the non-state sector – non-governmental organizations (NGOs), civil society organizations (CSOs), producer organizations, the private sector – involved in the provision of public goods and services.

The guide comprises nine chapters. Each chapter is written as a separate module designed to meet a specific number of learning objectives. It consists of lecture materials for presentation and work sheets for group exercises to assess learning outcomes (provided in the Annex).

*Chapter one* sets out the conceptual framework of agricultural governance in the broad context of governance. It explores organizational structures of agricultural governance at both national and international levels and highlights mechanisms of global agricultural governance and how they interface with the national governance systems. It identifies the key challenges facing agricultural governance in developing countries of the Asia-Pacific region.

*Chapter two* examines the principles of good governance and highlights the growing importance of incorporating sound governance principles in the design and implementation of projects funded by major international development partners. It also provides examples of how major international donors attempt to measure the quality of governance across countries using a variety of indicators reflecting the principles of good governance.

*Chapter three* introduces the concept of sustainable crop production intensification (SCPI) in the context of smallholder farming and sets the framework of SCPI as elucidated in FAO's new paradigm of agriculture – “save and grow”. It explores the key constituent practices that underpin SCPI and briefly highlights ongoing intercountry collaborative project initiatives that advance the SCPI agenda.

It disaggregates the SCPI concept into thematic areas and identifies challenges in each area to design appropriate governance interventions. Finally, it examines the role of monitoring and evaluation as an important governance tool for improving the chances of success of SCPI initiatives.

*Chapter four* deals with the diversification of smallholder crop production systems. It examines how diversification helps SCPI and analyses the policy trade-offs in crop diversification in smallholder crop production systems. It demonstrates how policy-makers and administrators can design appropriate governance measures to address the challenges of sustainable diversification of cropping in cereal-based intensive crop production systems, including vertical diversification in the value chain through agroprocessing.

*Chapter five* focuses on the issues of governance in relation to farmers' access to seeds and plant genetic resources. These issues have been explored in the context of the changing dynamics in the seed supply systems in smallholder crop production triggered by growing commercialization of the seed sector. It identifies major governance challenges at key steps in

seed production and supply chain – seed law and policy; varietal development and registration; enforcement of intellectual property rights and national plant variety protection systems; seed quality control; and seed certification. In the context of prevailing uncertainty and ambivalence toward transgenic food crops in most countries of the Asia-Pacific region, it examines governance challenges in creating an informed scientific basis and regulatory framework to pave the way for greater acceptance of transgenic technology for development of food crops in these countries. Finally, it demonstrates how appropriate governance interventions can be crafted to address the challenges in the production and supply of seeds in smallholder crop production systems.

*Chapter six* examines the issues of access to inputs (other than seeds) and improved production technology for SCPI. It looks at the challenges of governance in the framework of creating an enabling policy environment, improving effectiveness and efficiency in service delivery; enhancing accountability of institutions responsible for service delivery, and promoting a participatory approach in input delivery and access to technology. The chapter highlights major governance issues in restructuring the agricultural extension services to make them more compatible with the promotion of SCPI technologies. In this context, the need for strengthening research-extension-farmer linkages is highlighted.

*Chapter seven* shifts the focus onto the issue of food safety in smallholder crop production systems. It highlights existing food safety concerns and the status of food safety regulations in some countries of the Asia-Pacific region. It briefly reviews current approaches to food safety in the context of smallholder farming and refers to major global food safety standards. It explores the challenges of governance for food safety in the context of smallholder farming.

*Chapter eight* concentrates on the most contentious issue of contemporary governance in developing countries – corruption in public services, which nips in the bud most of the anticipated benefits of any development initiatives. It explores the nature of corruption in smallholder farming and presents a coherent strategy for combating corruption. It illustrates how the use of specific governance tools in certain contexts was effective in curbing corruption. It demonstrates how principles of good governance can be integrated in designing specific governance interventions for fighting corruption.

*Chapter nine* analyses the issues of governance in relation to enforcement of rights, particularly farmers' rights, land rights, environmental rights, and legal support for the protection of rights. It examines farmers' rights in the context of the multilateral system of access to plant genetic resources for food and agriculture and benefit sharing established under the international treaty on plant genetic resources for food and agriculture. The major governance challenges in realization of farmers' rights are identified and examples of national mechanisms of implementation of these rights are discussed. The chapter sets the framework of land rights and discusses the governance challenges in improving security of land tenure and the quality of public land administration. It introduces the conceptual framework of farmers' environmental rights and explores the governance challenges in protecting farmers' environmental rights. It also focuses on institutional mechanisms of legal support to farmers in protection of their rights, highlights the areas where such support is most needed and demonstrates how solutions can be designed to address the major challenge of providing legal support for protection of farmers' rights.

Group exercises have been designed in the manual as a tool for the training facilitator to evaluate how well training participants understand the content and are able to apply the acquired knowledge in problem solving.



# Chapter 1

## What is governance?

### Learning objectives

At the end of the presentation, participants will have developed:

- An increased understanding of the concept of governance in general and agricultural governance for the crop subsector in the context of smallholder farming;
- enhanced knowledge about the organizational capacities of agricultural governance at different hierarchical levels – local, national and global;
- an ability to analyse governance functions at different levels to develop appropriate responses to the current challenges of transformation in smallholder agriculture; and
- an enhanced capacity to tap into global mechanisms of agricultural governance to derive benefits for their countries' smallholder-dominated agricultural production systems.

## Introduction

Governance is about exercising authority within a framework defined and protected by law with the goal of providing common public goods and services. It is in this context that institutions involved in multilateral development assistance approach the concept of governance. The Asian Development Bank (ADB) defines governance as the manner in which power is exercised in the management of a country's economic and social resources for development.<sup>1</sup> Governance is the exercise of a political, economic, and administrative authority in the management of a country's affairs. It comprises the mechanisms, processes, and institutions through which citizens and groups articulate their interests, exercise their legal rights, meet their obligations, and mediate their differences.<sup>2</sup> The World Bank views governance as consisting of the traditions and institutions by which authority in a country is exercised. This includes: the process by which governments are selected, monitored and replaced; the capacity of the government to formulate and implement sound policies effectively; and the respect of citizens and the state for the institutions that govern economic and social interactions among them.<sup>3</sup> Governance refers to the formation and stewardship of the formal and informal rules that regulate the public realm, the arena in which state as well as economic and societal actors interact to make decisions.<sup>4</sup>

These definitions reflect the evolution of the notion of governance beyond its delivery and distributive roles. It is, broadly, a process that encompasses state-society interactions and partnerships. It includes a range of organizations, public, private, and cooperatives and complex relationships between and among them. Institutions of local government, civil society organizations, and private cooperatives as well as other market institutions are all relevant actors in the context of the new governance paradigm.<sup>5</sup>

The structure of governance is reflected in the rules and institutions that create the framework for conducting both public and private business and in the regulatory frameworks. The concept of governance can be applied at different levels:

- International level
- National level
  - ◆ Government
  - ◆ Private sector
  - ◆ Civil society
- Local level

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<sup>1</sup> Asian Development Bank. 1995. *Governance: Sound development management*.

<sup>2</sup> United Nation's Development Programme. 1997. *Governance for sustainable human development*. A UNDP Policy Document.

<sup>3</sup> World Bank. 2010. World governance indicators.

<sup>4</sup> Governance assessments for local stakeholders: What the World Governance Assessment offers. (Available at <http://www.odi.org.uk/resources/download/573.pdf>).

<sup>5</sup> Vallabh, V. 2007. *Institutional alternatives and governance of agriculture*. Academic Foundation, New Delhi, India.



## Governance for the agriculture sector

Agricultural governance is concerned with augmentation of growth and development of a country's agriculture sector and managing the consequences of this process through the effective functioning of its institutions, the application of technology and scientific innovations, the implementation of policies, adherence to acts and regulations, and active participation of all involved stakeholders.

Government is the main actor of governance in most countries providing institutions and resources for their functioning, a justice and legal framework of courts, acts, regulations, codes, and standards, and creating an enabling environment for private sector and NGOs that provide public goods associated with governance. Governments execute the functions of governance through the public sector administrative system structured in ministries and departments. Agricultural governance in many countries is organized in a ministry or department responsible for the food and agricultural production sector as a whole. Very often there are separate ministries or departments that are responsible for subsectors other than crops, for instance fisheries, forestry and livestock.

Agricultural governance is also executed through ministries or departments with responsibilities overlapping with or crosscutting agriculture, such as irrigation and water resources management, food, local government and rural development, microfinance and rural enterprise. Under the ministries, there may be parastatal organizations, often with their own charters and autonomous structures and staffed by professionals that conduct agricultural research, provide farmers with extension support and input-related services.

The involvement of other actors in the provision of public goods, individually or organized in groups, associations, cooperatives, societies or networks is what sets governance apart from government. These actors may vary depending on the level of governance being considered. At the local level, they may be farmers' groups, associations and cooperatives, field units of extension and research organizations, NGOs, microfinance institutions, political parties, etc.

At the national level, CSOs, media, private sector companies and multinational corporations and representatives of various bilateral and multilateral donor organizations can play influential roles in decision-making processes.

At the international level, country obligations under bilateral agreements, memoranda of understanding, collaboration and partnership with institutions constituting the global governance system for food and agriculture influence national policy-making processes in the agriculture sector.

## Global governance of agriculture

This consists of a complex web of international public, private, and civil institutions geared toward fostering cooperation, pooling resources, resolving conflicts and, more generally, seeking consensus and collective action in a world of interdependent actors. It also encompasses a wide range of treaties, conventions, protocols, codes and standards that govern access to resources and innovations, trade, transboundary movement and exchange of agricultural commodities and utilization of raw materials. The key constituents of the global governance system of agriculture are the following:

## World Trade Organization (WTO)

*Agreement on Agriculture (AoA)*: This is concerned with the promotion of efficiency through reduction of subsidies and improvement of quality. However, for developing countries, there are provisions for exemption and certain support to agriculture, especially for the purpose of stabilization and food security.

*Agreement on Sanitary and Phytosanitary Measures (SPS)*: This deals with food safety and animal and plant health regulations. The agreement recognizes that governments have the right to take sanitary and phytosanitary measures but that they should be applied only to the extent necessary to protect human, animal or plant life or health and should not arbitrarily or unjustifiably discriminate between members where identical or similar conditions prevail.

*Trade Related Intellectual Property Rights (TRIPS)*: Article 27(3) (b) of this agreement requires members to protect plant varieties either by patents or by an effective *sui generis* system of protection or by a combination of both these systems.

## The United Nations (UN) System

*Food and Agriculture Organization (FAO)*: This is at the forefront of global efforts to mobilize resources and sustain the attention of the world community on the urgent need to fight hunger and ensure food security for all. It provides a neutral forum for all member countries to conduct negotiations for developing treaties, protocols, codes, and standards that govern production, exchange, and trade of agricultural commodities.

FAO helps developing countries improve agricultural productivity and nutrition for the poor and undernourished by providing technical assistance, bridging the knowledge gap, and providing policy advice and support in the building of agricultural institutions. FAO's country assistance is conducted under a long-term programme framework agreed upon through a Country Programming Framework (CPF).

The following UN organizations assist developing countries in undertaking targeted agricultural development programmes and projects within the broader context of development activities in the framework of poverty alleviation, achieving MDGs, environmental protection and sustainable development, and trade and investment.

- *United Nations Development Programme (UNDP)*
- *United Nations Environment Programme (UNEP)*
- *United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP)*
- *United Nations Conference on Trade and Development (UNCTAD)*.

## International financial institutions

*The World Bank (WB)*: This is the largest single source of multilateral funding for development projects and one of the strongest influences on public policy in developing countries. It lends money on concessional terms and provides technical assistance to developing countries in undertaking major agricultural projects. The World Bank's country assistance in agriculture is implemented within its framework of policies and programmes approved for funding. Its current Agricultural Action Plan (2010-2012)

focuses on implementing the *Agriculture-for-Development* agenda contained in its 2008 World Development Report.

*Asian Development Bank (ADB)*: The ADB lends money and provides technical assistance with a regional focus within its long-term strategic framework. In 2009, the ADB approved the Operational Plan for Sustainable Food Security in Asia and the Pacific within its strategic framework 2008-2020. The plan adopts a multi-sector approach to removing key constraints on food security, particularly those affecting the poor, women, and other vulnerable groups.

*International Fund for Agricultural Development (IFAD)*: The Fund lends money on highly concessional terms to increase the access of smallholder farmers to credit, agricultural employment opportunities and income levels, with a special focus on women farmers within its framework of policies and programmes for assistance. Its strategic framework 2011-2015 focuses on enabling poor rural people to improve their food security, raise their incomes and strengthen their resilience.

### **Consortium of Consultative Group on International Agricultural Research (CGIAR) Centers**

This is the largest global network that coordinates cutting-edge scientific research aimed at developing modern technologies for increasing productivity and environmental sustainability of agricultural production in developing countries. The consortium is funded by developing and industrialized country governments, foundations, and international and regional organizations. It includes the following 15 member institutions:

- *International Food Policy Research Institute (IFPRI), Washington, D.C., USA*
- *International Rice Research Institute (IRRI), Los Banos, Philippines*
- *International Maize and Wheat Improvement Center (CIMMYT), Mexico City, Mexico*
- *International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), Patancheru, India*
- *International Potato Center (CIP), Lima, Peru*
- *International Institute of Tropical Agriculture (IITA), Ibadan, Nigeria*
- *International Centre for Tropical Agriculture (CIAT), Cali, Colombia*
- *International Livestock Research Institute (ILRI), Nairobi, Kenya*
- *International Centre for Agricultural Research in the Dry Areas, (ICARDA), Aleppo, Syria*
- *Centre for International Forestry Research (CIFOR), Bogor, Indonesia*
- *World Agroforestry Centre, Nairobi, Kenya*
- *WorldFish Center, Penang, Malaysia*
- *Biodiversity International, Rome, Italy*
- *International Water Management Institute, Colombo, Sri Lanka*
- *Africa Rice Center WARDA, Cotonou, Benin*

A brief description of the governance of the CGIAR-funded global agricultural research is given in Box 1.

### **Box 1 A more responsive consultative group on international agricultural research**

The Consultative Group on International Agricultural Research (CGIAR), with its 15 international research centers, offers much needed economies of scale in research. Many developing countries may be too small to achieve efficient scale in research and development, except in adaptive research. In addition, private sector research often doesn't focus on crops that are crucial for the poor (e.g. cassava, millet and beans).

The CGIAR continues to offer significant knowledge and expertise for increasing agricultural productivity and environmental sustainability in developing countries. The ongoing reorganization of the CGIAR also offers the potential to improve the relevance and responsiveness of its research effort. Performance contracts between a new CGIAR fund hosted by the WB and the consortium of CGIAR centers will provide opportunities for increasing WB investment in this global partnership.

Performance contracts binding the CGIAR centers to the consortium, and the consortium to the fund, will include mega-programmes expected to bring about increased coordination among donors. They, together with other stakeholders, will be actively engaged in the formulation of the research strategy through various means, including a biennial Global Conference on Agricultural Research for Development. An independent science and partnership council will provide advice to the fund.

*Source:* World Bank. 2009. *Implementing Agriculture for Development*. World Bank Group Agriculture Action Plan (2010-2012).

## **International Research Institutions outside the CGIAR System**

*The World Vegetable Center (AVRDC):* This is a non-profit research and development institution, funded by national governments and major private foundations with headquarters in Taiwan Province of China, that focuses on the alleviation of poverty and malnutrition in the developing world through the increased production and consumption of safe vegetables.

*International Fertilizer Development Center (IFDC):* A non-profit international organization that focuses on increasing and sustaining food security and agricultural productivity in developing countries through the development and transfer of effective and environmentally sound crop nutrient technology and agribusiness expertise.

*International Development Research Center (IDRC):* A public institution funded by the government of Canada to help developing countries use science and technology to find practical, long-term solutions to the social, economic and environmental problems they face. Support for small-agriculture and food security constitutes a major programme of IDRC's portfolio.

*Agricultural Research for Development (CIRAD):* This is a French research centre that works with developing countries to generate and pass on new knowledge, support agricultural development and fuel the debate on the main global issues concerning agriculture.

*International Service for the Acquisition of Agri-Biotech Applications (ISAAA)*: This is a non-profit international organization that shares the benefits of crop biotechnology to various stakeholders, particularly resource-poor farmers in developing countries, through knowledge-sharing initiatives and the transfer and delivery of proprietary biotechnology applications.

### **Convention on Biological Diversity (CBD)**

This is an international agreement, signed by 168 nations and managed by its secretariat located in Montreal, Canada, that addresses the conservation of biological diversity, the sustainable use of its components, and the fair and equitable sharing of benefits arising from the use of genetic resources. The CBD adopted the following two agreements to help achieve its goals.

The *Cartagena Protocol on Biosafety*. This aims at ensuring the safe handling, transport and use of living modified organisms (LMOs) resulting from modern biotechnology that may have adverse effects on biological diversity, taking also into account risks to human health.

The *Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization*. This aims at sharing the benefits arising from the utilization of genetic resources in a fair and equitable way, including by appropriate access to genetic resources and by appropriate transfer of relevant technologies. It takes into account all rights over those resources and technologies, and appropriate funding, thereby contributing to the conservation of biological diversity and the sustainable use of its components.

### **International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA)**

This treaty is the only operational international agreement of a legally binding nature with the overall goal of achieving global food security through the conservation and the sustainable use of crop diversity. It also regulates exchanges of a number of the most important food crops and thereby substantially facilitates access to crop varieties and their components for agricultural research and breeding of new varieties.

### **International Plant Protection Convention (IPPC)**

This sets international standards for phytosanitary measures to be adopted by governments to govern the trade in plants and plant products, and to manage associated phytosanitary risks. It also facilitates information exchange and provides technical assistance for capacity building.

### **Codex Alimentarius Commission**

This is a joint FAO/WHO commission that focuses on developing food standards, guidelines, and related texts such as codes of practice. The main purposes of this commission are protecting health of the consumers and ensuring fair trade practices in the food trade, and promoting coordination of all food standards work undertaken by international governmental and NGOs.

## **International Union for the Protection of New Varieties of Plants (UPOV)**

This is an inter-governmental organization established under the UPOV convention in 1961 that was revised last in 1991. The main purpose of the convention is to ensure that members of the union acknowledge the achievement of breeders of new varieties of plants, by granting to them an intellectual property right on the basis of a set of clearly defined principles. The main activities of UPOV are concerned with promoting international harmonization and cooperation, mainly between its members, and with assisting countries and certain organizations in the introduction of the UPOV system of plant variety protection.

## **Regional grouping of countries outside the UN system**

- *Organization of Economic Cooperation and Development (OECD)*
- *European Union (EU)*
- *Association of Southeast Asian Nations (ASEAN)*
- *South Asian Association for Regional Cooperation (SAARC)*

## **Development assistance institutions of major donor countries**

- *United States Agency for International Development (USAID)*
- *Canadian International Development Agency (CIDA)*
- *United Kingdom Department for International Development (DFID)*
- *German Agency for International Cooperation (GIZ)*
- *Netherlands Directorate for International Cooperation (DGIS)*
- *Swiss Agency for Development and Cooperation (SDC)*
- *Swedish International Development Agency (SIDA)*
- *Norwegian International Development Agency (NORAD)*
- *Danish International Development Agency (DANIDA)*
- *Japan International Cooperation Agency (JICA)*
- *Australian Centre for International Agricultural Research (ACIAR)*

## **International private foundations**

*Bill and Melinda Gates Foundation:* Agricultural development is the largest initiative of the foundation's global development programme. Since launching the programme in 2006, the foundation has made more than US\$1.4 billion in agricultural development grants to help small farmers, predominantly women farmers in sub-Saharan Africa and South Asia, boost their productivity, increase their incomes and improve their lives.

*Syngenta Foundation for Sustainable Agriculture (SFSA):* This is a non-profit organization established by Syngenta under Swiss law. The foundation works with partners in developing countries and emerging markets to help small farmers by extending science-based know-how, facilitating access to quality inputs, and linking smallholders to markets in profitable ways. This adds value for rural communities and sustainably improves food security.

*Rockefeller Foundation:* The Foundation supports initiatives in developing climate change resilience and strengthening food security for smallholder farmers.

### **International industry organizations**

*The Asia and Pacific Seed Association:* This is the largest regional seed association in the world that promotes quality seed production and marketing in the Asia-Pacific region by fostering technical cooperation among seed enterprises in the region, formulating recommendations on seed policy issues, and exchanging information on various aspects of seed.

*International Seed Federation:* This aims to facilitate the international movement of seed, related know-how and technology, to mobilize and represent the seed industry at a global level, and to promote the interests and the image of the seed industry.

*International Seed Testing Association:* The primary purpose of the association is to develop, adopt, and publish standard procedures for sampling and testing seeds, and to promote uniform application of these procedures for evaluation of seeds moving in international trade.

### **Global corporate agriculture sector**

The key players in the global corporate agriculture sector are: Monsanto, Bayer Crop Science, Syngenta, Dow Agro, and Novartis. These companies are well-known for pioneering the commercial cultivation of transgenic (also called genetically modified (GM) or biotech) crops in 1996. Their focus was limited to a few crops – maize, soybean, canola oilseed, and cotton – and the traits modified enabled insect resistance and herbicide tolerance. The cultivation of these crops rapidly expanded principally in the Americas – Argentina, Brazil, Canada, and United States – because of the large economies of scale that these companies enjoyed through marketing improved seed and brand agrochemicals in a single technology package and the supportive regulatory framework for biotechnological applications in these countries. The cultivated area under transgenic crops worldwide increased to 1 billion hectares in 2010.<sup>6</sup>

Commercial cultivation of GM crops in developing countries is limited to Bt cotton, mostly in India and China. Public policy toward GM crops, particularly GM food crops, remains deeply mired in confusion and ambivalence driven by widespread public hostility to the notion of introducing GM crops in their food systems. Governments are struggling to sustain even the middle-of-the-ground policy option of rigorous case-by-case scientific assessment for food and environmental safety of all submissions involving the use of transgenic technology before granting formal approval to any GM crop for commercial cultivation. Confronted with widespread public protest, the government of India was forced to impose an indefinite moratorium on the cultivation of a biotech food crop, Bt brinjal, in 2010 even though its cultivation was cleared by the country's biotechnology regulator.

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<sup>6</sup> James, Clive. 2010. Global status of commercialized biotech/GM crops: 2010. *ISAAA Brief No. 42*. ISAAA: Ithaca, NY.

Multinational companies are gradually adapting to the realities of the markets for biotechnology products in the developing world and have adopted several approaches to shape public opinion and overcome stiff resistance to acceptance of transgenic technology in these countries. One approach is to seek strategic alliance with local companies. For example, Monsanto opened its first subsidiary company outside the US, Monsanto India, and a joint venture company, Mahyco-Monsanto, with Mahyco, a large private-sector seed company with extensive operations in the Indian seed market. This company promoted the cultivation of Bt cotton in India. In China, the introduction of Bt cotton was more of an effort of indigenous technology, although Monsanto at a later stage collaborated with the Chinese Academy of Agricultural Sciences (CAAS) to develop a new generation of Bt cotton varieties. Similarly, Syngenta opened its Indian subsidiary company, Syngenta India Limited, that primarily focuses on hybrid varieties of maize and vegetable crops.

The other approach is to step aside from the conventional rigid business model and seek ways to work more closely with smallholder farmers through an appropriate subsidiary organization (for example, the Syngenta Foundation for Sustainable Agriculture) or through partnership with the international agricultural research centres. For example, in 2010 Syngenta entered into a public-private partnership with CIMMYT to focus on the development and advancement of technology in wheat through joint research and development in the areas of native and GM traits, hybrid wheat and the combination of seeds and crop protection to accelerate plant yield performance.<sup>7</sup>

It also concluded a five-year collaborative programme with CIMMYT to develop drought-tolerant maize for smallholder farmers in Asia called “Affordable, Accessible Maize for Asia”. The programme seeks to cross drought-tolerant African maize developed by CIMMYT with Syngenta varieties bred for Asia, applying Syngenta’s genetic mapping technology to speed and refine the selection of high-yielding, drought-tolerant maize varieties.<sup>8</sup>

These approaches of the multinational companies to work with smallholder farmers addressing their concerns within the framework of a long-term, broad-based, public-private partnership are expected to create an environment for allaying public skepticism. It would also bolster public confidence in the tools of modern biotechnology to address the production constraints of smallholder farming.

## Agricultural governance – challenges

Governance systems for agriculture and food in developing countries of the Asia-Pacific region are at a crossroads. Major challenges facing these systems are:

- reversing the slowdown in the growth of agricultural productivity and stimulating sustainable growth adequate to meet present and future demands for agricultural products;

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<sup>7</sup> Syngenta and CIMMYT establish industry-leading partnership, Syngenta Media Release, 6 April 2010. (Available at <http://www2.Syngenta.com/en/media/mediarelease>).

<sup>8</sup> <http://www.cimmyt.org>



- developing policy options to respond to continuing volatility in food prices and seeking options to keep food prices affordable for a vast majority of limited-income and poor people who are net buyers of food. Real food commodity prices are forecast to be on average about 25 percent higher during 2009-2018 than over the 1997-2006 period, driven by higher demand for biofuels and for livestock products;<sup>9</sup>
- devising adequate scientific, technical, policy, and institutional options to address effectively the fallout arising from a degraded and shrinking natural resource base – water, soil, land, biological diversity;
- building resilience against the increase in frequency of extreme weather events impacting agriculture and rural livelihoods on unprecedented scales by means of adaptation and mitigation measures;
- making the participation and contribution of the national systems in the global systems of governance for food and agriculture effective and multipronged so as to harness the maximum benefit for their agricultural systems.

An inadequate response to these challenges constitutes a crisis of governance. It comes at a time when there is a need for countries to manage the transition of their agricultural systems from the paradigm of the green revolution to one that takes a holistic view of agricultural growth and its sustainability, equity, and efficiency with a focus on improving the productivity of smallholder farming.

The urgency of this transformation is driven by the need for a dramatic increase in food production by 2050 to feed a population in the region projected by the UN Population Division in 2007 to grow to 5.1 billion at 1.4 percent annually and which surpasses the growth rate of productivity for key food cereals – 0.8 percent for rice and 0.2 percent for wheat during 1997-2007.<sup>10</sup>

This increase must come from a shrinking resource base – water, land, soil, energy – because of a decrease in availability or competition from other non-agricultural uses, namely urbanization, industrial development and production of bio-energy crops. The onus therefore will be on boosting crop productivity, as evident from an FAO estimate that suggests that global food production must increase through yield increase by at least 43 percent to meet food demand by 2030, assuming all other factors remain unchanged.

Governance systems for food and agriculture in developing countries suffer many of the same challenges that affect overall governance systems in these countries. These are: low institutional capacity; lack of political and economic stability; weak democratization processes; poor accountability and transparency; corruption; limited voice of the poor, women and minorities, particularly in rural areas; lack of participation and access to information; and poor rule of law.

Increasing globalization of the agri-food system poses a specific governance challenge at the national level. Faced with complex issues, there is little institutional capacity, for instance, to formulate appropriate policies and regulatory guidelines for agribusiness companies, for transboundary movement and local testing of exotic genetic resources and biotechnology

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<sup>9</sup> World Bank. 2009. Implementing agriculture for development. World Bank Group Agriculture Action Plan: FY 2010-2012.

<sup>10</sup> FAO. 2010. Increasing crop productivity for sustainable food security in the region. Paper presented at the thirtieth FAO Regional Conference for Asia and the Pacific, Gyeongju, Republic of Korea, 27 September – 1 October 2010.

products, to frame appropriate national policy responses or participate in the ongoing processes associated with relevant international agreements.

A main challenge of the agricultural governance systems in many countries of the Asia-Pacific region is to refocus on smallholder farmers and increase the productivity of smallholder farming as the concept of sustainability occupies the centre stage of the evolving paradigm of agricultural development.

## Chapter 2

### Principles of good governance

#### Learning objectives

At the end of the presentation, participants will be able to:

- Understand the key principles that define the quality of governance;
- understand how different measures are used to assess the quality of governance;
- focus on incorporating the principles of good governance in project design as required by major international development partners; and
- link the principles of good governance with the output and outcome of agricultural development projects.

## Introduction

The concept of governance has become inextricably linked with “good governance” in the context of focusing project activities on achieving stated objectives within the stipulated time frame and with the allocated resources. Major international financial institutions and development partners now have in-built mechanisms in project design that requires countries to put adequate governance measures in place before their project-based aid and loans are released.

ADB in its long-term strategic framework 2008-2020 (Strategy 2020) reaffirmed its support for good governance and capacity building by: (i) further mainstreaming four elements of good governance (accountability, transparency, participation and predictability) into its operations and activities; (ii) linking its anti-corruption efforts to broader support for governance; and (iii) effectively increasing private sector investments by improving governance, curtailing official corruption, and helping to make public institutions and organizations more capable. The ADB, at the project preparation stage involving its assistance, conducts governance risk assessment surrounding concerned organizations or agencies using an extensive indicative list of questions (the Governance Checklist).<sup>11</sup>

FAO under its Technical Cooperation Programme (TCP) envisages the description of governance requirements in standard project document format under section 4 “Implementation and Management Arrangements” and Section 5 “Oversight, Monitoring, Management Information, and Reporting”.<sup>12</sup>

## Principles of good governance

The United Nations regards good governance as having eight major principles:<sup>13</sup>

1. Participation
2. Consensus-orientation
3. Accountability
4. Transparency
5. Responsiveness
6. Equity and inclusiveness
7. Effectiveness and efficiency
8. Consistency with the rule of law.

Good governance assures that corruption is minimized, the views of minorities and marginalized groups are taken into account and that the voices of the most vulnerable in society are heard in decision making. It is also responsive to the present and future needs of society.

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<sup>11</sup> Mulqueeny, K. 2010. Governance and Anti-corruption in Project Design: Office of the General Counsel Guide, Asian Development Bank. Mandaluyong City, Philippines.

<sup>12</sup> FAO. 2007. Technical Cooperation Programme: Standard project document format, Technical Cooperation Department, June.

<sup>13</sup> UNESCAP. No Date. What is good governance? United Nations Economic and Social Commission for Asia and the Pacific.

## ***Participation***

The principle of participation is derived from an acceptance that people are at the heart of development. They are not only the ultimate beneficiaries of development, but are also the agents of development. In the latter capacity, they act through groups or associations, for example trade unions, chambers of commerce, NGOs, political parties and as individuals they act through letters to newspaper editors, by participating in radio and television talk shows and by voting. Since development is both for and by people, they need to have access to the institutions that promote it, for example representative bureaucracies.<sup>14</sup> Participation by both men and women is a cornerstone of good governance. Participation could be either direct or through legitimate intermediate institutions or representatives. It is important to point out that representative democracy does not necessarily mean that the concerns of the most vulnerable in society would be taken automatically into consideration in decision making. Participation needs to be informed and organized.

This means freedom of association and expression on the one hand and an organized civil society on the other hand.

## ***Rule of law***

The rule of law encompasses well-defined rights and duties, as well as mechanisms for enforcing them, and settling disputes in an impartial manner. It requires the state and its subsidiary agencies to be as much bound by and answerable to the legal system as are private individuals and enterprises. Impartial enforcement of laws requires an independent judiciary and an impartial and incorruptible police force.

The importance of rule-based systems for economic life is obvious. They are an essential component of the environment within which economic actors plan and take investment decisions. To the extent, therefore, that legal frameworks help ensure that business risks can be assessed rationally, transaction costs are lowered and governmental arbitrariness is minimized, they should prove conducive to risk taking, growth, and development. In contrast, the capricious application of rules generates uncertainty and inhibits the growth of private sector initiatives. Regulatory uncertainty also tends to raise the cost of capital by increasing the risk of investment.

## ***Transparency***

Transparency means that decisions taken and their enforcement is done in a manner that follows rules and regulations. It also means that information is freely available and directly accessible to those who will be affected by such decisions and their enforcement. It also means that enough information is provided and that it is provided in easily understandable forms and media.

## ***Responsiveness***

Good governance requires that institutions and processes try to serve all stakeholders within a reasonable timeframe.

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<sup>14</sup> ADB. 1995. Governance: Sound development management, Asian Development Bank.

### **Consensus orientation**

There are several actors and as many viewpoints in any society. Good governance requires mediation of the different interests in society to reach a broad consensus on what is in the best interest of the whole community and how this can be achieved. It also requires a broad and long-term perspective on what is needed for sustainable human development and how to achieve the goals of such development. This can only result from an understanding of the historical, cultural and social contexts of the society or community.

### **Equity and inclusiveness**

A society's well-being depends on ensuring that all its members feel that they have a stake in it and do not feel excluded from the mainstream of society. This requires that all groups, but particularly the most vulnerable, have opportunities to improve or maintain their well being.

### **Effectiveness and efficiency**

Good governance means that processes and institutions produce results that meet the needs of society while making the best use of resources at their disposal. The concept of efficiency in the context of good governance also covers the sustainable use of natural resources and the protection of the environment.

### **Accountability**

Accountability is a key requirement of good governance. Not only governmental institutions, but also the private sector and civil society organizations must be accountable to the public and to their institutional stakeholders. Who is accountable to whom varies depending on whether decisions or actions taken are internal or external to an organization or institution. In general, an organization or an institution is accountable to those who will be affected by its decisions or actions. Accountability cannot be enforced without transparency and the rule of law.

## **Assessment of governance: The World Bank approach**

The World Bank, based on a long-standing research programme to reflect the principles of governance in a quantitative measure of the quality of governance, has developed six aggregate indicators known as "Worldwide Governance Indicator (WGI).<sup>15</sup> These are defined as:

1. *Voice and accountability (VA)* – measuring the extent to which a country's citizens are able to participate in selecting their government, as well as freedom of expression, freedom of association, and a free media.
2. *Political stability and absence of violence (PV)* – measuring perceptions of the likelihood that the government will be destabilized or overthrown by unconstitutional or violent means, including terrorism.

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<sup>15</sup> Kraufmann, D. & Kraay, A. 2002. Growth without governance. World Bank Policy Research Working Paper No. 2928.

3. *Government effectiveness (GE)* – measuring the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies.
4. *Regulatory quality (RQ)* – measuring the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development.
5. *Rule of law (RL)* – measuring the extent to which government agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, the police, and the courts, as well as the likelihood of crime and violence.
6. *Control of corruption (CC)* – measuring the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as “capture” of the state by elites and private interests.

Beginning in 1996, the assessment of WGI now covers 213 countries. These indicators combine the views of a large number of enterprise, citizen and expert survey respondents in industrial and developing countries. The individual data sources underlying the aggregate indicators are drawn from a diverse variety of survey institutes, think tanks, NGOs, and international organizations.<sup>16</sup>

This approach to assessment of governance quality across countries over time has allowed donors to link development with good governance. It has also provided political activists and reformers with a comprehensive database for conducting analyses and drawing comparisons so as to demand from governments corrective action in areas where the quality of governance is declining.

World Governance Indicators for selected countries are illustrated in Table 1, with higher values corresponding to better governance outcomes. As is evident from the table, whereas the performance of a particular country on overall governance may not be good, its performance in some areas of governance may be good. This could help governments to prioritize area-specific investment of efforts and resources so as to achieve improvement of overall governance.

## Other governance assessments<sup>17</sup>

Other assessments are available that provide both quantitative and qualitative data on governance. Most other assessments are either country specific or involve several countries. These are:

- Overseas Development Institute's (ODI) World Governance Assessment (WGA). This relies on six principles that are not country or region-specific but reflect universal human values. These are: participation, fairness, decency, accountability, transparency, and efficiency.

<sup>16</sup> <http://info.worldbank.org/governance/wgi/index.asp>

<sup>17</sup> Governance assessment: Overview of governance assessment frameworks and results from the 2006 World Governance Assessment Report from ODI Learning Workshop, 15 February 2007. (Available at <http://www.odi.org.uk/resources/download/1321.pdf>).

**Table 1. The state of governance in selected countries of the Asia-Pacific region (2008)<sup>18</sup>**

Country	Variable						Overall governance
	PV	GE	VA	RQ	RL	CC	
Afghanistan	-2.64	-1.31	-1.26	-1.58	-2.01	-1.64	-1.74
Bangladesh	-1.54	-0.77	-0.61	-0.82	-0.70	-1.10	-0.92
Bhutan	0.89	0.11	-0.73	-0.86	0.37	0.72	0.08
Cambodia	-0.27	-0.81	-0.94	-0.47	-1.08	-1.14	-0.78
India	-0.99	-0.03	0.45	-0.21	0.12	-0.37	-0.17
Indonesia	-1.00	-0.29	-0.14	-0.27	-0.66	-0.64	-0.50
Lao PDR	-0.01	-0.84	-1.71	-1.25	-0.90	-1.23	-0.99
Malaysia	0.13	1.13	-0.58	0.27	0.49	0.14	0.26
Myanmar	-1.56	-1.68	-2.24	-2.24	-1.48	-1.69	-1.82
Nepal	-1.69	-0.75	-0.79	-0.66	-0.76	-0.68	-0.89
Pakistan	-2.61	-0.73	-1.01	-0.47	-0.92	-0.77	-1.09
Philippines	-1.41	0.00	-0.20	-0.05	-0.49	-0.75	-0.48
Samoa	1.11	-0.07	0.63	-0.43	0.74	0.24	0.37
Solomon Island	0.12	-0.79	0.19	-1.31	-0.78	-0.41	-0.50
Sri Lanka	-2.04	-0.29	-0.44	0.28	-0.01	-0.15	-0.54
Thailand	-1.19	0.11	-0.56	0.26	-0.03	-0.38	-0.30
Tonga	0.21	-0.41	-0.08	-0.75	0.13	-0.73	-0.27
Viet Nam	0.32	-0.31	-1.62	-0.53	-0.43	-0.76	-0.56
<b>Asia-Pacific region</b>	-0.83	-0.08	-0.74	-0.34	-0.30	0.59	-0.29
<b>South Asia</b>	-1.27	-0.24	0.05	-0.39	-0.16	0.54	-0.25
<b>Southeast Asia</b>	-0.85	-0.27	-0.66	-0.37	-0.55	-0.41	-0.52

Note: PV – Political stability and absence of violence; GE – Government effectiveness; VA – Voice and accountability; RQ – Regulatory quality; RL – Rule of law; CC – Control of corruption; Overall governance – average of six indicators.

- United Nations Development Programme's (UNDP) Governance Indicators Project (GIP), which covers four countries worldwide and focuses on such dimensions as parliamentary development, electoral systems, human rights, justice, access to information, decentralization and local government, and administrative reforms.
- Organization for Economic Cooperation and Development's (OECD) Metagora Project, which covers five countries in Africa and eight in Latin America. It focuses on such dimensions as corruption (perception, experience, distribution and trends); state of law (constitution, control, respect); business environment (free market effectiveness).

<sup>18</sup> Worldwide governance indicators. (Available at <http://info.worldbank.org/governance/wgi/index.asp>).



- United States Agency for International Development's (USAID) Democracy and Governance Assessment Framework. This provides a flexible strategic assessment framework designed to assess the state of democracy and to programme choices. It offers an approach for analyzing country – specific political conditions and crafting targeted programme strategies with counterparts. The framework has four district stages – political system (consensus, rule of law, competition, inclusion and good governance); key actors, institutions, and implementations.
- Netherlands' Strategic Governance and Corruption Assessment (SGACA): This covers 35 countries and focuses on such dimensions as power and change analysis, foundational factors (political stability), rules of the game/institutions, and key actors/current issues.
- United Kingdom Department for International Development's (DFID) Country Governance Assessment (CGA). This focuses on capability (stability, regulation, trade/growth, effectiveness, security), accountability (transparency, free media, rule of law, elections), responsiveness (rights/liberties, pro-poor, equality, regulation, corruption).
- Other initiatives developed by research institutions. Key independent initiatives are: Freedom House's Freedom in the World (evaluating political and civil liberties), Institute for Democracy and Electoral Assistance (IDEA)/Human Rights Centre's Democracy Assessment (DA), and the Polity IV Project (University of Maryland).



## Chapter 3

# Agricultural governance in the context of sustainable intensification of smallholder crop production

### Learning objectives

At the end of the presentation, participants will be able to:

- Understand the context for moving the paradigm of agricultural development toward sustainable crop production intensification (SCPI);
- develop a clear insight into the ecological principles and operational framework of SCPI in the context of smallholder farming;
- understand the critical role of governance in putting in place systems and structures for moving ahead in SCPI;
- identify the key areas for focusing governance measures to facilitate expansion of SCPI approaches; and
- understand how governance tools can be applied effectively in project-based implementation of SCPI approaches.

## Introduction

Small farms have been defined in a number of ways. The most common measure is farm size with many sources defining small farms as those with less than two hectares of crop land, as did the WB in its 2008 World Development Report. Others describe small farms as those depending on household members for most of the labour or those with a subsistence orientation, where the primary aim of the farm is to produce the bulk of the household's consumption of staple foods.<sup>19</sup> Yet others define small farms as those with limited resources including land, capital, skills and labour.

Small farms constitute the backbone of Asian farming. It is estimated that about 87 percent of the world's 500 million small farms (less than 2 ha) are in the Asia-Pacific region.<sup>20</sup> China and India alone account for 193 million and 93 million small farms, respectively. Three other Asian countries with a large number of small farms are Indonesia (17 million), Bangladesh (17 million) and Viet Nam (10 million).

The average size of operational holdings (actual area cultivated) is only 0.5 hectares in Bangladesh, 0.8 hectares in Nepal and Sri Lanka, 1.4 hectares in India and 3.0 hectares in Pakistan. About 81 percent of farms in India have land holdings of less than 2 hectares, whereas their share in total cultivated area is about 44 percent. In China 95 percent of farms are smaller than two hectares. In Nepal 93 percent of operational holdings are operated by small farmers (<2 ha) covering 69 percent of the cultivated area. In Bangladesh, small farms account for 96 percent of operational holdings with a share of 69 percent of cultivated area. In Pacific islands countries and territories, smallholder farmers constitute 79 percent of all farms.<sup>21</sup>

Smallholders' contribution to the total value of agricultural output is also significant in many countries of Asia. For example, in India their contribution to total farm output exceeds 50 percent although they cultivate only 44 percent of land. Many studies have also confirmed the inverse relationship between farm size and productivity per hectare. Small farmers are characterized by smaller applications of capital but higher use of labour and other family-owned inputs, and a generally higher index of cropping intensity and diversification.<sup>22</sup>

Increasing the productivity of smallholder farming and making it resilient to climate change is the key to reinvigorating growth in agricultural production in countries of the Asia-Pacific region.

## What is sustainable crop production intensification?

Sustainable crop production intensification (SCPI) essentially implies two concepts – sustainability and intensification – blended in a single operational mode so as to reap maximum benefits that both concepts promise for increasing agricultural production while preserving the natural resource base. SCPI embodies a new paradigm aimed at producing

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<sup>19</sup> Hazell, P., C. Poulton, S. Wiggins, & A. Dorward. 2007. The Future of small farms for poverty reduction and growth. International Food Policy Research Institute (IFPRI) 2020 Discussion Paper 42, May 2007. Washington, D.C.

<sup>20</sup> Ibid.

<sup>21</sup> Singh P., Umar M., & Bhati J. 2011. Strengthening governance of crop agriculture to enhance competitiveness of smallholder farmers in Pacific Island Countries. Report of the Expert Consultation on Small-Farmer Focused Good Governance in Crop Agriculture in Asia and the Pacific, FAO/RAP (In Press).

<sup>22</sup> Thapa G. & Gaiha R. 2011. Smallholder farming in Asia and the Pacific: Challenges and opportunities. Paper presented at the IFAD Conference on New Directions for Smallholder Agriculture, 24-25 January, 2011.

more from the same area of land while conserving resources, reducing negative impacts on the environment and enhancing natural capital and the flow of ecosystem services (FAO's "Save and grow" strategy).

This strategy is based on the application of an ecosystem approach that seeks integrated management of land, water and living resources aimed at their conservation, sustainable use, and in an equitable way. FAO provides an operational mode of this strategy based on four principles (Box 2):

### **Box 2 Framework for sustainable crop production intensification (SCPI)**

This comprises:

1. Increasing agricultural productivity through improved use of resources (for example, soil, water, plant genetic resources) to achieve higher yields while promoting the sustainability of production and farming systems
2. enhancing sustainable crop protection with a focus on pest and pesticide-related issues
3. managing biodiversity and ecosystem services, including through identification and use of mechanisms for valuing agricultural biodiversity and ecosystem services, and sound agronomic and land management practices
4. strengthening livelihoods using the benefits of increased productivity and diversification within the value chain.

*Source:* FAO. 2010. Sustainable crop production intensification through an ecosystem approach and an enabling environment: Capturing efficiency through ecosystem services and management. Rome.

As is evident from the definition, SCPI is more knowledge-intensive and requires an understanding of the ecological ramifications of applying innovative technologies and accommodating location-specific considerations to fine-tune interventions. This helps the search for maximum benefits and the minimization of contradictions inherent in striving for both sustainability and intensification in a single operational approach.

A limited number of countries have made significant policy shifts towards sustainable agriculture. China's 11<sup>th</sup> Five-Year Plan (2006-2010) emphasizes the need to reduce the environmental impact of agriculture, and calls for the development of the production base for green and organic foods, greater adoption of water-saving and conservation agriculture (CA), and the promotion of "ecological agriculture" – a combination of environmentally beneficial integrated traditional and modern techniques. Many other countries have policies relative to some elements of sustainable intensification. The Philippines' government, for example, stopped its fertilizer subsidy programme in 2009 and it has introduced a "balanced fertilization strategy" aimed at promoting the use and management of location-specific combinations of inorganic and organic fertilizers. In Brazil, the federal government supports zero-tillage and conservation farming with tax incentives for CA farmers. In India, the government provides support for watershed and soil management and incentives for biofertilizers. The government supports the system of rice intensification (SRI), particularly in the state of Bihar, provides subsidies for zero-till planters and supports CA, particularly in rice-wheat areas. Indonesia has

banned selected pesticides and has a national programme in place for farmer field schools and IPM in rice production.<sup>23</sup>

## Management of ecosystem services – key to sustainable crop production intensification

Ecosystem services are supporting (e.g. nutrient cycling); provisioning (e.g. food); regulating (e.g. pollination, climate regulation, pest and disease regulation); and cultural (e.g. educational). Practices that harness ecosystem services and contribute to sustainability of production systems include the following:

- Conservation agriculture (CA): Described in Box 3.

### Box 3 Conservation agriculture

Conservation agriculture (CA) is an approach to managing agro-ecosystems for improved and sustained productivity, increased profits and food security while preserving and enhancing the resource base and the environment. CA is characterized by three linked principles, namely:

1. Continuous minimum mechanical soil disturbance;
2. permanent organic soil cover; and
3. diversification of crop species grown in sequences and/or associations.

CA principles are universally applicable to all agricultural landscapes and land uses with locally adapted practices. CA enhances biodiversity and natural biological processes above and below the ground surface. Soil interventions such as mechanical tillage are reduced to an absolute minimum or avoided, and external inputs such as agrochemicals and plant nutrients of mineral or organic origin are applied optimally and in ways and quantities that do not interfere with, or disrupt, the biological processes.

CA facilitates good agronomy, such as timely operations, and improves overall land husbandry for rainfed and irrigated production. Complemented by other known good practices, including the use of quality seeds, and integrated pest, nutrient, weed and water management, CA is a base for sustainable agricultural production intensification. It opens increased options for integration of production sectors, such as crop-livestock integration and the integration of trees and pastures into agricultural landscapes.

- Integrated pest management (IPM): In well-managed farming systems, crop losses to insects can often be kept to an acceptable minimum by deploying resistant varieties, conserving predators and managing crop nutrient levels to reduce insect reproduction. Recommended measures against diseases include use of clean planting material, crop rotations to suppress pathogens, and eliminating infected host plants.
- Integrated plant nutrient management (IPNM): Production efficiencies are gained through integrated nutrient management practices promoting the combined use of mineral, organic and biological resources in a reasoned way to balance efficient use of limited/finite resources and ensure ecosystem sustainability against nutrient

<sup>23</sup> IFAD. 2010. *Rural poverty report, 2011. New realities and new challenges: new opportunities for tomorrow's generation*, pp. 163-166.

mining and degradation of soil and water resources. For example, efficient fertilizer use requires that correct quantities be applied (overuse of nitrogen (N) fertilizer risks disrupting the natural N-cycle), and that the application method minimizes losses to air and/or water. Options exist for incorporating fertilizer into the soil directly (rather than broadcasting). Equally, plant nutrient status during the growing season can be better monitored using leaf-colour charts, and adaptively managing fertilizer application accordingly.<sup>24</sup>

- Agricultural water management: It is directed at enhancing moisture storage in the crop root zone, increasing soil water storage capacity, improving water infiltration and minimizing evaporation through organic mulching, on-farm runoff management, including the use of water retaining bunds in cultivated areas, uniformity of distribution and application efficiency of irrigation water, and knowledge-based precision irrigation for reliable and flexible water application.
- Crop-livestock systems: Integrated crop-livestock production, widely practiced in smallholder farming, allows more efficient use of nutrients and resources boosting profitability and resilience of smallholder farming systems.
- Agroforestry systems: Growing woody perennials in combination with annual crops allows more productive utilization of arable land, including degraded land and problem soils, improving soil fertility through biological nitrogen fixation and conserving moisture, and providing biomass for use as surface residues.
- Integrated weed management: Effective weed management entails timely manual weeding, minimized tillage and the use of surface residues. When necessary, lower risk synthetic pesticides should be used for targeted control, in the right quantity and at the right time.
- Pollinator management: The ecosystem service provided by animal pollination can be considered an agricultural input that can have a high impact on yield of crops and also helps to ensure quality seed and fruit set, and contributes substantially to the global economy for horticultural crops. For example, pollinator populations can be encouraged by conserving diverse cropping patterns in farms, for example by combining mixed cropping, including cover crops, kitchen gardens and agroforestry systems, and providing habitats on farms for bees. At the landscape level, areas of natural vegetation in close proximity to farmland are beneficial for crop production, and such habitat patches provide flowering resources and nesting sites that sustain pollinators.

These practices are not new. Some of them, particularly IPM and IPNM constitute part of the existing research and extension agenda of the NARES in many developing countries of the Asia-Pacific region. Large-scale government IPM programmes are operational in more than 60 countries, including Brazil, China, India and most developed countries. There is a general scientific consensus that IPM works and provides the basis for protecting SCPI.<sup>25</sup>

However, the new element is the complementarity between the different approaches when applied together in a systems approach, rather than an isolated use of best practices. Applied together, or in various combinations, these practices contribute to important ecosystems

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<sup>24</sup> FAO. 2011. An ecosystem approach to sustainable crop production intensification – a conceptual framework.

<sup>25</sup> IAASTD. 2009. *Agriculture at the crossroads*, by B.D. McIntyre, H.R. Herren, J. Wakhungu & R.T. Watson, eds. Washington, D.C.

services and work synergistically to produce positive outcomes in terms of factor and overall productivity. For example, for a given amount of rainfall, soil moisture availability to plants depends on how the soil surface, soil organic matter and plant root systems are managed. Water productivity under good soil moisture supply is enhanced when soils are healthy and plant nutrition is adequate. Good water infiltration and soil cover also minimize surface evaporation and maximize water use efficiency and productivity, in which the plants' own capacity to absorb and use water also plays a role (FAO's "Save and grow" strategy).

But research and extension (R&E) activities in these areas are often conducted through donor-supported projects piloting new concepts and temporary management structures are put in place for pooling resources and achieving better coordination in implementing activities. Scaling up of these approaches will require their integration into the core research agenda and transforming the *ad hoc* mechanisms of project management into durable institutional structures.

### **How FAO's approach to sustainable production intensification builds on existing practices**

FAO adopts a mission mode for scaling up these initiatives with a renewed emphasis on understanding biological processes in distinct agro-ecological settings that allow capturing efficiencies in the use of inputs and minimizing their negative environmental impacts through harnessing ecosystem services and ecosystem management. It focuses on putting in place systems and structures to support its new strategic framework, adopted at the FAO Conference in 2009, of which Strategic Objective A is the sustainable intensification of crop production. As illustrated earlier in Box 2, FAO identified four thrust areas for moving ahead in providing member countries with technical and policy assistance for initiating long-term activities structured in a programme framework for SCPI.

FAO in its policy document *sustainable crop production intensification through an ecosystem approach and an enabling environment* (COAG/2010/3) proposed a 15-year (2010-2025) programme for investment in research, technology development and knowledge dissemination to help member countries to embark on SCPI. This initiative of FAO represents a milestone in undertaking concerted effort to shift the paradigm of agricultural development to more sustainable practices and methods. Consistent with this approach, the FAO Regional Office for Asia and the Pacific in partnership with the International Rice Research Institute (IRRI) launched a consultation with the South Asian Association for Regional Cooperation (SAARC) member countries on 10-11 March 2011 to develop a regional coordinated project "Increasing rice production and productivity in under-exploited areas of South Asian countries" with the application of practices and approaches of SCPI.

Enhancement of environmental services and sustainability is also one of the five focal areas that the World Bank Group identified for investment in its Agriculture Action Plan (2010-2012). This provides a solid platform for countries to seek funding assistance and technical support in implementing projects under the rubric of sustainable intensification.

SCPI, when effectively implemented and supported, will provide the "win-win" outcomes required from the dual challenges of feeding the world's population and saving the planet. SCPI will allow countries to plan, develop, and manage agricultural production without



jeopardizing the right of future generations to enjoy the full range of environmental goods and services.<sup>26</sup>

## Project-based initiatives toward sustainable crop production intensification

To foster sustainable intensification of cereal-based cropping systems in the Indo-Gangetic Plains of South Asia and sub-tropical regions of India covering four countries – Bangladesh, India, Nepal, and Pakistan – IRRI in partnership with the CIMMYT, ILRI, IFPRI and public-private sector partners in the participating countries is implementing a regional coordinated project “Cereal systems initiative for South Asia (CSISA)” over the period 2009-2011. The project will focus on developing and transferring component technologies of sustainable crop intensification. These include zero-till establishment of wheat, maize, and other crops (after rice), laser land leveling, site-specific nutrient management (SSNM) for balanced and efficient fertilizer application (to rice, wheat, maize), alternate wetting and drying (controlled irrigation management) for rice, direct seeding for rice, crop residue management, new diagnostic tools for management of micronutrients, particularly Zn for grain enrichment in rice and wheat, permanent bed and furrow systems to foster water use efficiency and crop diversification, practices for addressing emerging soil fertility/soil health problems resulting from diversification and intensification of rice-based cropping systems.<sup>27</sup>

In Africa, CIMMYT with funding assistance from the ACIAR and the Association for Strengthening Agricultural Research in East and Central Africa (ASARECA) is implementing a coordinated project “Sustainable intensification of maize-legume cropping systems for food security in Eastern and Southern Africa (SIMILESA)” over the period 2010-2013. The project is implemented in the countries of Eastern and Southern Africa – Ethiopia, Kenya, Tanzania, Malawi, Mozambique, Republic of South Africa, and Uganda.

The project will promote technologies and practices associated with conservation agriculture: weed control, seeding into untilled soil, residue maintenance, fertilization strategies for CA systems including biological nitrogen fixation, appropriate legume/maize varieties.<sup>28</sup>

Farmers’ groups and NGOs too, experiment with and advocate greater institutional and policy space for agricultural practices emphasizing sustainability. Such practices, for example the SRI with support from national governments are expanding (Box 4).

CA is now widely used in Latin America, where more than 50 million hectares are now under no-tillage systems in Argentina and Brazil, and in parts of Paraguay 70 percent of the land is under no-tillage. In the Indo-Gangetic plains of India, some 620 000 farmers are applying no-tillage systems for winter wheat, using locally made zero-tillage drills, on some 1.8 million hectares. In sub-Saharan Africa too, CA is spreading, and in countries such as Ghana and Zambia, between 200 000 and 300 000 farmers are applying elements of CA practices.

<sup>26</sup> FAO. 2011. *Save and grow*. (Available at <http://www.fao.org/ag/save-and-grow/en/1/index.html>).

<sup>27</sup> Cereal Systems Initiative for South Asia. (See <http://sites.google.com/site/CSISAportal>).

<sup>28</sup> Australian Centre for International Agricultural Research, SIMILESA Programme. (See <http://aci-ar.gov.au>).

#### Box 4 The system of rice intensification

SRI is a resource-conserving, but intensifying set of practices designed for well-watered environments. Developed in 1983 in Madagascar, its key principles are that rice seedlings should be transplanted when young, and widely spaced to permit more growth of roots and canopy. Rice field soils should be kept moist rather than saturated. Farmers are encouraged to experiment with these, to adapt them to local conditions and satisfy themselves that they are beneficial. Although some varieties respond better than others to SRI methods, it is claimed that increased yield is achieved with 80 to 90 percent reductions in seed requirements and 25 to 50 percent less irrigation water. Supporters of SRI report other benefits – resistance to pests and diseases, resistance to drought and storm damage, less pollution of soil and water resources, and reduced methane emissions. The benefits of SRI have now been documented in more than 40 countries in Asia, Africa and Latin America. In Cambodia, more than 80 000 families now use SRI practices, which are reported as leading to a doubling of rice yields, substantial reductions in the use of fertilizers and agrochemicals, and increases in farm profits of 300 percent. Governments in the largest rice producing countries (China, India and Indonesia) are now supporting SRI extension and committed to significant expansion of SRI rice.

Source: Adapted from IFAD World Poverty Report, 2011.

The broadest assessment of sustainable agricultural approaches in developing countries to date is based on a study of 286 initiatives in 57 poor countries, covering 12.6 million farms on 37 million hectares. According to this study, virtually all these initiatives have increased productivity, while improving the supply of critical environmental services. Out of 198 sampled yield comparisons, the mean yield increase over four years was 79 percent, all crops showed water-use efficiency gains, the practices sequestered carbon, and most of those projects with data substantially reduced pesticide use while increasing yields. Yield increases occurred through one or more of three mechanisms: (i) introduction or intensification of a single component of the farm system (a dairy cow, fish ponds, fish/shrimp in paddy rice, new crops, a vegetable garden, agroforestry); (ii) better use of natural resources to increase total farm production, be it water (water harvesting, better use of irrigation water) or land (reclaiming degraded land); and (iii) improvements in yields of staple crops by introducing new regenerative elements such as legumes, conservation agriculture, or integrated pest management.<sup>29</sup>

With policy support and adequate funding, SCPI could be implemented over large production areas in a relatively short period of time. The challenge facing policy-makers is to find effective ways of scaling up sustainable intensification so that eventually hundreds of millions of people can benefit. In practical terms, the key implementation stages include:

- Assessing potential negative impacts on the agro-ecosystem of current agricultural practices. This might involve quantitative assessment for specific indicators and reviewing plans with stakeholders at the district or provincial levels;
- deciding at national level which production systems are potentially unsustainable and therefore require priority attention and which areas of ecosystem sustainability (e.g. soil health, water quality, conservation of biodiversity) are priorities for intervention;

<sup>29</sup> Pretty, J., A.D. Noble, D. Bossio, J. Dixon, R.E. Hine, F.W.T. Penning de Vries, & J.I.L. Morison. 2006. Resource-conserving agriculture increases yields in developing countries. *Environment Science and Technology* 40(4): 1114-1119.

- working with farmers to validate and adapt technologies that address those priorities in an integrated way, and using the experience to prepare plans for investment and to develop appropriate institutions and policies;
- rolling out programmes (with technical assistance and enabling policies) based on the approaches and technologies contained in this resource; and
- monitoring, evaluating and reviewing progress and making on-course adjustments where required.

## Elements of governance and how they facilitate sustainable crop production intensification

Minimizing the human footprint on managed ecosystems and making greater use of the ecosystem services that eventually translate into resource use efficiency and benefits for smallholder farmers can be done by improved use of resources, sustainable crop protection and managing biodiversity and ecosystem services.

### *Improved use of resources*

The use of resources can be improved by:

- Strengthening institutional capacity to undertake crop improvement programmes that are complex in their use of genetic resources; applying tools of scientific breeding; and addressing challenges posed by the increasing scarcity of natural resources (soil, land, water) suitable for use in agriculture and by climate change;
- building capacity to engage a broad range of stakeholders (private sector, NGOs, community-based organizations, farmers' associations, women's organizations, etc.) and feed the inputs of consultative procedures into programme planning, priority setting, performance review, and budget allocation to ensure new varieties are demand-driven;
- redesigning approaches to soil management by reducing the environmental impact of soil tillage and promoting an input supply sector to serve no-till technologies to the farmers;
- redesigning approaches to conducting breeding research with more emphasis on decentralization and participatory approaches, including farmer-participatory breeding;
- revamping the seed supply systems, particularly farmers' access to quality seeds at an affordable price; protection against fraud for seeds sold at premium prices; and enhancement of the quality of traditional sources of seed, namely farmers' own saved seeds and farmer-to-farmer exchange of seeds; and
- simplifying and accelerating the variety release and seed multiplication processes with the involvement of an extensive and decentralized network of trained seed growers and private sector agribusiness companies.

### *Sustainable crop protection*

Crops can be better protected by:

- Scaling up research on IPM by integrating it into existing core programme research often funded through donor-supported projects;

- continuing investing in farmer’s training on adoption and use of IPM technologies that are knowledge-intensive and location-specific;
- exercising greater regulatory oversight on import, registration, and use of chemical pesticides; and
- rationalizing the use of pesticides by improving methods of pesticide application in conjunction with approaches for integrated nutrient management.

### **Managing biodiversity and ecosystem services**

- Fostering a cross-sectoral approach and effective coordination across institutions responsible for the development of sound agronomic practices that, in combination, harness ecosystem services, such as, CA, IPNM, IPM, agricultural water management, crop-livestock systems, agro-forestry systems, etc. should be a priority. This can be carried out by interministerial coordination committees embedded in a high-level hierarchy of public agricultural administration, technical committees at the field level including local level extension and research workers, farmers, producer organizations, women’s organizations, NGOs, civil society organizations, and agribusiness. The involvement of a wide range of stakeholders at the grassroots level enhances participation, will inject a sharp focus on location-specific problems, and foster ownership of the results by target beneficiaries. All of these processes eventually contribute to improving voice and accountability – two key components of good governance.<sup>30</sup> Other measures are:
  - Create agricultural market policies that favour diversity in crops and production sectors on farms and within regions.
  - Shift the focus in management of agricultural biodiversity from conservation to seeking uses that benefit livelihoods and undertake crop improvement programmes aimed at incorporating new traits to boost resilience of farming systems in the face of emerging threats.
  - Emphasize a decentralized approach to inventorying biodiversity resources and to farmer-participatory evaluation of their value as sources of income generation or potential uses to address important production constraints in their farming systems.
  - Strengthen participatory approaches for *in-situ* and on-farm conservation of plant resources for food and agriculture.
  - Institute a decentralized approach to inventorying biodiversity resources and to farmer-participatory evaluation of their value as sources of income generation or potential uses to address important production constraints in their farming systems. Such an approach backed by greater efforts on on-farm conservation of biodiversity resources with participation of primary stakeholders will create conditions for using biodiversity in the promotion of SCPI.
  - Consider options for payment (or compensation) to smallholder farmers, livestock producers and poor rural communities for environmental services (PES) to provide incentives for adoption of sustainable agricultural intensification

<sup>30</sup> Dasgupta, S. 2011. *Promote improved awareness and understanding the problems of agricultural governance that directly affect small-farmers’ wellbeing and strategy to improve governance in crop sector in line with FAO’s strategic objective A*. Report of the expert consultation on small farmer-focused good governance in crop agriculture in Asia and the Pacific, FAO Regional Office for Asia and the Pacific, Bangkok (In Press).

practices, for example, watershed management to provide high-quality water, biodiversity functions, and above all, carbon sequestration.

### *Cross-cutting issues*

- Forge greater coordination at the decision-making level across the sectoral ministries in the public agricultural administration in the form of interministerial coordination/steering committees; technical committees at the field level including local level extension and research workers, farmers, producer organizations, women's organizations, NGOs, CSOs, and agribusiness.
- Develop institutional structures at the local level to facilitate participatory processes at the grassroots level that lend primary stakeholders a larger voice and greater influence over decision making and programme implementation by the public sector agricultural services.
- Delegate adequate authority, in the framework of ongoing processes of administrative reform, to local units of the public agricultural service for effective decentralization of participatory technology development and assessment and service provision to farmers.
- Build adequate national capacity for policy analysis, formulation and change to efficiently manage a knowledge-intensive process of agricultural transformation and effectively participate in global governance systems for food and agriculture.
- Improve managerial skills, knowledge and technical competence of officials in the public agricultural administrative system. Such knowledge and skills are important for managing policy analysis, formulation and change processes, for effectively handling consultative and deliberative mechanisms involving a broad range of national and international stakeholders in a labyrinth of global and regional treaties, conventions, and codes that regulate different aspects of SCPI.
- Modernize the regulatory system consisting of laws, rules, codes, and regulations to create incentives for the private sector to make investment and assume a greater role in providing farmers with quality inputs and services.
- Develop a sound policy framework outlining long-term goals and investment needs in the sustainable crop production sector – CA, IPM, IPNM, irrigation water use, seeds and genetic resources for food and agriculture, biodiversity conservation and use.
- Establish adequate incentives and risk mitigation measures for a shift to sustainable intensification to take place. This requires, in particular, more secure land tenure to encourage long-term investments, conducive pricing and regulations for the use of natural resources and agricultural inputs, and support for the development of markets.
- Strengthen agricultural education, research and advisory services, and foster more collaborative dynamics among smallholders, researchers and service providers. The focus should be on innovation, joint problem-solving, systemic approaches to agriculture and context-focused knowledge production and sharing.
- Introduce greater transparency and accountability in public financial management in such areas as preparation of budgets, procurement of supplies, preparation and processing of bidding documents and floating of tender, award of contracts and payment of contractors' bills, cost overruns, and expenses in unapproved line items.

These are the areas most often implicated in widespread corruption involving public officials.

Stringent anticorruption measures in public spending will be critically important to mobilize funding resources because transition to sustainable crop intensification practices will require substantial investments in new infrastructure and the refurbishment of old infrastructure, development of technology along the value chain, and training for adoption of knowledge-intensive technologies. Pilferage of public resources in the implementation of these activities will frustrate efforts to build essential structures to support sustainable intensification of crop production.

## Monitoring and evaluation as tools of governance in sustainable crop production intensification

Monitoring and evaluation (M&E), as a governance tool, is central to the success or failure of project implementation. A clear understanding about the importance of M&E during project design sets the stage for deciding on other governance tools – implementation arrangements with descriptions of organizational roles and responsibilities; lines of authority and mechanisms of inter-agency coordination; measures of accountability and reporting requirements; financial management, including procurement of supplies and contractual services and audit of expenditures. The role of M&E is particularly important in piloting specific approaches so as to draw lessons and corrective actions before their scaling up for larger impact and replication over wider geographical areas. M&E constitutes an important element in FAO's proposed programme (2010-2025) on SCPI through an ecosystem approach and an enabling environment.

M&E systems are designed to inform project management of whether implementation is going as planned or corrective action is needed. A well-designed M&E system provides data on the progress of a project and whether it is meeting objectives. These data may indicate that adjustments are required in the project to take into account different circumstances in the local environment.<sup>31</sup> IFAD places M&E at the heart of “managing for impact”, by which is meant the need to respond to changing circumstances and increased understanding, and managing adaptively so that the project is more likely to achieve its intended impacts.<sup>32</sup>

Although M&E are usually discussed in tandem, they serve distinct yet complementary functions. The role of monitoring is seen as one of regular and continuous tracking of inputs, outputs, outcomes, and impacts of development activities against targets. It determines whether adequate implementation progress has been made to achieve outcomes, and provides management with information to enhance implementation. Unlike monitoring, evaluation is seen as attempting to establish attribution and causality, and serve as a basis for accountability and learning by staff, management and clients. Information from evaluation is to be used to develop new directions, policies and procedures. Despite their distinct roles, M&E processes in practice overlap and need to function as an integrated system.<sup>33</sup>

<sup>31</sup> World Bank. 2006. *Agricultural investment sourcebook*. Module 12 Scaling up agricultural investments in the Bank's changing internal environment. Washington, D.C.

<sup>32</sup> IFAD. 2002. *Managing for impact in rural development: A guide for project M&E*. Rome.

<sup>33</sup> Muller-Praefcke, D., Lai K.C., & Sorenson W. 2010. *The use of monitoring and evaluation in agricultural and rural development projects. Best Practices in investment design*. FAO/INB, Rome.

M&E systems of agriculture and rural development projects have generally incorporated combinations of the following elements and/or approaches, which are by no means mutually exclusive: Logical framework (logframe) approach; results-based framework (simplified logframe); formal surveys; rapid appraisal methods; participatory methods; impact evaluation; cost-benefit and cost-effectiveness analysis.<sup>34</sup>

## How utility of M&E can be enhanced in project implementation

**Integrating M&E with the project management system:** First and foremost is striking an appropriate balance between M&E's role of fostering accountability, empowerment, and knowledge generation, on the one hand, and of providing more immediate operational and strategic management support, on the other.

**Clarity about what to monitor and evaluate:** Crucially important for an effective M&E system is the choice of what to track, document and analyse, and who should be involved in this. Concepts for deciding what to monitor and evaluate are: relevance, cost-effectiveness, efficiency, results-orientation, and sustainability of the system.

**Participation and stakeholder-orientation at the core of M&E:** The project M&E should be participatory in that its operation is intended not only to meet accountability requirements of the government or financing institution, but is a shared responsibility, providing a common resource for information gathering, exchange, communication, and mutual learning for all stakeholders.

**Multiple information gathering techniques and sources:** Both qualitative and quantitative approaches have their place in the project M&E system and it would be unwise to rely solely on one or the other. The former tend to be more informal and participatory, but ought to be used in conjunction with the latter.

**Linking project design, annual work plans and budgets and M&E:** Project design and re-design are ongoing processes, the more so for projects of a pilot or innovative nature. Both must go hand in hand with determining realistically the project's M&E requirements. An invaluable aid for this is the logframe matrix.

**Proactive communication and dissemination:** An information system has little relevance if it does not form part of the wider action and decision-making system. Critical to the utility of M&E is good communication and feedback of findings to the intended users.

## How to design M&E systems

**Setting out the basic M&E framework:** In line with the recommended approaches above, a results-based, participatory, and stakeholder-oriented M&E framework should be defined. Essential features of the M&E framework to be elaborated include:

- A comprehensive M&E strategy, including an impact evaluation strategy, clearly indicating roles and responsibilities of implementing and coordinating agencies (and, where applicable, community based organizations), information requirements, specific tools and methodologies for data collection, analysis and reporting; and the necessary institutional arrangements, including functional linkages with management/ coordination units and steering committees;

<sup>34</sup> World Bank. 2004. *Monitoring and evaluation: Some tools, methods and approaches*. OED. Washington, D.C.

- a set of component-specific performance indicators for the entire results chain – distinguishing between input, output and outcome indicators, to measure success or failure towards achieving each component's results. As part of the participatory approach, several iterations, involving a series of stakeholder consultations may be necessary to agree on the indicators. Precise targets, especially quantitative ones, and timelines may have to be decided only at the time of project inception or during implementation, in conjunction with annual work planning.

**Specifying system objectives:** The operational objectives of the M&E system are an integral part of the M&E framework. These will need to be specified and agreement sought amongst project stakeholders. They should ideally be accompanied by a set of M&E system outcomes, which are subject to monitoring as for any other project component.

**Defining the M&E programme structure.** The overall structure of the M&E programme over the entire project implementation period will need to be defined, covering specific tasks, timelines, responsibilities, focus and scope of the processes. It may be appropriate in some situations to treat the activities spelled out below under separate subsystems:

- Routine monitoring reports, providing the main basis for regular internal reviews as well as work plans and budgets and their approval, by implementing agencies, project coordinators, supervisors, steering committees, and beneficiaries themselves. These need to be supported by a systematic database geared towards archival, consolidation and speedy retrieval of information for decision making, the establishment and management of which would require specialized staff with a background in ICT/MIS operations.
- Ongoing, periodic evaluations and adhoc/special studies, including baseline and follow-up surveys, and other diagnostic and in-depth studies (some triggered by monitoring report findings), to support both internal and external reviews, including mid-term and implementation completion reviews. A combination of “hard” skills, such as in statistical survey design, as well as “soft” skills in participatory methods and stakeholder facilitation, e.g. conducting focus group meetings, should ideally be available.

**Drafting M&E programme plan and cost estimation:** In line with the programme structure, a time-bound plan, detailing activities for specific elements of the M&E system/subsystems should be carried out broken down into annual, half-yearly, quarterly or monthly activities.

## How to tailor M&E findings to reporting requirements

- Reporting arrangements should be kept simple but flexible enough to be tailored to the specific needs of each user. Some reports may need to focus on each component/subcomponent or implementing agency separately, whereas others need to cover the entire project in a less detailed overview of all project components.
- Stakeholders must be aware of the existence of the information and must be able to easily access it.
- Communication between the M&E units of each implementing agency, and between these units and each agency's management and the overall project management, is vitally important.



- In order that M&E systems serve as a public accountability and transparency instrument, the information that the systems produce should be easily accessible. ICT can be used cost effectively for this purpose, especially the Internet.
- An easily accessible information system serves as a powerful incentive for the different stakeholders to pay attention to and make use of M&E information. Performance can be easily measured and tracked and the resulting assessments can be widely circulated within government and publicly.

*Although developing a conducive policy environment is primarily the responsibility of governments, developing capabilities for sustainable intensification requires building coalitions, sharing responsibilities and creating synergies among governments, civil society, the private sector and – above all – farmers and their organizations (IFAD World Poverty Report, 2011).*



## Chapter 4

### Agricultural governance in the context of sustainable crop diversification

#### Learning objectives

At the end of the presentation, participants will be able to:

- Understand how crop diversification contributes to enhancing sustainable crop production intensification, increasing income and strengthening livelihood security of smallholder farmers;
- understand key policy trade-offs in stimulating diversification in intensive cereal-based crop production systems;
- analyse specific contexts for considering options for sustainable crop diversification;
- identify governance challenges in creating sustainable mechanisms for undertaking initiatives in sustainable crop diversification; and
- suggest appropriate governance measures to respond to challenges of crop diversification in smallholder farming, including upstream diversification through agro- processing and value addition.

## What is crop diversification?

Crop diversification leads to diversity in cropping practices and broadens the crop base in smallholder farming. The objective is to help smallholder farmers manage various risks in their livelihoods, reduce vulnerabilities of their food production systems to unexpected shocks and weather-related fluctuations, boost household farm incomes and maintain food security.

This can be done by adding more crops to the existing cropping systems resulting in an increase of cropping intensity. This system of horizontal diversification has been able to increase food production potential to over 30 t/ha with an increase of the cropping intensity from 400 to 500 percent.<sup>35</sup> The other type, vertical crop diversification, is defined as expansion of post-harvest activities including processing and transformation industries to enable food crops to be sorted, graded, processed into both food and industrial products, packed, stored, and moved to domestic or export markets.<sup>36</sup>

However, crop diversification is not just about multiple cropping where farmers can grow more of the same crop, for example, intensive rice-rice, rice-wheat cropping systems. In crop diversification, farmers introduce new crops taking into account their economic returns and other opportunities that may improve their livelihoods.

## How crop diversification fits the paradigm of sustainable crop production intensification

Crop diversification is an integral part of SCPI and promotes SCPI by focusing on crops that:

- Require less water and other inputs of non-renewable energy thereby minimizing their environmental footprint and allowing opportunities for bringing rainfed, salt-affected, and other marginal lands under profitable crop cultivation;
- make efficient use of available plant nutrients through the adoption of improved technologies of delivering fertilizer nutrients and by harnessing biological processes in the soil and improves soil quality;
- are underutilized, and as a result, the genetic diversity of these crops and valuable traditional knowledge about their profitable uses are threatened with erosion;
- promise a variety of innovative options for integration and synergy with other components of smallholder farming systems – livestock, fisheries, agroforestry – that boost ecological resilience and sustainability of smallholder crop production systems;
- offer a means of adaptation to climate change effects by allowing flexibility in timing of crop management practices; and
- have the potential to strengthen livelihoods using the benefits of increased productivity and diversification within the value chain through downstream linkages with potential for employment and income generation.

Crop diversification has emerged as a significant driver of agricultural growth in many countries of the Asia-Pacific region since the late 1980s when governments across the region embarked

<sup>35</sup> Gunasena H.P.M. 2001. Intensification of crop diversification in the Asia-Pacific region, FAO Regional Office for Asia and Pacific, 2001/03, pp. 156-165.

<sup>36</sup> Hedley, D.D. 1987. Diversification: Concepts and directions in Indonesian agricultural policy. In Bottema, J.W.T., Dauphin, F., & Gijsbers, G. (eds). 1987. Soybean research and development in Indonesia, CGPRT No. 10. The CGPRT Centre, Bogor.

on programmes of structural adjustment of their economies. This led to easing of restrictions on and simplification of procedures for private sector investment, including in agroprocessing and export-oriented food manufacturing. In India, the share of crop diversification to growth in agriculture was impressive with diversification to horticultural crops accounting for 56.26 percent growth in the 1980s and 60.69 percent in the 1990s.<sup>37</sup>

## Pattern of crop diversification

Crop diversification in most countries of the Asia-Pacific region took place with the replacement of food grain crops with non-food grain crops – oilseeds, pulses, fruits, vegetables, root and tuber crops, spices, sugarcane – substituting mainly coarse cereals. It was driven by changes in both supply (government policy initiatives and incentives) and demand (rising incomes, growing urbanization, the emergence of an affluent middle class and associated changes of food habits toward processed, convenience, and snack foods).

Diversification in the crop sector was more prominent in those parts of the developing world that recorded higher agricultural growth during the green revolution and moved swiftly to non-cereal crops triggering further agricultural growth. It also had distinct intra-country regional variations depending on the diversity of agro-climatic and socio-economic conditions. In regions less developed in irrigation and relying on rainfall, cultivation of pulses, oilseeds, and high-value crops such as fruits and vegetables gained momentum. In regions with developed irrigation facilities and the availability of high yielding technologies, cultivation of rice and wheat expanded replacing pulses and coarse grains. Maize cultivation also picked up mostly as poultry feed in regions that witnessed substantial growth in poultry farming.

Between 1994 and 2004, China had the highest rate of growth of fruit production (7.5 percent) followed by Indonesia (4.5 percent) and Australia (4.1 percent). China also contributed 16 percent of the total global production of fruits. Thailand, Bangladesh and Pakistan show less diversity compared to other countries.<sup>38</sup>

Governments almost everywhere in the developing world came up with an array of best-fit interventions through institutional support and policy initiatives to stimulate crop diversification and shape its emergence as a contributor to agricultural growth in their countries. International development assistance played a prominent role in supporting governments' initiatives for crop diversification.

In India, ADB implemented the Agribusiness Development Support Project. Bangladesh undertook its first comprehensive crop diversification effort at the beginning of the 1990s with implementation of the CIDA-supported Crop Diversification Project later continued and expanded with ADB assistance. A second crop diversification project (2010-2015) is now under formulation with ADB assistance. In Nepal, a crop diversification project was implemented with ADB's assistance between 2001 and 2008 followed by a crop diversification and commercialization project that ended in 2010. Crop diversification programmes in Southeast Asian countries were oriented more toward export-oriented processing of fruits and vegetables. Viet Nam implemented an agroprocessing and post-harvest technology project in 2003 with the assistance of the AusAID. ITC/Swiss-Sweden funded development of Viet Nam's

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<sup>37</sup> Joshi, P.K., A. Gulati, P.S. BIRTHAL & P. Parthasarthy Rao. 2005. *Agricultural diversification and vertical integration in India: Will smallholders participate?* MTID. International Food Policy Research Institute, Washington, D.C.

<sup>38</sup> Shome S. 2009. An analysis of crop diversification: Experience in the Asia-Pacific region. ICFAI University. *Journal of Agricultural Economics*, 6 (1), pp.1-20.

export strategy in the fruit and vegetable sector. Export of processed fruit and vegetables accounted for a rising share of agricultural exports in countries like Thailand, Philippines, Indonesia, and Malaysia.

However the pace of crop diversification suffered a setback following drastic shortages of staple food cereals in world markets and the resultant spiralling of food prices in 2008 that led to unprecedented citizens' unrest and food riots. The trust in market efficiency for the allocation of food supplies to developing regions of the world was greatly shattered. Governments in many countries were forced to revisit the concept of "self-sufficiency in food staples", which they had abandoned in favour of "self-reliance" in the wake of trade liberalization and structural reforms of their economies. A renewed emphasis on cultivation of grain cereals through protectionist measures and policy biases runs the risk of slowing down diversification in the crop sector in the Asia-Pacific region.

### Key trade-offs in crop diversification in smallholder farming

- Crop diversification in the context of smallholder farming in developing regions of the world is mostly a switch from cultivation of grain cereals to non-cereals, the durability of which is determined by relative advantages in efficiency of production and competitiveness offered by technological innovations, price signals, favourable climatic conditions, policy support, institutional arrangements and infrastructural development. Taking in to account specific factors:
  - ◆ In land-scarce countries, particularly those experiencing rapid transformation with almost non-existent opportunities for bringing new lands under cultivation and an overriding focus on grain cereals, small farmers' readiness to diversify in well-endowed areas largely depends on the availability of suitable technologies (short-duration high yielding varieties) that allow crops targeted for diversification to find a niche in existing cereal-based cropping systems.
  - ◆ Sustainable diversification in favour of non-cereals (pulses, oilseeds, vegetables, fruits, potato, sugarcane, spices, floriculture, medicinal plants, etc.) through replacement of grain cereals in these areas will be a viable option if policy biases toward cereal crops are withdrawn and the competitiveness and comparative advantage of alternative crops relative to grain cereals is improved through technological innovations and remunerative prices, which can be achieved through efficient marketing.

To compensate for the potential shortfall of areas under cereal cropping because of reallocation to alternative crops, new technologies (improved varieties and innovative management practices) will be needed to increase and sustain the productivity of rice and wheat to levels much higher than the present ones so that the aggregate production of key cereal staples doesn't leave an unbridgeable gap between demand and supply and thus making fragile the basis of national food security.
  - ◆ Farmers in rainfed areas, drylands, salt-affected and other marginal areas have more freedom to choose from alternative crops because there is less competition from grain cereal crops.
- Switching from production of grain cereals to high-value crops is labour-intensive and thus more suitable for smallholders.

- High-value agricultural commodities are perishable, their markets are fragmented, so there is high volatility in their prices, and high market risk.
- Smallholder farmers have low volumes of marketable surplus and the land they cultivate is mostly located in remote areas with poorly developed infrastructure. As a result, they face high transaction costs and risks in production and marketing of such commodities.
- They also face poor access to credit, and stringent food safety and quality standards. Nevertheless, diversification toward high-value agricultural crops within the context of smallholder farming can be sustainable if they can be connected to the upstream processes of value addition through agroprocessing and export markets by eliminating the weaknesses identified in the chain of linkages between production and marketing.

## Crop diversification – the role of governance

There are a number of key governance challenges in crop diversification:

- A sound institutional framework in the public sector agricultural administration needs to be provided to undertake focused activities and coordinate with other government institutions and private sector initiatives. This will help to promote diversification of the crop sector within the overall objective of increasing the production of key food staples vital for food security.

The task of coordination is particularly daunting because crop diversification, to be effective and sustainable, requires: multipronged interventions from various government ministries and departments responsible for public works and rural infrastructure; enterprise development in agroprocessing and export; supply chain management; international trade and export promotion; facilitating investment including foreign direct investment (FDI); and public-private partnerships in agro-industries and agroprocessing. A top-level interministerial coordination committee on crop diversification accountable to the parliamentary committees on agriculture and rural development can be a suitable format for exercising administrative authority needed for fast-tracking decision making in the labyrinth of procedural obstacles in departmental bureaucracies.

Within the framework of its own programmes and projects, the focus of the public agricultural administration should be on:

- ♦ Strengthening the human and technical capacity for conceptualizing initiatives related to the diversification and development of concrete project documents within the framework of long-term national policy goals on crop diversification for growth in agriculture and enhancement of food security;
- ♦ maintaining continuity of major activities under donor-funded crop diversification projects upon their completion by: (i) incorporating key findings, lessons learnt, and major issues for follow up in the mainstream of agricultural research, extension, and policy-making; (ii) sustaining organizational strengths and public-private partnerships created and new linkages developed in commodity value chains; and (iii) setting new benchmarks and policy goals, and identifying opportunities for attracting new investments to expand diversification of the crop sector.

- The planning process for crop diversification must be broad-based and decentralized with functional mechanisms in place for drawing public inputs from key stakeholders – farmer’s organizations, cooperatives, producer organizations, mass organizations, and input providers. Such participatory planning is important for validating and rationalizing the key considerations in crop diversification:
  - ◆ Delineation of land area suitable for crop diversification in different agro-ecological zones of the country using scientific databases on soil type, fertility, topography, irrigation, and drainage;
  - ◆ priority ranking and targeting areas for mobilization of resources and focusing efforts;
  - ◆ choice of a number of alternative crops for promotion and identification of appropriate methods for their introduction in existing crop production systems;
  - ◆ identification of potential risks associated with crop diversification and approaches for sharing the risks of the new systems;
  - ◆ assessment of priority inputs and credit needs;
  - ◆ market support and linking to upstream supply chains;
  - ◆ appropriate mix of policy choices for both horizontal and vertical diversification.
  
- The focus of the NARES on the development of new technologies and innovations needs to be maintained and these need to be rapidly disseminated to farmers to accelerate adoption of alternative crops through improving:
  - ◆ their institutional capacity including the ability to engage a broad range of stakeholders;
  - ◆ accountability in provision of services to target clientele;
  - ◆ effectiveness and efficiency in design of programmes with both long-term perspectives and short-term action plans to capture existing opportunities and their implementation in modes reflective of consensus-building and stakeholder participation.

Strategic research programmes on crop diversification should be focused on addressing land constraints and exploring innovative technological options for increasing productivity of both key food cereals and non-food cereals in intensive crop production systems underpinning national food and nutrition security.

Technological options for horizontal diversification should be aggressively pursued in underexploited areas such as in hilly areas, rainfed and degraded land and coastal areas with a clear focus on neglected and less-utilized plants, for example, herbal medicinal and aromatic plants that have tremendous potential for value-addition through processing and export in niche markets in the developed world.

In countries with extremely limited potential for horizontal expansion of cropping, the quest for durable national food security should be built on self-reliance. This can be achieved by boosting national income and exploiting comparative advantages in vertical diversification: agroprocessing, value addition and export of processed food. Strategic research programmes for this diversification approach should focus on developing new cost-effective technologies for post-harvest waste reduction, storage, preservation, processing, and product development; and new tools for quality control and compliance.



- Administrative bottlenecks need to be removed, procedures need to be simplified, and coordination with other government ministries need to be improved to ensure that adequate public and private investments are made in development and maintenance of rural infrastructure supportive of agricultural diversification. Such infrastructure benefits farmers by reducing transaction costs and improving their bargaining power to negotiate fair prices with potential buyers. This includes:
  - ◆ roads;
  - ◆ market outlets, marketing infrastructure, and access to market information;
  - ◆ improved connectivity with urban centres and supermarkets;
  - ◆ facilities for post-harvest handling (cleaning, grading, sorting, packaging) and storage including cold storage, controlled and modified environment storage and cold-cool chains in transportation of perishable high value commodities from field to market.
- Institutional capacity must be built for scaling up of crop diversification to value-addition and agroprocessing by ensuring the regular supply of good quality raw material from farm to firm through organized production and marketing. For example:
  - ◆ Context-specific initiatives for organizing farmers into groups and cooperatives as producers of a particular commodity and link them to traders, processors, and exporters (an example is described in Box 5);
  - ◆ contract farming in which a business enterprise organizes farmers into groups and enters into contract with them to grow a particular crop of its interest with buyback arrangement and assured farm gate prices. In addition, farmers are often offered other incentives from the contracting firm such as door delivery of inputs and crop loans at low interest rates. Such a mechanism improves economy of scale by ensuring a flow of adequate raw material and lowers the production and transaction costs of farmers (an example is described in Box 6).
- Incentives through policy and administrative support to different mechanisms (for example FDI, joint venture, public-private partnership, public sector enterprise) for accelerating investment in agroprocessing must be provided. This will help to reduce wastage of commodities, increase shelf-life and durability, add value, and sell in upstream markets including export markets.
- Specialized institutions in the public sector must be established to support growth of agroprocessing industry. Exports must be promoted through building modern infrastructure and logistics for cargo handling at airports, implementing quality control and certification schemes to match quality standards of targeted export markets, branding and advertising; and building linkages of local producers with global markets.

For example, the National Horticultural Board was constituted in India to encourage the horticulture sector through coordinating production and processing of fruits and vegetables. It was followed by the Agricultural and Processed Food Products Export Development Agency to strengthen food processing and promote their export. In Viet Nam export promotion of processed fruits and vegetables is handled by Viet Nam National Vegetable Fruit and Agricultural Product Corporation (Vegetexco) and Viet Nam Trade Promotion Agency. Horticultural Export Foundation (Hortex) promotes export of vegetables and fruits in Bangladesh.

### Box 5 Grower-producer linkages in the Philippines

FAO project entitled “Technical support to agrarian reform and rural development” developed a series of coordinated programmes that led to the promotion of linkages between small-farmers and food processing enterprises.

The small farmers were new owners of land transferred under the Comprehensive Agrarian Reform Programme (CARP). The farmers were not effectively linked with the market and had limited technical and financial resources. On the other side were agribusiness firms that needed a reliable source of raw materials and partners who could meet industry requirements in terms of quality, quantity and timely delivery.

The department concerned with agrarian reform placed high priority on promoting linkages between the farmer organizations and processing enterprises. A production processing linkage based on mutual benefit therefore resulted. Farmers, through their organization, supplied raw materials to food processors, who in turn provided the steady market that offered a fair price.

Linkage instruments used were:

- Memorandum of understanding (MOU)
- Memorandum of agreement (MOA)
- Letters of intent by the buyer to indicate his desire to purchase farmer produce.

*Source:* Rolle, R. 2006. Processing of fruits and vegetables for reducing post-harvest losses and adding value *In* Post-harvest management of fruits and vegetables in the Asia-Pacific region, FAO/Asian Productivity Organization, pp. 32-42.

### Box 6 Examples of contract farming in the Asia-Pacific region

- ADB has identified a number of successful contract farming enterprises in India in the processed product sector: tomato production in Punjab, medicinal plants in Chhattisgarh, and tea and spices in Kerala. The successes are manifested in terms of higher employment, more stable prices and higher income.
- In Viet Nam there have been successes with Lam Son Sugar Company (LASUCO) and An Giang Agricultural Technical Services Company (ANTESCO) which conducts contract farming on baby corn and green soybean.
- In Indonesia's Western Java, a religious school organized about 450 local farmers to supply 20 tonnes of potatoes a year to supermarkets and wholesalers.
- Thailand has a number of successful examples of contract farming:
  - ◆ In the San Sai district, a farmers' group exports dried longan to China under contract.
  - ◆ The country's sugar crop of about four million tonnes is grown under a contract system that involves 200 000 farmers.
  - ◆ The country's snap-frozen vegetable industry for export (mainly soybean, green beans and baby corn) involves 30 000 farmers growing under contracts.

- ◆ Chrysanthemum and fresh vegetables are grown under contract for wholesalers in the Chiang Mai and Bangkok markets.
- In Bangladesh, BRAC, POSHIKA, and PRAN provide quality input supplies, technical advice and a guaranteed buy back price at harvest.
- In Sri Lanka about 15 000 rural households produce approximately 12 000 tonnes of gherkins.
- In the Pacific much of Tonga's squash production for export to Japan, and Fiji's ginger and taro exports come from a form of contract growing between the exporter and the producer.

Source: *Vinning G.S. & Young J.* 2006. Linking production and marketing of fruit and vegetables for better farm incomes in the Asia-Pacific region. In *Post-harvest management of fruits and vegetables in the Asia-Pacific region*, FAO/Asian Productivity Organization, pp. 49-69.



## Chapter 5

### **Agricultural governance: Seed supply systems and plant genetic resources (PGR) management**

#### **Learning objectives**

At the end of the presentation, participants will be able to:

- Understand the multifunctional role of seed and plant genetic resources in sustainable intensification of crop production systems;
- identify the emerging trends in the seed supply systems, and devise key institutional and policy reforms for an effective seed production and supply chain;
- apprehend the significance of the growing commercialization of the seed sector; increasing enforcement of intellectual property rights; and international agreements regulating access to seed and PGR in terms of their impact on farmers' seed systems and their unhindered access to seeds;
- understand the importance of having a suitable national response in terms of institutional and regulatory reforms to ensure adequate production and supply of quality seeds;
- identify key governance challenges, including those associated with transgenic technology, in overcoming constraints and stimulating growth in the seed sector; and
- devise appropriate governance measures to respond to identified challenges in the seed production and supply chain.

## Importance of seeds

The seed is the most important input in sustainable crop production. It encapsulates the genetic yield potential of the variety. The main role of other inputs is to create conditions that allow achieving yields as close to the genetic potential of the seed as possible, in other words, maximizing genetic yield potential of the variety or closing the *yield gap*. It is estimated that the direct contribution of quality seed alone to the total production is about 15 to 20 percent depending upon the crop and it can be further raised up to 45 percent with efficient management of other inputs.<sup>39</sup>

Seeds are distinguished by their multifunctionality. They are a commodity that can be traded, and may carry harmful organisms, and thus are the subject of business and trade policies. Seeds are carriers of genetic information that is combined with traditional or scientific knowledge, and thus the subject of policies focusing on private (intellectual property), community (traditional knowledge) and national (biological diversity) rights. Finally, as carriers of genetic information, seeds provide a tool for technology transfer and as such are able to increase output and reduce risk, and in some cases transform farming systems.

## Seed supply systems

A seed supply system is a combination of components, processes and their organization, as well as the interactions and support involved in the production and marketing of seeds. It encompasses distinct steps in the entire chain: breeding, multiplication, processing, quality control, certification, storage, and distribution.

Both formal and informal systems constitute the seed supply sector in the countries of the Asia-Pacific region. The formal seed supply system includes institutions in the public and private sectors. For the most part the formal seed supply systems in the region are carried out by the public sector through government and semi-autonomous institutions. This seed supply system is mainly concerned with the production of cereal seeds with less emphasis on other crops. Private seed companies are also involved in production and distribution of seeds. In general, the formal seed sector supplies 10 percent or less of seed requirements.

The informal seed supply systems are the major sources of seed for Asia-Pacific farmers. They are comprised of farmer-managed seed production and management systems and are based on indigenous knowledge and local diffusion systems. These systems include seeds saved from the previous harvest and farmer-to-farmer seed exchange networks.

Over 90 percent of the crops in developing countries are still planted with farmers' varieties and farm-saved seed.<sup>40</sup>

## Evolution of the seed industry

The emergence of private seed companies and seed suppliers, complementing seed parastatal firms or other forms of public seed producing activities is a relatively recent phenomenon in the Asia-Pacific region. This coincided with governments across the region revamping their seed systems and adopting new seed policies since the mid-1980s that

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<sup>39</sup> Indian Seed Sector, Seednet India. (At <http://seednet.gov.in>).

<sup>40</sup> Guei, R.S. 2010. Promoting growth and development of smallholder seed enterprises for food security crops – Case studies from Brazil, Cote d'Ivoire and India, FAO, Rome.

created favourable conditions for private sector investment in seed production and supply. Today the private sector contributes more than 40 percent of total seed production in India. It encompasses over 500 private seed companies, 24 of them with links to multinational seed companies, and many of them with their own breeding programmes.

However, the main focus of private seed companies has been on the high value crops such as hybrid cereals (e.g. maize and, in India, pearl millet), vegetables (notably in Southeast Asia) and industrial crops, such as cotton and soybean. The private sector will produce seeds of food crops only where there is sufficient demand to make it financially attractive, e.g. where there is a steady demand from relief agencies (notably in Africa) or where farming has intensified to the extent that farmers no longer save their own seeds (such as rice in parts of south and Southeast Asia). This means that seeds of many major food crops (self-fertilizing cereals and legumes) must either continue to be produced by public sector agencies (which have lost the profitable products that they formerly used to cross-subsidize production of these food crops), or must be produced by farmers themselves.<sup>41</sup>

An example of how the seed industry evolved in a developing country-context is illustrated in Box 7.

#### **Box 7 Major developments in the seed industry of Bangladesh**

- The Bangladesh Agricultural Development Corporation (BADC) was established as the public sector institution with responsibility for multiplication, production and supply of seeds of high-yielding varieties.
- In the 1970s, key crop research institutes like Bangladesh Agricultural Research Institute (BARI) and Bangladesh Rice Research Institutes (BRRRI) were established to develop new varieties of rice, wheat and other food crops and the supply of basic seeds for multiplication and distribution to farmers.
- The Seed Ordinance, the key seed law, was promulgated in 1977 (Amendments in 1997 and 2005).
- Under the structural adjustment programme initiated by the government in the 1980s that saw downsizing of the public sector role in the economy, BADC started sharing the sale of seeds, fertilizers, and agricultural equipment with private sector companies.
- The National Seed Policy was promulgated in 1993 to pave the way for development of a seed industry in the private sector.
- BADC developed a partnership with the emerging private sector by allowing private companies and traders to use its seed processing centres for a fee. The services include seed drying, cleaning, grading, storing, germination, moisture, and purity testing.
- The Seed Rule of 1998 made provisions for active participation of the private companies and NGOs in the seed sector.
- In 2003, nearly 200 tonnes of hybrid rice seeds were sold in the country by BADC and BRAC, the two main agencies involved in hybrid rice seed production. A five-year (1999-2004) project called *Poverty elimination through rice research assistance (PETRRA)* funded by UK's DFID was implemented by IRRI and this encouraged farmers to grow hybrid rice seeds. In 2010, around 1 000 tonnes of hybrid rice seed were sold in the country mainly by private sector companies.

<sup>41</sup> Louwaars, N. 2009. Seed systems and PGRFA. Background study paper for the state of the world's plant genetic resources for food and agriculture. FAO, Rome.

- The private seed sector in Bangladesh now includes over 20 domestic seed companies and their partnerships with multinational companies, 12 industry associations that promote seed business, and more than 20 NGOs with commercial operations in seed production and marketing.

*Source:* PAN AP and GRAIN. 2010. Asia's Seed Laws – Control over Farmers' Seeds. PAN AP Rice Sheet.

## Smallholder seed enterprises (SSEs)

These enterprises foster a commercial perspective in the informal seed system, in essence scaling up with the provision of entrepreneurial skills, management expertise and financial resources to local communities, farmer cooperatives, NGOs or other groups interested in producing seed for the local market. Their advantage lies in their ability to serve remote areas, work in close partnership with local farmers, produce seeds of diverse varieties including landraces, local varieties, farmer-bred varieties and populations, and thus increasing the supply of seeds of a large number of locally adapted varieties. These are the characteristics that differentiate them from large private seed companies that produce or market seeds of a limited number of varieties imported or developed through the formal plant breeding sector. Functionally, they are seen as developments in between the formal and informal seed supply systems. The FAO regards the SSEs as the best way of ensuring the availability and quality of non-hybrid seeds for food and feed crops in developing countries.

## Major steps in establishing a functional seed production and supply chain

### *Seed law and policy*

This is the entry point for most countries to provide the key governance input into shaping the development and evolution of the seed sector through developing, amending, and modernizing rules, regulations and policies. The main governance challenges at this step are to:

- Examine the validity and relevance of the mandates of the institutions created to enforce the provisions of the key seed legislation at the time of its promulgation; assess the effectiveness and efficiency of their service provision and system of accountability to the public and institutional stakeholders;
- undertake a review of the existing seed sector regulatory framework, as dictated by both domestic and external circumstances, using a broad-based consultative mechanism with active participation of the public and key stakeholders – amendments to the existing regime of controls, restrictions, collaboration, incentives, and punitive measures should reflect a broad public consensus on how to balance the interests of the public sector breeding and seed supply systems, private seed marketing and producing companies including their alliances with the global corporate seed sector, small-scale seed producing enterprises, traditional community and farmer-based seed systems with a variety of participatory approaches for enhancement and use of crop genetic resources;
- provide adequate safeguards for protecting the interests of farmer-based seed producing organizations and small-scale seed enterprises and expanding their role in the seed supply chain at each successive stage of opening up the domestic seed market with new opportunities for investment by the private sector;



- evaluate the tools, methods, procedures, costs, and institutional mechanisms for exercising technical oversight in the seed regulatory framework, for example, requirements for variety release and registration, seed quality, seed certification, seed labelling, seed import and export;
- explore opportunities for flexibility in standards and procedures that allow low-cost and alternative methods suitable for use in small-scale and farmer-based seed systems thus enhancing their competitiveness in the seed supply chain; and
- update seed policy to reflect changes in seed legislation, methods, procedures, and resources for implementation following a comprehensive process of public hearing.

### **Varietal development**

This is the key step for countries to consider strategies and methods for providing the inputs of modern science and technology into developing new seeds and improved genetic resources for further use. The main purpose is to stimulate and sustain a healthy growth in the seed sector by ensuring a steady supply of new crop varieties that farmers can use to replace older varieties and address existing or new concerns in their crop production systems. The main governance challenges at this step are to:

- Ensure that systems and processes of variety development through plant breeding in public agricultural research institutions are geared to finding solutions to existing problems and emerging challenges that inhibit sustainable growth in crop production and productivity, particularly in the context of smallholder farming;
- reorient with a greater degree of accountability the process of planning and organizing breeding programmes and projects in public scientific institutions to a bottom up approach for facilitating public inputs. A variety of participatory and consultative approaches can be adopted and can involve farmers and their organizations, local NGOs, CSOs and private sector;
- increase efficiency and effectiveness of crop breeding programmes by seeking a paradigm shift in approaches, methods, tools, and procedures with the goal of tilting the focus away from developing varieties for uniform cultivation practices over a wide geographical area to varieties that are suitable for cultivation in specific agro-ecological conditions addressing. Specific biotic and abiotic production constraints can be addressed;
- make greater use of participatory approaches – participatory varietal selection, participatory plant breeding, community seed growing, *in situ* conservation and use of landraces, traditional varieties, and other plant genetic resources – for faster and cost-effective breeding and seed multiplication; and
- strengthen capacity of national programmes to access and use crop genetic resources for breeding from a variety of sources – international gene banks and repositories, CGIAR institutions, bilateral agreement with other countries, protected varieties developed by the private sector.

## Varietal registration

The main purpose is to ensure that varieties introduced to the market are useful, distinct and help overcome the problem of the same variety being known by different names or, on the contrary, the problem of many different varieties being known by the same name.<sup>42</sup>

The main governance challenges at this step are to:

- Examine the key aspects in terms of technical requirements and procedures that influence the pace of diffusion of new varieties (and their availability to farmers) of seeds of a wide range of varieties that address the specific constraints of their farming contexts;
- recognize that compulsory registration of varieties slows the introduction of new varieties and restricts market access for landraces and farmer-developed varieties;
- understand that complex administrative procedures entail investment of extra resources in conducting trials delaying the arrival of new varieties in the market; and
- devise a registration system that is simple, time-saving, flexible and effectively caters to the needs of different segments of the seed supply chain.

Flexibility in definitions and enforcement, for example, exemption from mandatory multilocation yield trials for Value for Cultivation and Use (VCU) and trials for Distinctiveness, Uniformity and Stability (DUS) can help stimulate local and farmer-led participatory approaches in variety development and acceleration of commercializing farmer-bred varieties. Also, small-scale seed systems may not be able to afford the high cost of complying with seed certification regulations.

## Varietal protection

The key governance challenges at this step are to:

- Understand the importance of IPR in the wake of increasing commercialization of the seed sector as a result of liberalization of trade, entry into the market of private companies often in alliance with multinational companies and their growing influence, and international agreements imposing restrictions on free movement, exchange and use of seeds and associated plant genetic resources in absence of IPR protection.

Plant breeders' rights (PBRs) protect IPR in plant breeding. They grant a legal monopoly over the commercialization of new plant varieties to plant breeders, and thus allow them to try to recover the costs associated with breeding new plant varieties. The rights are granted for a limited period of time, at the end of which the variety passes into the public domain. PBR is important to private-sector involvement in breeding open-pollinating/self-pollinating crops.

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<sup>42</sup> Tripp, R. 2003. How to cultivate a commercial seed sector. Paper presented at the symposium on Sustainable Agriculture for the Sahel, Bamako, Mali, 1-5 December 2003. (Available at <http://www.syngentaoundation.org/db/1/447.pdf>).

The provisions of PBR are country-specific and described in detail in specific articles of national PVP or seed laws. An example is shown in Box 8. IPR in varietal development are protected in a number of international treaties (Box 9). The perceived benefits of IPR protection are illustrated in Box 10.

### Box 8 Scope of breeder's rights

A holder of a breeder's right shall, in respect of the registered plant variety for which the right is granted, have the right to carry out all or any of the following acts on a commercial basis:

- (a) Producing or reproducing;
- (b) conditioning for the purpose of propagation;
- (c) offering for sale;
- (d) marketing, inclusive of selling;
- (e) exporting;
- (f) importing;
- (g) stocking the material for the purposes mentioned in paragraphs (a) to (f).

#### *Protection of new plant varieties*

The breeder's right shall also extend to:

- (a) Any propagating material of the registered plant variety, harvested material of the registered plant variety and the entire plant variety or any part of a plant variety where the propagating material of that plant variety is obtained through unauthorized means from the registered plant variety;
- (b) plant varieties which are essentially derived from the registered plant variety, if the registered plant variety is not essentially derived from another plant variety;
- (c) plant varieties which are not clearly distinguishable from the registered plant variety; or
- (d) the production of other plant varieties which require the repeated use of the registered plant variety.

Source: Section 30 of the *Protection of New Plant Varieties Act 634 (2004) of Malaysia*.

### Box 9 Major treaty systems that regulate IPR in variety development

- The agreements established under the auspices of UPOV, and
- The Agreement on Trade Related Aspects of Intellectual Property Rights (TRIPs or TRIPs Agreement) included within the family of treaties administered by the WTO.

These two treaty systems each contain a comprehensive set of rules for their Member States regarding IPRs over plant varieties. In short, the UPOV treaties adopt a *sui generis* system of protection (that is, a system that is unique, or of its own kind) especially tailored to the needs of plant breeders. The TRIPs Agreement requires its Member States to protect new plant varieties using patent rights, a *sui generis* system, or some combination thereof.

Source: Helfer L.R. 2002. *Intellectual property rights in plant varieties: An overview with options for national governments*. Food and Agriculture Organization, July 2002.

### Box 10 Benefits of IPR protection

- Introduction of the UPOV system of PVP was associated with increased breeding activity and with the encouragement of new types of breeders, such as private breeders, researchers and farmer breeders.
- Introduction of PVP was associated with the development of new, protected varieties that provided improvements for farmers, growers, industry and consumers, with overall economic benefit.
- One of the benefits of PVP is to encourage the development of new, improved plant varieties that lead to improved competitiveness in foreign markets and to the development of the rural economy.
- The breeder's exemption, whereby protected plant varieties can be freely used for further plant breeding is an important feature of the UPOV system, which advances progress in plant breeding.

*Second World Seed Congress, Rome 2009.*

Other challenges are to:

- Establish a system of transparent and accountable administration staffed with trained manpower and with technical capabilities to implement national PVP laws. These include the capacity to develop and use a range of tools (forms, procedures, technical guidelines, etc.) to enforce the IPR on new plant varieties and also to comply with different IPR regimes in the context of evolving scenarios of international exchange, trade and investment in the seed industry;
- harmonize national plant variety protection systems with country obligations, as a signatory or a party as the case may be, to such international agreements as the WTO, TRIPS, CBD, FAO's ITPGRFA, UPOV to have unhindered access to improved seeds and crop genetic resources;
- facilitate growth of the emerging seed industry by capturing a larger share of the export market taking advantage of varietal protection;
- develop an appropriate instrument for governance of IPR in the national legislation. It can be enforced in the framework of the existing seed legislation and the institutional structure. It can also be in the form of separate PVP legislation and a separate national authority entrusted with its implementation (Box 11); and

### Box 11 National plant variety protection systems

India: *Protection of Plant Varieties and Farmers Rights Act, 2001* implemented by Plant Varieties and Farmers Rights (PPV&FR) Authority.

Bangladesh: *Plant Variety and Farmers' Right Protection Act, (2003, Draft)* implemented by Seed Wing, Ministry of Agriculture.

Thailand: *Plant Varieties Protection Act B.E. 2542 (1999)* implemented by the Ministry of Agriculture and Cooperatives.

Indonesia: *Plant Variety Protection Law 29 (2000)*, implemented by the Plant Variety Protection Office under the Department of Agriculture, Ministry of Agriculture.

Malaysia: *Protection of New Plant Varieties Act 634 (2004)* implemented by the Plant Varieties Board under the Department of Agriculture.

China: *Regulations of the People's Republic of China on the Protection of New Varieties of Plants (1999)* under the authority of the Ministry of Agriculture.

Philippines: *Plant Variety Protection Act (2002)* under the authority of the National Plant Variety Protection Board.

Viet Nam: *Intellectual Property Law: Rights for Plant Variety (2005)*.

Republic of Korea: *Seed Industry Law (2001)* under the authority of the Ministry of Agriculture and Forests.

- make appropriate provision in national PVP legislation for recognizing and protecting the rights of farmers that arise out of their contribution to conserving, improving and making available plant genetic resources for the development of new plant varieties.

Article 9 of the ITPGRFA, recognizes farmers' rights as "*the enormous contribution that the local and indigenous communities and farmers of all regions of the world, particularly those in the centers of origin and crop diversity, have made and will continue to make for the conservation and development of plant genetic resources which constitute the basis of food and agriculture production throughout the world.*"

The treaty lists the following measures that governments can take to protect and promote these rights:

- The protection of traditional knowledge relevant to plant genetic resources for food and agriculture.
- The right to equitably participate in sharing benefits arising from the utilization of plant genetic resources for food and agriculture.
- The right to participate in making decisions, at the national level, on matters related to the conservation and sustainable use of plant genetic resources for food and agriculture.

### **Seed quality control**

The main purpose is to ensure that all seeds entering formal trade channels are of good quality and farmers are protected from illicit practices in seed trading. It is particularly important because farmers cannot determine quality until they sow them and plants are growing in the field. The key governance challenges at this step are to:

- Strengthen institutional capacity through investment in training and monitoring of seed quality control as well as the capacity to oversee and enforce standards;
- examine the current systems of seed quality assurance in terms of costs involved, time needed, and rigidity of procedures – the existing systems in most developing countries are geared to ensuring quality of seeds of crop varieties bred through formal plant breeding through rigid and uniform application of standards;
- devise alternative approaches to seed quality standards and methods of implementation that are flexible, cheap and time-consuming and can be adapted with greater efficiency in smallholder crop production systems; and

FAO has developed the quality declared seed system (QDS) aimed at assisting small farmers as well as specialists in seed production, field agronomists and agricultural extension services in the production of quality seed. The system provides an alternative for seed quality assurance, particularly designed for countries with limited resources. It is less demanding than full seed quality control systems, but guarantees a satisfactory level of seed quality.

- create local level capacity for self-declared quality seed production through investment in training farmers in seed crop management, seed selection, and storage aimed at improving quality of seeds traded through the informal farmer-based seed systems.

Truthfully labelled seed (TLS) is a system in which producers declare and guarantee quality attributes of seed meant for sale. Farmers can grow TLS by multiplying certified seeds using improved crop management, harvesting, processing, and storage techniques.

### **Seed certification**

This is concerned with quality control of seed multiplication and production. It is basically a methodology to ensure that varieties are true to type. Through certification it is guaranteed to the public that seeds and other propagating materials so grown and marketed retain genetic identity and genetic purity. Certification is applied to seeds of only those varieties that have been developed in public institutions. The major governance issues at this step are to:

- Address inadequacies of the existing institutional capacity for seed certification either through a public sector seed certification agency or a private sector seed improvement association – the availability of adequate trained manpower and facilities for thorough and timely inspections and evaluations will be critical;
- maintain the autonomous status of the seed certification agency with no involvement in seed production and marketing;
- ensure that seed certification standards and procedures adopted by the seed certification agency are uniform throughout the country and that the agency functions in close linkage with technical and related institutions; and
- undertake a periodic review of seed certification standards and procedures to ensure a systematic increase of superior varieties and a continuous supply of comparable material through careful maintenance.

### **Transgenic (genetically modified or biotech) seed**

Scientific and policy discourse on transgenic crops with regard to their food and environmental safety remains as deeply polarized today as it was 15 years ago when these crops were first introduced. In many countries, including those in Europe, the opposition to the cultivation of biotech crops runs deep across all strata of the society. This prompted the erection of a European Union (EU)-wide stringent regulatory framework for granting approval to the cultivation of GM crops and sale of food with GM ingredients resulting in an extremely slow pace of diffusion of transgenic technology in EU's food and agriculture sector.

Public opinion in developing countries also is shaped intensely by strong opposition from farmer's groups, key environmental and civil society organizations against introduction of any genetically modified food crop. They highlight the current approach of transgenic technology spearheaded by the global corporate sector to focus on a few crops grown industrially in the developed world (including recent surge of maize cultivation for biofuel) and a few traits (that allow companies to tailor brand agrochemicals for sale in a seed-chemical package) and its lack of relevance for addressing key constraints of increasing productivity of smallholder agriculture in the developing world. Public debate is also shaped by the prospect of limiting farmers' access to improved seeds by patents, shrinking of their autonomy for seed saving and exchange, and the spectre of losing the reins of control over the nation's food supply system to the whims of a handful of multinational companies.

This partly explains why seed laws of many developing countries of the Asia-Pacific region remain silent or vague on genetically modified crops and commodities. In many countries of the developing world, governments have opted for a cautious wait-and-see approach trying to play both sides of the game – on one hand investing in science, technology, and infrastructure for biotechnology research and development and on the other delaying the fruition of biotechnology products because of public pressure and political exigencies (Box 12).

#### **Box 12 Second-generation transgenic food crops**

Despite limited adoption, interest in transgenic food crops remains high, and a wave of second-generation products is making its way toward the market. Transgenic rice, eggplant, mustard, cassava, banana, sweet potato, lentil, and lupin have been approved for field-testing in one or more countries. And many transgenic food crops are in the public research pipeline in developing countries.

Many of these technologies promise substantial benefits to poor producers and consumers. Most notable are traits for the world's major food staple, rice, including pest and disease resistance, enhanced vitamin A content (Golden Rice), and salt and flood tolerance. Advanced field testing of Bt rice in China shows higher yields and an 80 percent reduction in pesticide use.

*Source:* World Development Report, World Bank, 2008.

For example, the Seed Bill of India (2004) allows provisional registration of GM seeds subject to environmental clearance from the concerned authority. The Bill does not prohibit the registration of GM seeds. India's environment ministry exercised its authority in 2010 by banning the introduction of the nation's first candidate GM food crop, Bt brinjal, that passed regulatory approval from the country's top biotechnology regulatory authority.

The regulatory framework for handling GM foods and commodities typically encompasses procedures for detailed scientific assessment of the food and environmental safety of transgenic crops utilizing well-established experimental protocols for:

- characterizing the new DNA construct in the recipient organism, the vector used in gene transfer, and the mRNA product (protein) that the target gene produces;
- conducting toxicity studies including the potential of the new protein product to trigger allergenicity;
- stabilizing incorporation of the target DNA construct in the genome of the recipient organism through replication over successive generations;

- assessing the potential for escape of the target gene in the wild through cross-pollination with wild species leading to the emergence of super weeds;
- assessing the impact on biodiversity in managed agro-ecosystems; and
- establishing substantial equivalence of the GM food to its non-GM counterpart through determining its nutrient content and the potential for allergic reactions.

Regulations also concern special biosafety measures for handling of GM organisms. Such biosafety rules enacted in the past decade include the Gene Technology Act (2000) in Australia, European Union *Directive 2001/18/EC*, Mexico's *Law on Biosafety of Genetically Modified Organisms* (2005) and Brazil's *Law no. 11.105/05*(2005).

At the international level, the Cartagena Protocol on Biosafety to the CBD, which came into force in 2001, aims at ensuring the safe transfer, handling and use of living genetically modified organisms (LMOs). The Codex Alimentarius Commission under FAO and the WHO developed international guidelines on the safety assessment and labelling of food and feed products derived from LMOs.

Although some countries in the Asia-Pacific region, for example, Japan and the Republic of Korea have comprehensive regulatory frameworks addressing all aspects of domestic production, import and export of transgenic material, other countries have take some initial steps mostly putting in place biosafety guidelines for lab equipment and confined environmental testing.

## Governance measures to improve seed supply systems

The main measures required are:

- Develop a long-term national policy, for example a national seed policy outlining a framework for investment of resources, capacity development, incentives for private sector investment, pricing and procurement, collaboration between public and private sectors; support for research and development;
- upgrade the regulatory framework (seed laws, rules, acts, etc.) in terms of:
  - ◆ standardizing seed production and import in the formal seed sector;
  - ◆ exercising additional oversight on import and local production of hybrid seeds and their quality control;
  - ◆ facilitating greater private sector involvement in the seed sector;
  - ◆ eliminating trust deficit between public and private sectors;
  - ◆ protecting farmers against fraud, adulteration, and mislabelling in their access to marketed seeds;
  - ◆ protecting farmers' rights over their own PGR and seed systems particularly their right to saving a portion of harvest for use as seed;
  - ◆ balancing interests of resource-limited small-holder farmers with those of corporate breeding and seed sector in the framework of intellectual property protection through such instruments as PVR, UPOV, etc.
- make investment in strategic areas of the seed sector: processing and storage, road transportation and delivery systems;



- eliminate bureaucratic red tape in the administrative procedure to expedite variety release, acceptance, registration and seed multiplication processes;
- build capacity in the public agricultural service for effective technical and administrative oversight of field trials of candidate varieties, seed multiplication and quality control of seeds developed through formal breeding research, and production of certified seeds for sale through a network of contract growers;
- strengthen institutional capacity to undertake crop improvement programmes complex in the use of genetic resources, tools of scientific breeding, and broader in scope to address challenges posed by increasing scarcity of natural resources (soil, land, water) for use in agriculture and climate change;
- build capacity to engage a broad range of stakeholders (farmer groups, private sector, NGOs, community-based organizations, women's organizations, etc.) and feed the inputs of the consultative procedures into research programme planning and priority setting to ensure relevance and utility of new varieties and their faster uptake by farmers;
- make breeding research more decentralized with a renewed focus on farmers' participation at different stages in the variety development process and create effective institutional mechanisms for mainstreaming farmer-participatory breeding in the conventional model of crop improvement (the concept and practice of farmer-participatory breeding are illustrated in Boxes 13 and 14);

### Box 13 Participatory plant breeding (PPB)

PPB is based on a set of methods that involve close farmer-researcher collaboration to bring about plant genetic improvement within a crop. PPB is expected to produce more benefits than the traditional global breeding model in situations where a highly centralized approach is inappropriate.

The stage at which farmers interact with breeders can range from very early in the breeding process (e.g. during selection of source materials or when the germplasm being improved still shows a high degree of genetic variability) to very late in the breeding process (e.g. during evaluation of near-finished or finished varieties). Selection and testing of germplasm may take place in experiment station plots, in farmers' fields, or both. It should be pointed out that in the literature on PPB, farmer selection of finished or near-finished varieties is known as *participatory varietal selection*, whereas farmer selection with unfinished materials with a high degree of genetic variability is known as *participatory plant breeding*. Farmers' participation can be obtained at the following stages of the breeding process.

- Late-stage participation in the breeding process is used to obtain feedback from farmers about landraces, finished or near-finished varieties.
- Mid-stage participation in the breeding process is used to obtain feedback from evaluating advanced lines with farmers and to orient breeding programme objectives.
- Early participation involves farmers in making decisions about parents and crosses, evaluation of early generations and selection of advanced lines. PPB varieties are co-produced.

Sources: Morris M.L. & Bellon M.R. 2004. Participatory plant breeding research: Opportunities and challenges for the international crop improvement system. *Euphytica*, 136: 21-35, 2004.

Ashby J., Hareau G., & Quiros, C. *The impact and experience of participatory plant breeding in Latin America*. (Available at [www.cipotato.info/docs/abstracts/SessionX/OP-76\\_J\\_Ashby.pdf](http://www.cipotato.info/docs/abstracts/SessionX/OP-76_J_Ashby.pdf)).

### Box 14 Participatory rice breeding in the Philippines

In the Philippines, traditional rice varieties have been collected by farmers and improved through farmer-centred participatory rice breeding, supported by NGOs and scientists. After 20 years, this initiative has grown to the point that more than 600 farmers' organizations (35 000 farmers) using organic production systems are involved, and other crops, livestock and integrated farming systems are covered. There are 223 farmer-managed trials in 47 provinces, with ten back-up farms serving as gene banks, each maintaining 300 to 1 800 rice varieties. A total of 826 varieties, including 284 rice crosses, have been released (compared with 173 varieties released by the government between 1955 and 2005). Farmers' yields are sometimes better than those of high-yielding varieties, and farmers' incomes are usually greater than those of conventional rice producers because of savings from non-use of chemicals and a lower cost.

*Source:* Medina, C.P. 2007. Rebuilding small farmers' resilience. In FAO. 2007. *Organic agriculture and environmental stability of the food supply*. Papers presented at the International Conference on Organic Agriculture and Food Security, 3-5 May, Food and Agriculture Organization of the United Nations, Rome.

- build capacity in the informal seed sector with due recognition of its potential to support sustainable crop production in smallholder-dominated farming through:
  - ◆ organizing on-farm seed production using farmer groups, cooperatives, NGOs, etc.;
  - ◆ providing technical training to farmers to improve quality of saved seeds through pre-harvest selection, grading, drying, and post-harvest storage;
  - ◆ undertaking farmer participatory breeding and seed selection with active involvement of local units of public sector research and extension organizations, NGOs; and
  - ◆ better networking through farmer-to-farmer seed exchange systems.

## Governance for the transgenic seed sector

The most important tasks are to:

- Streamline procedures for introducing, testing, and registering crop varieties derived from the application of transgenic technology within the framework of the basic national seed law – this can be done by removing inconsistencies and ambiguities, where applicable, and seeking greater operational synergy with existing rules and procedures in relation to transgenic crops under the jurisdiction of other state institutions;
- establish top-level coordination between the agriculture ministry and other government ministries and departments exercising regulatory control over applications of modern biotechnology in the food and agriculture sector – an inter-ministerial coordination committee on genetically modified crops can be a suitable mechanism for removing administrative bottlenecks, inconsistencies in application of rules and procedures and fast tracking regulatory approval of GM crop varieties;

In many countries these ministries and departments are: the ministry of environmental protection that conducts environmental safety testing and grants clearance for environmental release of genetically modified crop varieties; the ministry of science and technology or the department of biotechnology that oversees procedures and protocols for the scientific assessment of food safety and biosafety protocol for handling transgenic organisms.

- increase effectiveness and efficiency of the biosafety regulatory system through:
  - ◆ Establishing adequate modern laboratories with trained staff in reputed public sector institutions;
  - ◆ accrediting these laboratories to boost public confidence in foolproof capability of the regulatory system to provide food safety; and
  - ◆ establishing accredited laboratories for seed testing of GM crops.
- undertake far-reaching multipronged concerted efforts toward the most difficult task of consensus-building in the society around the need for accepting modern biotechnology tools (that allow manipulation with native as well as transgenes) as some of the most promising tools for achieving unprecedented increases in yield and productivity of key food crops. This can be achieved by:
  - ◆ Initiating a systematic campaign of educating and awareness building around the pros and cons of GM technology.

Public perceptions of GM technology are often not based on scientific facts. The information communication system, including public extension and awareness services, need to be considerably improved in order to effectively deliver correct and unbiased information to farmers and the general public. Also, there is an urgent need to properly inform and educate people at all levels, including policy-makers and planners, farmers, consumers and other stakeholders on all aspects of agricultural biotechnology and biosafety. Required communication tools must be used for effective delivery of knowledge.
  - ◆ devising a variety of PPPs with the involvement of smallholder farmers in biotechnology projects to ensure the flow of unbiased information and cross-breeding of scientifically valid ideas eventually contributing to building an atmosphere of trust and consensus building.
- bolster institutional capacity, especially in areas of biosafety research, regulatory systems (including legal aspects), communication tools and IPR issues since they are all critical for scaling out innovations for greater impact.<sup>43</sup>

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<sup>43</sup> Stakeholders' interface on GM food crops. The Asia-Pacific Consortium on Agricultural Biotechnology (APCoAB) and the Trust for Advancement of Agricultural Sciences (TAAS) at National Agricultural Science Centre (NASC) Complex, New Delhi on 19 May, 2011.



## Chapter 6

### **Agricultural governance: Access to inputs (other than seed) and improved production technology for sustainable crop production**

#### **Learning objectives**

At the end of the presentation, participants will be able to:

- Understand how access to and use of inputs (equipment, fertilizer, pesticides, irrigation water) and production technology influence the adoption of SCPI approaches;
- identify elements of governance in improving farmers' access to inputs;
- understand the role of institutional innovations in designing extension systems to provide farmers with advisory services; and
- conceive appropriate governance measures to address institutional shortcomings and establish effective systems for input provision and access to improved technologies.

## Introduction

In any agricultural setting, a list of conventional inputs, apart from seed, would include equipment and farm machinery, fertilizer, land, irrigation water, pesticides, energy and labour. Farmers use external inputs to augment biological processes that support plant growth and ultimately contribute to high yields. The use of inputs in SCPI strategy is focused on achieving maximum efficiency through rationalizing their use in a manner that improves ecosystem services. This entails curbing overuse of nutrients that inhibits natural processes to the detriment of crop growth. It also seeks greater precision in use of inputs. This can be achieved by improving the timeliness of the application of inputs and their placement in close proximity to plants and in forms that facilitate faster uptake of the active ingredients.

Managing ecosystem services lies at the heart of the SCPI strategy. This calls for a focus on developing crop, soil, and land management technologies that minimize the human footprint on managed ecosystems. Such technologies make greater use of the ecosystem services that eventually translates into resource use efficiency and benefits for smallholder farmers. These technologies would also be knowledge-intensive and hence farmers' training will be a key input to enable them to adopt and use the know-how.

Not all farmers, particularly resource-constrained smallholder operators, have the ability to access and use inputs unless adequate supportive measures are in place.

## Elements of governance in improving farmers' access to inputs

### *Creating an enabling policy environment*

This entails developing a long-term national strategy to facilitate farmers' access to key production inputs and improved technologies. The following are some of the elements that deserve attention in developing such a strategy:

- Investment in the supply and service chain of agricultural machinery and equipment;
- investment in the supply chain of chemical inputs, notably fertilizers and pesticides, including infrastructure to support delivery of inputs;
- development of water resources and infrastructure for agricultural water management;
- building institutional mechanisms for efficient delivery of production inputs to farmers; and
- developing a framework for collaboration and partnership between the public and private sectors to provide agricultural support services with a focus on resource-limited smallholder farmers.

### *Improving effectiveness and efficiency of service delivery*

This will require:

- Expanding the capacity in the government ministry responsible for agriculture to effectively coordinate with other ministries and departments with a stake in agriculture or whose policies affect the production, procurement and distribution of

inputs to farmers – in most countries of the Asia-Pacific region, the key ministries with jurisdictions overlapping with agriculture are: ministries of irrigation and water management; land administration; rural development and cooperatives; trade and investment, Industry, etc. Effective coordination between these ministries and their subordinate institutions at the field level is vital for securing farmers' access to land and other inputs; and

- upgrading administrative and technical capacity of the public agricultural service to regulate and enforce regulation.

The following examples illustrate the importance of regulatory functions in the provision of inputs to farmers:<sup>44</sup>

- Inappropriate registration of new products (pesticide sprayers, fertilizer, pesticides, etc.) in return for personal financial gain on the part of registrars may cause unsafe or environmentally damaging products to be marketed.
- Rent-seeking associated with any form of official inspection will undermine the quality of inspection with the result that unsafe products are marketed, domestic consumers suffer and market access may be lost for export products.
- Land use policies may be undermined for individual gain, either by sanctioning land to be used for inappropriate agricultural purposes (e.g. changing to a land use which damages the environment), or for converting to non-agricultural use (can be a problem in peri-urban areas where land values are typically high).
- Adulteration of inputs may occur in the absence of effective regulation, with the result that farmers have access to substandard or ineffective material. In the case of pesticides, use of partially inactive material will encourage the development of resistant pests. Also, where material is ineffective farmers may be encouraged to use more than recommended doses. If they then encounter unadulterated material, poisoning or environmental damage may result.
- Distributors of inputs failing to follow guidelines and codes of conduct (e.g. governing the sale of pesticides with local language labelling and the availability of appropriate personal protective equipment), will increase risk to smallholder farmers' health and well-being.

National institutional capacity for efficient delivery of inputs to farmers should also be enhanced through well-managed partnerships and linkages between the public and private sectors.

Successful PPP models are built by exploiting the relative strengths of both the public and private sectors:

- *Public sector strengths* – large resource base, sets policies and standards, safeguards the public interest, generates reliable information on agriculture.
- *Private sector strengths*: Innovation, investments, sustainable, farmer-friendly delivery models, competitive, offers more choices to the farmers, accountable to farmers.

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<sup>44</sup> Robson M. 2011. *Agricultural governance and smallholders: Issues in the sustainable intensification of crop production*. Report of the expert consultation on small farmer-focused good governance in crop agriculture in Asia and the Pacific. FAO Regional Office for Asia and the Pacific, Bangkok (In press).

- *Area of mutual interest:*
  - ◆ Private sector: maximizes commercial gains by reaching a **large number** of farmers.
  - ◆ Public sector: fulfills the mandate of serving a **large number** of farmers.<sup>45</sup>

PPP can be an efficient mechanism for expanding the use of ICT to provide farmers with better information, such as the Internet kiosk, *e-Choupals*, in India (Box 15).

#### **Box 15 Private agribusiness and NGOs: leading ICT provision to farmers in India**

Indian private companies and NGOs are global leaders in providing information to farmers as a spinoff from India's meteoric rise as a world leader in ICTs. The *e-Choupals* now provide information on the weather and farming techniques in local languages, in addition to information on market prices.

The M.S. Swaminathan Research Foundation established Knowledge Centers in Pondicherry in 1997. With the support of the Indian Space Research Organization, centres in each village are connected by satellite to a hub at Villianur. The centers are managed by women's self-help groups, which receive microcredit loans and training to start small businesses such as mushroom or biopesticide production. The self-help groups use the centers' computers to manage their business accounts and coordinate their activities, using video links with the other villages.

Farmers can use the centres to access databases of technical information, developed by the hub, with the help of experts from local agricultural institutions, in their local language. Dairy farmers, for example, have received training in some centers using touch-screen computer applications developed by the local veterinary college. An alliance of more than 80 partner organizations extends the concept throughout India.

*Source:* World Development Report, World Bank, 2008.

Farmers' ability to adopt and use knowledge-intensive farming concepts such as CA, IPM, IPNM, etc. needs to be increased by making sustained investment in farmer's technical training – FFS is a widely-tested and successful approach in building such capabilities.

It is also necessary to foster a cross-sectoral approach and effective coordination across the institutions responsible for the development of sound crop management and land use concepts that harness ecosystem services. These can include CA, IPM, IPNM, agricultural water management, crop-livestock systems, agro-forestry systems.

Innovative public-private institutional mechanisms need to be devised for expanding and deepening access of resource-poor farmers including ultra-poor farmers and sharecroppers to low-interest credit financed from public sector institutions.

#### **Enhancing accountability of institutions responsible for service delivery**

Public officials in charge of service provision at the local level, for example, land administration, agricultural extension and input distribution should be made accountable to popularly-elected local governments.

<sup>45</sup> Making e-agriculture work through public-private partnership in Asia, an on-line discussion, 10-28 March 2008.



Agricultural extension should be demand-driven – fix targets for extension and implement a system of monitoring and evaluation with feedback from farmers/growers to ensure that services are delivered.

### ***Promoting participatory approaches in input delivery and access to technology***

The involvement of producer organizations in input supply systems/chains should be increased.

Diversity and pluralism of extension approaches should be encouraged through the active engagement of multiple stakeholders in organizational structures that facilitate participation, deliberation, and equity in extension service provision.

Pluralistic research extension systems make sense not only in terms of flexibility and complementarity, but also in terms of the range and number of farmers served as well as their different technological needs (e.g. commercial agribusiness technologies compared to low external input technologies).

Pluralistic approaches explicitly underscore the need for integrating mechanisms. No longer is it sufficient to address research-extension integration that served the purpose under a supply-driven regime wherein predetermined technology packages were marketed across large recommendation domains. With the focus now shifted to demand-driven, location-specific, customized and tailor-made technologies and services to serve different categories of farmers, a vital link, the “farmer”, needs to be included in the integration process.<sup>46</sup> The research-extension-farmer linkage is geared to incorporating farmers’ perspectives and demand on both research and extension agendas so that new technologies meet their requirements and they have also the capacity to adopt them. The focus is more on a trilateral rather than linear relationship so as to exploit additional opportunities arising from two-way feedback between the actors in this linkage. Key governance challenges facing agricultural extension systems in developing countries are listed in Box 16.

### ***Improving research-extension-farmer linkage***

A key governance measure that can help to create and support this linkage is to devise effective, efficient, and sustainable institutional mechanisms to foster a greater degree of partnership, collaboration and cooperation, among and between, researchers, multiple providers of extension services, farmers, and their organizations. Such mechanisms must be proactive in defining actionable areas and have a mission-mode approach to implementing them in contrast to slow-moving processes taking their own course within the confines of centralized administrative-bureaucratic systems. This can be achieved by:

- Focusing ongoing processes of decentralization of extension systems toward creating decentralized institutional structures, for example technical coordinating committees, stakeholders’ coordinating forums or other networks, down to regional, sub-regional, district, and sub-district levels, to provide the broad operational framework for research-extension-farmer linkages at these levels;

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<sup>46</sup> Rahman M.M. 2003. Recent developments in agricultural research and extension systems in Asia and the Pacific. In Report of the APO Study Meeting on Integration of Agricultural Research and Extension held in the Philippines, 18-22 March 2002.

### Box 16 Key governance challenges in agricultural extension

- Achieving effective administrative decentralization of the public sector agricultural extension service on the basis of regional variations in agro-ecology, land use and natural resource endowment;
- using decentralized governance as a tool to promote bottom-up and demand-led approaches to extension;
- establishing functional institutional structures for participatory planning and delivery of extension services;
  - ◆ facilitating access to know-how such as by developing appropriate extension methodologies to reach farmers, e.g. use of mobile units to deliver transfer of skills and provide immediate testing results; and developing new non-traditional sources of technology backstopping, agro-advisory services and marketing to the concerned stakeholders;
- improving knowledge content through e-extension and establishment of agriculture knowledge management institute (for example, patterned on the model of *Krishi Vigyan Kendras* (Farm Science Centres) of India).

- facilitating, in collaboration with NGOs and civil society organizations, the formation of farmers' organizations (farmer's groups, self-help groups, cooperatives) with a focus on small-scale subsistence farmers and enhance their organizational capacities to create a durable constituency among farmers for the functioning and expansion of decentralized demand-driven extension approaches;
- making these coordinating mechanisms effective and efficient by clear specification of the mandates, roles and responsibilities of stakeholders' representatives, devolving adequate authority for developing programmes and making decisions, encouraging a team approach to problem-solving and providing a transparent procedure for the generation of funds through pooling resources allocated through departmental budgets and other income for supporting programme activities;
- incorporating elements of sustainability in various structures of decentralized demand-driven extension services by devising innovative administrative mechanisms that can survive the top-down and centralized approach deeply entrenched in the cultures and mindsets of the civil service in many countries of the Asia-Pacific region.

Other key government measures are to introduce greater accountability in linkage mechanisms by specifying performance indicators, drawing clear lines of authority, reporting requirements and audit of expenditures and expand the participation content in the research-extension-farmer linkage by widening coverage and including farmers through deft harnessing of ICT as discussed in Box 15.

### *Improving transparency in service provision*

This can be achieved by:

- Overcoming institutional fragmentation of service delivery and identifying opportunities to arrange "one-stop" types of delivery systems for farmers;

- eliminating loopholes that breed corruption and deprive end users of their fair share of legitimate entitlements by expanding public access to information through the introduction of modern communication technologies to those institutions providing public agricultural services.
  - ◆ Public land administration units at the local level can be equipped with modern computerized and GIS-enabled technologies to track records and transactions related to rights, purchases, transfers, and sales of land. The use of such technologies will make the tampering of land records by corrupt officials difficult and allow the posting of information in the public domain for access by the general public.
  - ◆ Agricultural marketing units in the public agricultural service can enhance farmers' access to market information on current prices and price forecasts for inputs and commodities by posting such information through using Internet and mobile device-based technologies.



## Chapter 7

### Agricultural governance: Improving food safety

#### Learning objectives

At the end of the presentation, participants will be able to:

- Understand the importance of food safety in the context of achieving the goal of sustainable food and nutrition security;
- identify major food safety issues and explore weaknesses in existing institutional mechanisms for supervision and regulatory oversight of enforcement and compliance of food safety standards;
- familiarize themselves with major global food safety standards and how they can be tailored to developing appropriate approaches to food safety control in the context of smallholder farming;
- assess the challenges of governance facing effective control of food safety; and
- analyze the context of smallholder agriculture for developing governance measures for improving food safety, including measures for harmonizing national food safety standards with selected global standards to promote agroprocessing and the export of processed food.

## Introduction

Food safety refers to all protective and defensive measures that are taken along the food chain from production, post-harvest handling, distribution, processing, storage, transportation, marketing, to consumption. The goal is to prevent contamination, spoilage and deterioration of food occurring at any stage along the continuum from production to consumption that may pose health hazards to humans. Food safety, therefore, is a critical component of sustainable food security that aims to provide access to adequate, healthy, and safe food by eliminating the potential for the spread of food-borne illnesses.

Food safety is a global problem threatening the food security of millions of people. The food safety problem is more prevalent in the least industrialised world than in the industrialized world.<sup>47</sup> In the less developed world, unsafe food and water borne diseases are responsible for the deaths of approximately 2.2 million people annually, 1.9 million children amongst them.<sup>48</sup> Food safety-related health problems, like acute diarrheal illness, affect up to 1.8 million children worldwide in developing countries. Nearly 700 000 people die of food and water safety-related causes every year in the Asia-Pacific region alone.<sup>49</sup>

Major food safety issues arise depending on how food is produced on-farm, processed, stored, marketed and consumed.

The main factors that affect food safety are the following:

- Improper use of chemicals, particularly excessive use of pesticides, often banned ones, and their faulty application in the field (unsafe and badly maintained equipment, timing of application, methods of application) lead to increased chemical residues in food sources -as an example, India uses only about 0.31 kg pesticides per hectare in comparison to 17 kg in Taiwan and 13.1kg in Japan, but still reports a higher number of cases of pesticide residues in food and drinks;
- improper use of additives, hormones, and preservatives, often banned for use in food, in pre-harvest and post-harvest processing and storage;
- poor regulatory oversight for adherence to good manufacturing practices in design and establishment of small-scale food processing facilities catering for domestic markets;
- unhygienic environments, especially among poor households, in which food is stored, prepared and consumed;
- the existence of only rudimentary food safety rules and regulations and a rudimentary institutional setup to enforce them.

In many developing countries of the Asia-Pacific region, food safety is viewed mostly through the prism of public health and the institutional mechanism to address food safety is incoherent, fragmented, and weak. The mandate for food safety control in many countries of the region is vested in a number of public sector institutions with a plethora of their own, often contrasting and overlapping, standards, rules and regulations resulting in low efficiencies in

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<sup>47</sup> McIntyre, B.D., H.R. Herren, J. Wakhungu, and R.T. Watson. 2009. *Agriculture at a crossroads: A global report*. Washington, D.C.: IAASTD.

<sup>48</sup> WHO. 2008. *Food safety*. (Available at <http://www.who.int/foodsafety/en/>).

<sup>49</sup> WHO. 2004. *Food safety at risk in Asia and the Pacific*. (Available at <http://www.who.int/mediacentre/news/releases/2004/pr34/en/index.html>).

implementation. Navigating through this multi-layered structure of food safety control can be a challenge for any prospective investor seeking investment opportunity in the food processing industry.

Primary producers are no longer the sole actors in food production in these countries. Other stakeholders such as food processors and retailers have entered the food supply chain with remarkable increase in domestic production of perishable food such as meat, milk, fish, vegetable, and egg and value addition through processing and packaging to satisfy the demand of the growing urban middle classes.

Food safety concerns have transcended national borders. With rapid globalization and an increase in the share of developing countries in the global trade of primary as well as processed food, food safety has become a shared concern among both developed and developing countries. Governments in many countries have initiated steps toward establishing new institutions, standards, and methods for regulating food safety.

## Status of food safety regulation

Although several countries in the region have food safety laws and regulations in place (Box 17), in general the prevalence and enforcement of national food safety standards for commonly consumed food in the Asia-Pacific region are at a very primitive stage. Many countries do not have comprehensive regulations covering the entire food range, whereas in other cases, despite the existence of comprehensive regulations, implementation is poor because of a multiplicity of implementing agencies and results in inefficiency and conflicts.

### Box 17 Food safety laws in selected countries of Asia

- Food Safety and Standards Act (2006) of India: The objective of the Act is to bring out a single statute relating to food and to provide for the systematic and scientific development of the food processing industry. The Act is in tune with the international trend towards modernization and convergence of regulations of food standards with the elimination of multilevel and multidepartmental control. The emphasis is on: (a) responsibility of manufacturers; (b) recall; (c) GM and functional foods; (d) emergency control; (e) risk analysis and communication; and (f) food safety and good manufacturing practices and process control viz., hazard analysis and critical control point (HACCP). *Implementing Agency – Food Safety and Standards Authority of India.*
- Food Safety Law of the People's Republic of China (2009): Key organizational provisions create a state-level Food Safety Commission to oversee food-safety monitoring. Other key provisions deal with supervision, monitoring, enforcement, recall, trace back, licensing, registration, and development of standards and regulations. *Implementing Agency – State Food and Drug Administration.*
- Food (Labeling & Advertising) Regulation (2005) of Sri Lanka: The regulation covers labelling of packaged food for consumer awareness, health, safety, and nutrition reasons. Labeling and control of GM products was introduced in the regulation in 2007.
- Government Regulation of the Republic of Indonesia No. 28 on Food Safety, Quality and Nutrition (2004): This regulation covers requirements for food safety, quality and nutrition. *Implementing Agency – National Agency for Drug and Food Control (BPOM).*

- Food Act (2005) of Bhutan: The Act addresses the issue of food safety, including that resulting from GM food.
- Food Act B.E. 2522 (1979) of Thailand: The Act covers food standard and specifications, hygienic and labelling requirements, control of the production and importation of food products, approval of registration of specific-controlled food, enforcement of food safety standards based on GMP, and issuance of certification. *Implementing Agency – National Bureau of Agricultural Commodity and Food Standards, Ministry of Public Health.*

Food production, processing, and marketing systems range from small- to large-scale, with products passing through multiple tiers of handlers and middlemen in the market chain. A range of difficulties is reported in enforcing national food safety laws and standards. The first is the choice between obligatory and voluntary systems. Wherever national standards are obligatory, it has been difficult to introduce effective regulatory systems because of the large number of processes and people engaged in the food supply chain from production to marketing. For example, in the case of India, the currently proposed national food safety standards do not apply to the whole range of actors involved in the food industry, such as hawkers and small petty shops. At the same time, the food safety standards in countries such as Indonesia have made little difference in achieving food safety because of their voluntary nature.<sup>50</sup> It is thus important for countries with a predominance of smallholder farming to search for effective food safety regulations and the practical means to implement them.

## Approaches to food safety in the context of smallholder farming

The concept of food safety primarily arose out of the concern to protect public health against food- and water-borne infectious diseases. Whereas in the developed world, public health focus in relation to food safety is oriented toward preventing food-borne infectious illnesses, in the developing world, particularly in countries lacking effective enforcement capacity of existing food safety rules, public health concern is being aggravated by an emerging threat of complex diseases and long-term health complications (cardio-vascular, kidney, and liver diseases) as a result of the consumption of adulterated food. The widespread entry of misbranded, mislabelled, and adulterated products in the food distribution and marketing chains in these countries has become possible because of poorly controlled processing often with the addition of carcinogenic ingredients, for example, dyes unfit for food use. The incidence of 300 000 infants being sickened in China in 2008 by drinking milk formula laced with industrial chemical melamine is a much publicized case of deliberate food adulteration.<sup>51</sup>

Food safety is also the key determinant of food quality. By adhering to accepted norms and standards of safety during the production of primary food, its further processing, packaging, and transportation, a food processor adds a premium on food and an attribute of quality that allows him to grab an edge in product marketing in upstream niche markets.

<sup>50</sup> Prabhakar, S.V.R.K., Sano, D. & Srivastava, N. 2010. Food safety in the Asia-Pacific region: Current status, policy perspectives and a way forward. *In Sustainable consumption and production in the Asia-Pacific region: Effective responses in a resource constrained world*, Institute for Global Environmental Strategies, White Paper III, pp. 215-238. Institute for Global Environmental Strategies, Hayama, Japan.

<sup>51</sup> Fred, G., & J.C. Buzby. 2009. Imports from China and food safety issues. Economic Information Bulletin Number 52, Washington, D.C.: United States Department of Agriculture.



Apart from government initiatives through public sector institutions, food safety standards have been developed by industry organizations involving retailers and food manufacturers. Elimination of existing and emerging public health hazards in the food chain and a science-based rigorous approach to maintenance of quality through adherence to accepted standards are twin objectives of food safety control.

Food safety concerns begin from on-farm production of food commodities. It is the key entry point for the introduction of production and management practices that allow minimizing potential contamination with excessive residues of harmful chemicals in food, water and the introduction in food of harmful biological agents. In developing countries with predominance of smallholder farming, proactive and preventive approaches at this stage offer the most cost-effective option of ensuring food safety. Good agricultural practices (GAP) is one such preventive food safety approach.

FAO defines GAP as practices that address environmental, economic and social sustainability for on-farm processes and result in safe and quality food and non-food agricultural products.<sup>52</sup> A multiplicity of GAP codes, standards and regulations have been developed in recent years by the food industry and producers organizations as well as by governments and NGOs, aiming to codify agricultural practices at farm level for a range of commodities. Many of the GAP principles are essentially the practices that support the crop production intensification approach. Dissemination of information to farmers about these practices through the national extension system and educating them through IPM schools, FFS, and other field-level mechanisms for farmers' training holds the best chance of incorporating food safety measures during crop production and post-harvest handling stages. SCPI approaches thus have an in-built mechanism for application of GAP in the context of smallholder farming.

Similarly, the introduction of good manufacturing practices (GMPs) is a preventive approach to food safety during production of processed food. GMPs require food manufactures to put in place: (i) a set of verifiable and effective controls in operations and maintenance; (ii) hygienic practices for adherence by food handlers to minimize microbial contamination; (iii) cleaning and sanitation of production premises; (iv) pest control at the facility against contamination by mice, rodents, and birds; (v) food labelling (for consumer decision making to buy or not buy a product); (vi) traceability (tools to trace a product in the supply chain); (vii) and recall in the event of public health emergencies. Food safety at every stage of value addition through processing can be ensured by requiring food manufacturers to strictly adhere to GMP standards. The major internationally-recognized food safety standards are listed in Box 18.

## Challenges of governance for food safety in the context of smallholder farming

The key challenges are to:

- Establish an effective system of mandatory control of the use of agrochemicals through registration and quality control of pesticides as well as registration and inspection of application equipment, mandatory operator training and certification etc.;

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<sup>52</sup> FAO.2003. Development of a framework for Good Agricultural Practices. FAO/COAG paper. (Available at <http://www.fao.org/docrep/meeting/006/y8704e.htm>).

### Box 18 Key global food safety instruments

- Codex Alimentarius Commission (Joint FAO/WHO Food Standards Programme)
- WTO Agreement on Sanitary and Phyto-sanitary Standards (SPS)
- International Organization for Standardization – ISO 22000 Food Safety Management System Standard
- Global Food Safety Initiative (GFSI) – benchmarks existing food standards against food safety criteria, and also looks to develop mechanisms to exchange information in the supply chain, to raise consumer awareness and to review existing good retail practices
- Hazard Analysis and Critical Control Points (HACCP)-based food safety management systems
- BRC (British Retail Consortium), food technical standard
- Good manufacturing practices (GMP); GAP; good hygienic practices (GHP)

- build effective and efficient national institutions for food safety with adequate trained manpower (food inspectors and laboratory technicians) and technical capacities (modern laboratories to perform a range of analytical testing in conformity with established laboratory protocols and a reference laboratory for dispute resolution) to develop and modernize food safety laws, regulations and standards, and to monitor and enforce those safety standards;
- bring under the ambit of food safety inspection the myriad of actors, both formal and informal, involved in producing, handling and selling food in a developing country setting – restaurants including small-scale unregistered ones catering to low-income people, street vendors and hawkers, petty shops, etc.;
- bring small-scale food processing establishments under effective regulatory oversight to ensure adherence to safe and hygienic practices in food handling and guard against adulteration of food;
- develop modern infrastructure for post-harvest handling, transportation and storage. Despite the fact that refrigeration decreases food spoilage and the occurrence of food-borne diseases, only a small proportion of food is preserved in cold storage, chilled or frozen in developing countries, as opposed to more than 50 percent of foodstuffs in developed countries.<sup>53</sup> As a result, an estimated \$12 billion worth of food is being wasted in India every year,<sup>54</sup> 10 to 40 percent of food is spoiled in transport depending upon the commodity, and 25 to 40 percent of fruits and 20 to 25 percent of vegetables produced are lost because of spoilage during post-harvest mishandling in India.<sup>55</sup>
- general awareness building for safe production, preparation and consumption of food; and

<sup>53</sup> Pineiro, C., Barros-Velázquez, J. & Aubourg, S.P. 2005. Effect of newer slurry ice systems on the quality of aquatic food products: A comparative review of flake-ice chilling methods. *Trends in Food Science and Technology* 15.

<sup>54</sup> Rabo India Finance. 2007. *Potential opportunities in food processing sector*. New Delhi: Rabo India Finance and Austrade.

<sup>55</sup> Central Institute of Post Harvest Engineering and Technology. 2008. *Vision 2020*. Ludhiana, India.

- build capacity to undertake timely regulatory reforms and institutional innovations in food safety to keep pace with growth in agroprocessing and the export-oriented food processing industry.

## Governance measures to improve food safety

Specific governance measures will vary depending on country contexts, especially the state of development of a country's agriculture and agrifood industry. Pro-active preventive measures to eliminate or reduce to a safe level, or both, widespread chemical (pesticide residues in excess of safe threshold limits), biological (harmful microbial agents causing infectious disease) and physical (by adulterating food through addition of toxic chemical ingredients) dangers through effective and efficient use of the existing scientific/technical resources and the regulatory system should be at the core of governance for food safety. But as the food industry matures and export-oriented trade in processed food gains momentum, additional investments will be needed to put in place more robust food safety standards and technical/regulatory infrastructure to be able to meet rigid conformance criteria demanded by the buyers in international export markets.

The following is a list of governance measures that countries in the Asia-Pacific region can consider to put in place a robust and credible food safety system:

- Mainstream the concept of food safety in the national food supply chain by streamlining food safety administration through:
  - ◆ Improving coordination at the decision-making level among different public sector institutions responsible for food safety control in specific segments of agriculture and food industry; and
  - ◆ vertical integration of different public sector institutions responsible for food safety under the jurisdiction of a separate independent entity (for example, Food Safety and Standards Authority of India) to overcome multilevel and multidepartmental control on food safety.
- Invest in capacity building in the food safety sector for adequate administrative (including inspection, monitoring, supervision) and technical oversight of the food supply chain for adherence to established food safety laws, regulations, and standards and enforcement of sanctions and punitive measures for violations.
- expand the reach of science-based approaches to food safety by:
  - ◆ strengthening institutional mechanisms for establishment and enforcement of standards;
  - ◆ accreditation and monitoring of laboratories for scientific testing;
  - ◆ granting legal authority to competent institutions in the public and industry sector for awarding certification to food establishments for conformance to widely recognized food safety standards – EurGAP, Global GAP, HACCP, GMP/GHP, etc.; and
  - ◆ requiring food producers and processors to undergo the certification process and obtain certificates for food quality and safety.

- Strengthen the national capacity for addressing regulatory and policy issues affecting food safety:
  - ◆ modernize food safety laws, for export-oriented segments of the food industry and harmonize them with current food safety laws of key trading partners – EU, North America, ASEAN, etc.;
  - ◆ enhance capacity for risk assessment of food safety in the entire food supply chain; and
  - ◆ effectively participate in negotiations of global instruments and processes governing food safety in the framework of FAO/WHO, WTO.

## Chapter 8

### Improvement of governance: Control of corruption

#### Learning objectives

At the end of the presentation, the participants will be able to:

- Gain a fair understanding of the nature of corruption in smallholder agriculture; how it breeds inefficiency in the delivery of public services and stalls the outcome of development projects;
- apply principles of governance to developing anti-corruption strategies; and
- conceive appropriate governance tools and measures to discourage and combat corruption.

## Introduction

Corruption is a curse that afflicts most societies in the world. In many developing countries it is pervasive with its reach extending to all aspects of transactions that citizens have to make with public officials in their daily lives. The notion of good governance in these societies is practically synonymous with fighting corruption. This explains the lively discourse and debate generated among civil society groups in these countries each time a report on the state of corruption is released by global anticorruption watchdogs. This also heralds a moment for holding the government accountable for governance failures and increasing the public demand for a sustained focus on anticorruption measures.

There is no single definition of corruption because perceptions of immoral and illegal actions, and consequently the public zeal to confront it, vary greatly among societies depending on their culture and value systems. Generally it encompasses all obstacles that citizens have to confront in having equitable access to the state's resources leading to the entrenchment of injustice in the society.

Most often corruption is viewed as misuse of entrusted power for private gain. In most countries of the Asia-Pacific region, corruption in government institutions responsible for service delivery is a major obstacle to efficient use of public funds and equitable provision of services. This is evident from the poor performance of most countries of the region on the Corruption Perceptions Index (CPI), an indicator that Transparency International (TI), a global watchdog of corruption, uses to assess the perceived levels of public sector corruption in the world (Table 2).

**Table 2. State of corruption and ranking of countries as measured by Corruption Perceptions Index (CPI), 2010**

Country	CPI Score	Rank
Singapore	9.3	1
Japan	7.8	17
Republic of Korea	5.4	39
Malaysia	4.4	56
China	3.5	78
Thailand	3.5	78
India	3.3	87
Sri Lanka	3.2	91
Kazakhstan	2.9	105
Indonesia	2.8	110
Viet Nam	2.7	116
Mongolia	2.7	116
Bangladesh	2.4	134
Pakistan	2.3	143
Lao PDR	2.1	154
Uzbekistan	1.6	172
Myanmar	1.4	176

Source: Transparency International, Corruption Perceptions Index 2010. (Available at [http://www.transparency.org/policy\\_research/surveys\\_indices/cpi/2010/results](http://www.transparency.org/policy_research/surveys_indices/cpi/2010/results)).

As evident from Table 2, most countries of the region scored below 3.5 (on a scale of 0 (highly corrupt) to 10 (very clean)) and ranked near the bottom of the table as a result of their perceived lack of freedom from corruption.

Control of corruption is regarded as a vital policy element for effectively implementing SCPI programmes. This will have a profound impact on boosting the capacity of resource-constrained smallholder farmers who have a larger stake in sustainable approaches to production intensification.

## Nature of corruption in smallholder farming

Corruption most frequently affects small-scale farmers in such areas as granting land title (informal payment to officials for registration of land ownership and help in dispute settlement in demarcation of land boundaries), credit availability (payment of bribes to bank officials for releasing agricultural loans), quality of supplies and water allocation. In India, bribes paid annually by users of land administration services are estimated to total US\$700 million.<sup>56</sup>

In most countries, corruption involves public officials demanding payment under a variety of pretexts, including:

- Payment of acceleration fees (for “speeding up” administrative tasks through the complex labyrinth of bureaucratic decision making);
- over blackmail by deliberately sabotaging service requests (e.g. by making document pages go missing);
- neglect in performance of assigned duty despite being paid from public money for performance of the given task and no fear for being held accountable (time corruption); and
- attempt by dishonest stakeholders to get around laws and regulations by bribing inspectors for issuance of government certification for low-quality products that do not meet required standards.

In countries where the state was slow in developing and enforcing an adequate regulatory regime in the wake of the private sector becoming involved in agribusiness and assuming a prominent role in provision of farm inputs, there has been instances of corruption by private traders trying to sell adulterated and mislabelled products using brand names and attractive packaging. This often happens when farmers sought to buy quality seed, particularly hybrid seeds at a premium price.

## Priorities for anticorruption strategies

Generally five tools are recognized in controlling corruption: (i) political leadership; (ii) accountability; (iii) capacity; (iv) transparency; and (v) implementation and voice.

### *Political leadership*

Political will provides the foundation for all anti-corruption efforts. It is a prerequisite to forging a broad consensus in the political spectrum and the civil society that allows governments in charge to maintain continuity and vigorously pursue anti-corruption efforts. In order for political

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<sup>56</sup> Transparency International India 2005.

will to be translated into tangible results beyond empty sloganeering, political leaders must first open themselves to genuine public scrutiny and then address all the weaknesses in the statecraft that breed corruption – weak laws with loopholes for manipulation by elites, inefficiencies of the civil service, public finance and other organs of the state including the judiciary.

In many countries this is done by empowering the anti-corruption authorities, that often exist only in name, with real authority and public trust to investigate corrupt practices and initiate prosecution at any level of government. Other countries, often under the weight of investigative journalism and the relentless pressure of citizen advocacy groups, may choose a tougher anticorruption and grievance redress system. This can be the office of an independent public ombudsman with the power to prosecute politicians and bureaucrats without prior government permission and provide protection to whistleblowers.

### **Accountability**

Accountability is imperative to make public officials answerable for behaviour and responsive to the entity from which they derive their authority. This may be achieved in a variety of ways depending on the level, context, culture, and political systems involved.

In representative democracies, parliamentary committees are appropriate bodies to exercise top level political oversight. Strengthening technical capacity of these committees in charge of the ministries of agriculture, food, and rural development can contribute to bringing the public agricultural administration system under the spotlight effectively thus improving its accountability and overall performance. At other levels, accountability can be achieved by:

- Establishing performance indicators at all levels of executive authority. Such tools as “quarterly result framework” documents as benchmarks/targets can be used and made available to the general public;
- involving stakeholders in designing and monitoring anti-corruption policies. Local community and civil society organizations can also combat corruption through undertaking a “social accountability” approach by bringing budget, expenditures, procurement, work plan of local-level public service providers under their scrutiny. The success of this approach can also contribute to building citizen’s trust in the state at the national and local levels;<sup>57, 58</sup>

This has been achieved in India through the establishment of formal public hearings with communities. Mazdoor Kisan Shakti Sangathan (MKSS), a union of peasants and workers, works with rural communities across the state of Rajasthan to hold innovative public forums — also known as social audits. A formal report is prepared by the MKSS following each public hearing and sent to senior state government officials, the media, and other groups engaged in anti-corruption campaigns. The state government now requires that these hearings be held annually within each village to verify whether public works projects have been successful and whether corruption has occurred

<sup>57</sup> World Bank. 2011. World Development Report, 2011.

<sup>58</sup> Ramkumar, V. & Krafchik, W. 2006. *The role of civil society organizations in auditing and public finance Management*. (Available at [http://www.internationalbudget.org/pdf/Role-of-civilsociety\\_orgs\\_in\\_auditing.pdf](http://www.internationalbudget.org/pdf/Role-of-civilsociety_orgs_in_auditing.pdf)).



- conducting independent supervision and monitoring and complaints handling;
- applying sanctions in administrative court in case of procedures (and timescales) not being met. Decisions should be given in case of legal resolution in shortest possible time;
- applying zero tolerance to corruption cases that come to light. The goal should be to change the most prevalent perception of corruption – from a “low-risk” activity to a “high-risk low-reward” activity. This could be achieved by fast-tracking a few high profile pending cases of alleged graft and corruption for successful prosecution. It can also be promoted by streamlining the legislative and regulatory framework involving corruption and civil service codes of conduct; and
- combating the situation where local services are not being delivered – ensure wherever possible that service delivery is by someone who can be held accountable by end-users/ the community.

## Capacity

The incentive framework governing the public services in many countries of the Asia-Pacific region is poor. The wage increases that many governments made to their civil servants in the recent past are still in many cases inadequate given the high cost of living. Low salaries effectively mean that government employees must have other jobs, family businesses, or other sources of income, including bribe payments to survive. Improving the capacity of the public services can be an effective tool in combating corruption. The measures that work most in public service capacity building are as follows:

- Pay salaries to public sector officials that are adequate and appropriate to the duties they perform;
- provide adequate operational budget to undertake mandated activities;
- provide clear job description to public employees particularly under unclear decentralization systems; and
- expand capacity in public administration at the central and local levels.

## Transparency

Availability of information to the general public and clarity about government rules, regulations, and decisions are powerful tools that reduce uncertainty and can help inhibit corruption among public officials. In practice, principles of transparency to combat corruption can be put in place using a mix of approaches, including:

- disclosing public officials’ assets and other information by public agricultural service providers that may be of value to farmers – requirement, timeframe, terms and conditions, performance targets on such services as input provision, marketing, processing, licensing, etc.
- requiring a government agency to specify and publish each step of the procedures required for the provision of a particular service. This information would include the maximum length of time to conclude the process as well as procedures to file complaints;
- increasing the use of e-governance for enhancing access to information and allowing citizens to monitor the status of their application for a service and raise questions in the event irregularities are detected;

- encouraging anti-corruption organizations to issue messages by mobile phone – if public officials are trying to extort money, encourage the public to report;
- strengthening the right-to-information for the people with a degree of legal enforceability;
- simplifying rules and procedures and making them easy to understand and apply, cumbersome regulations create loopholes that provide discretionary power to government officials and make them susceptible to different interpretations;
- categorizing products under risk categories and reduce the numbers of (unnecessary) inspections, which will offer less opportunity for corruption; and
- legalizing urgent administrative requests – providing a transparent scale of charges for such rapid requests (not at the discretion of service provider).

### ***Implementation and voice***

Empowering local community and CSOs with increased voice can significantly contribute to combating corruption at the local level, for example by introducing complaints and feedback mechanisms. This can be done using a wide variety of approaches and tools.

#### ***Community assessments***

Citizen report cards, first used in communities in Bangalore (India) in 1993 and since replicated in more than twenty countries, allow personal stories about corruption to be scaled up into a powerful collective body of evidence. In Bangalore, report cards have helped to benchmark the performance of Bangalore's water board and other public utilities and produce significant improvements in service provision at the local level since the first round of surveys.<sup>59</sup>

#### ***Accelerating complaint resolution***

In Indonesia, the Kecamatan Development Program (KDP), supported by the WB, developed a participatory community-led grievance and complaints resolution mechanism to enable communities to anonymously send their complaints to a post office box. A Complaints Handling Unit was established at the regional and national level to respond and follow up on the enquiries made. By empowering beneficiaries at the community level, KDP has proved successful in targeting and assisting the poorest in the region as well as improving local governance.

#### ***Community mobilization***

Apart from complaints and monitoring mechanisms, another option is to promote the engagement of communities in more general oversight of local issues. Transparency International Bangladesh (TI-B) has set up local watchdog bodies known as Committees of Concerned Citizens (CCCs), seeking to reduce corruption, demanding reform and promoting integrity in public service delivery. CCC members are selected from different professional groups including teachers, lawyers, public representatives,

<sup>59</sup> Mann, C. 2011. Dealing with petty corruption in fishing and small-scale farming. U4 Anticorruption Resource Centre. (Available at [www.U4.no/helpdesk/helpdesk/query.cfm?id=267](http://www.U4.no/helpdesk/helpdesk/query.cfm?id=267)).

and women activists, among other groups. CCCs work independently with a plan of action drawn up by themselves.<sup>60</sup>

Other measures that can be taken are:

- Undertake large-scale campaigns and initiatives, on government and private sector side to reduce corruption.  
Civil society groups, such as NGOs, academic institutions and research organizations, have proven themselves to be powerful partners in anti-corruption initiatives, whether in coalitions or as individual actors. The work and findings on anti-corruption by such groups can become the basis for investigation by government agencies, hearings by the legislative assembly, social mobilization by NGOs, and may draw the spotlight of media coverage,<sup>61</sup>
- conduct open forum events, for example farmers' field days to allow them to speak out and voice their concerns and perceptions with regard to issues that inhibit better delivery of services by both public and private sector service providing institutions; and
- establish farmer income guarantee programmes, replacing previous price guarantee programmes as these can reduce corruption. Producers in the community are identified and can join farmer income guarantee programmes – payments can be made directly to farmers' accounts.

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<sup>60</sup> Transparency International, Bangladesh.

<sup>61</sup> Marcelo, S. 2004. Enhancing the role of civil society in anti-corruption work. (Available at <http://www.u4.no/document/literature/Marcelo-2004-enhancing-civil-society.pdf>).



## Chapter 9

### Improvement of governance: Enforcement of rights

#### Learning objectives

At the end of the presentation, participants are expected to:

- Demonstrate a fair understanding of the rights farmers are entitled to, for example, farmers' rights over the plant genetic resources for food and agriculture (PGRFA); the right to secure land tenure; and the right to a clean environment;
- understand the relevant provisions in international agreements, treaties and national legislations that ensure these rights;
- identify the key governance challenges in enforcing these rights; and
- conceive the application of the principles of good governance, innovative institutional arrangements, design and updating of laws and regulations in fair enforcement of the rights granted to farmers.

## Introduction

Institutions that determine the rights to key resources support the empowerment of smallholder farmers on the one hand and also have the potential to improve efficiency and equity of use of those resources on the other. In most countries these issues are land tenure, access to plant genetic resources, environmental protection and legal enforcement of rights.

### Farmers' rights: Access to plant genetic resources and sharing of benefits from their use

Recognizing farmers' rights is an alternative approach that allows farmers to claim rights over the landraces, traditional varieties, and other genetic resources of which they are both custodian and user as well as over their knowledge systems that are not possible to claim through the framework of the conventional IPR systems.

The concept of farmers' rights was developed to reflect the contributions that traditional farmers, particularly those in the developing world, have made to the preservation and improvement of PGR. FAO Resolution 5/89 defines farmers' rights as "rights arising from the past, present and future contributions of farmers in conserving, improving and making available PGR, particularly those in centres of origin/diversity."<sup>62</sup> Article 9 of The International Treaty on Plant Genetic Resources for Food and Agriculture also recognizes:

*"the enormous contribution that the local and indigenous communities and farmers of all regions of the world, particularly those in the centers of origin and crop diversity, have made and will continue to make for the conservation and development of plant genetic resources which constitute the basis of food and agriculture production throughout the world."*

#### The key governance challenges for countries to realize farmers' rights are to:

- Introduce suitable mechanisms in national legislations that explicitly recognize a set of rights that farmers are allowed to claim over the system of seeds they save, grow, and sell and over the PGR they conserve, develop and make available for use in the development of new varieties;
- create a transparent mechanism of sharing the benefits that arise from for-profit utilization of local varieties, landraces, and other plant genetic resources in the public domain. Such a mechanism should allow the participation of a broad range of local level stakeholders and a system of accountability in deciding programmes, projects, and modalities for spending resources designated for benefit sharing. The most common approach to benefit sharing is to make provision in PVP law for a benefit-sharing fund. Examples are shown in Box 19 and Box 20:

<sup>62</sup> Resolution 5/89 adopted by FAO Conference 25<sup>th</sup> Session, Rome November 11-20, 1989.

### Box 19 Plant varieties protection fund

**Section 54** There shall be established in the Ministry of Agriculture and Cooperatives a fund called the "Plant Varieties Protection Fund" to be expended for the purposes of assisting and subsidizing activities related to plant varieties conservation, research and development, consisting of the following property:

- (1) Income accruing from profit-sharing agreements under section 52;
- (2) money or property received from the registration of plant varieties;
- (3) subsidies from the government;
- (4) donated money or property;
- (5) fruits or other benefits accruing from the Fund.

Money or other property under paragraph one shall be remitted to the Fund without having to remit the same as state revenue.

**Section 55** The money in the Fund shall be expended for the following activities:

- (1) Assisting and subsidizing any activities of communities in connection with the conservation, research and development of plant varieties;
- (2) serving as expenses of local government organizations for the purposes of their subsidizing the conservation, research and development of plant varieties of communities;
- (3) serving as expenses in the management of the Fund.

The management of the Fund and the control of the expenses there from shall be in accordance with the Regulation prescribed by the Commission with the approval of the Ministry of Finance.

Source: *Plant Varieties Protection Act B.E. 2542 (1999)* of Thailand.

### Box 20 Gene fund

45. (1) The Central Government shall constitute a Fund to be called the National Gene Fund and there shall be credited thereto—

- (a) the benefit sharing received in the prescribed manner from the breeder of a variety or an essentially derived variety registered under this Act or propagating material of such variety or  
An essentially derived variety, as the case may be;
- (b) the annual fee payable to the authority by way of royalty under subsection (1) of section 35;
- (c) the compensation deposited in the Gene Fund under subsection (4) of section 41;
- (d) the contribution from any national and international organization and other sources.

(2) The Gene Fund shall in the prescribed manner be applied for meeting—

- (a) any amount to be paid by way of benefit sharing under subsection (5) of section 26;
- (b) the compensation payable under subsection (3) of section 41;
- (c) the expenditure for supporting the conservation and sustainable use of genetic resources including *in situ* and *ex situ* collections and for strengthening the capability of the Panchayat in carrying out such conservation and sustainable use; and
- (d) the other expenditures of the schemes relating to benefit sharing, framed under section 46.

Source: *Protection of Plant Varieties and Farmers Rights Act of India, 2001.*

- enforce compliance through a clear description of penalties in national PVP legislation and the procedures that aggrieved parties can use to seek compensation and redress grievances through a country's court and justice system;
- create adequate institutional capacity for effective and efficient performance of administrative tasks as well as provision of scientific and technical oversight in implementation of PVP legislation particularly with regard to recognition, documentation and enforcement of rights.

The principles and guidelines described in Box 21 serve as a basis for countries to consider while developing national laws and an institutional framework for the enforcement of access and benefit sharing.

**Box 21 Highlights of a multilateral system: Access and benefit sharing  
(International Treaty on Plant Genetic Resources for Food and Agriculture)**

- The Treaty establishes a multilateral system with rules for access and benefit sharing for genetic material and associated information on a specific list of crops.
- Access is provided to both *ex situ* and *in situ* materials for the purpose of research, breeding and training.
- Access to PGRFA under development is at the discretion of the developer during the period of development. The multilateral system does not cover access for purposes that are not related to food and agriculture.
- Access must respect existing IPRs, but IPRs may not be claimed over material accessed from the multilateral system if that would limit facilitated access by others to that material "in the form received" from the system.
- Facilitated access to PGRFA will be provided under the terms of a Standard Material Transfer Agreement (SMTA).
- Monetary benefit sharing in the form of a payment into the so-called "benefit-sharing fund" is mandatory when genetic material from the system is used to produce a "product that is a PGRFA" (e.g., a line or cultivar) that is commercialized and the availability of that product for further research and development is restricted. In effect, some forms of patenting will trigger the benefit-sharing mechanism; plant breeders' rights probably will not.
- The monies that accumulate in the benefit-sharing fund will be used to support high-impact projects for the conservation and sustainable use of PGRFA, focusing on food security and adaptation to climate change, primarily in developing countries, as the approach to sharing benefits with farmers.

In developing mechanisms for recognition and enforcement of farmers' rights, countries have several options. One option is to adopt PVP legislation with provisions that permit farmers and communities themselves to claim exclusive rights to the plant varieties they cultivate and develop with arrangements for benefit sharing. Another option is to insert the traditional practices of farmers as exceptions to the exclusive rights of plant breeders under existing IPR laws. In other words, breeders are barred from demanding payment from farmers for such activities as saving seeds and planting them next season, or informally exchanging seeds.

Countries such as India and Thailand opted for the first approach, whereas Malaysia and the Philippines opted for the second. A description of both approaches is given in Box 22 and Box 25.



### Box 22 Farmers' rights

- (1) Notwithstanding anything contained in this Act—
- (i) a farmer who has bred or developed a new variety shall be entitled to registration and other protection in the same manner as a breeder of a variety under this Act;
  - (ii) the farmers' variety shall be entitled to registration if the application contains declarations as specified in clause (h) of subsection (1) of section 18;
  - (iii) the farmer who is engaged in the conservation of genetic resources of landraces and wild relatives of economic plants and their improvement through selection and preservation shall be entitled in the prescribed manner to recognition and reward from the National Gene Fund; provided that material so selected and preserved has been used as donors of genes in varieties that are eligible for registration under this Act;
  - (iv) shall be deemed to be entitled to save, use, sow, resow, exchange, share or sell his farm produce, including seed of a variety protected under this Act in the same manner as he was entitled to before the coming into force of this Act, provided that the farmer shall not be entitled to sell branded seed of a variety protected under this Act.

Explanation: For the purpose of clause (iv) branded seed means any seed put in a package or any other container and labelled in a manner indicating that such seed is of a variety protected under this Act.

- (2) Where any propagating material of a variety registered under this Act has been sold to a farmer or a group of farmers or any organization of farmers, the breeder of such variety shall disclose to the farmer or the group of farmers or the organization of farmers, as the case may be, the expected performance under given conditions, and if such propagating material fails to provide such performance under such given conditions as the farmer or the group of farmers or the organization of farmers, as the case may be, may claim compensation in the prescribed manner before the Authority and the Authority shall after giving notice to the breeder of the variety and after providing him an opportunity to file opposition in the prescribed manner and after hearing the parties, it may direct the breeder of the variety to pay such compensation as it deems fit, to the farmer or the group of farmers or the organization of farmers, as the case may be.

Source: Article 39 of the *Protection of Plant Varieties and Farmers' Rights Act of India*.

### Box 23 Protection of local domestic plant varieties

**Section 43** A plant variety capable of registration as a local domestic plant variety under this Act shall be of the following descriptions:

- (1) Being a plant variety existing only in a particular locality within the Kingdom; and
- (2) being a plant variety not registered as a new plant variety.

**Section 44** A *sui juris* person, residing and commonly inheriting and passing on culture continuously, who takes part in the conservation or development of the plant variety which is of the descriptions specified in section 43 may register as a community under this Act. For this purpose, there shall be appointed a representative who shall submit an application in writing to the Provincial Governor of the locality.

**Section 45** When a plant variety exists only in a particular locality and has been conserved or developed exclusively by a particular community, that community shall have the right to submit to the local government organization in whose jurisdiction such community falls a request for initiating an application for registration of the local domestic plant variety in the name of such community. Upon receipt of the request from the community under paragraph one, the local government organization

shall proceed to apply to the Commission for registration of the local domestic plant variety as from the day documents and information necessary for the registration have duly been obtained.

In the case where the community under paragraph one is formed as a farmers' group or co-operative under the law on co-operatives, such farmers' group or cooperative shall have the right to apply for registration of the local domestic plant variety on behalf of the community.

**Section 46** The application for registration, the consideration of the application and the issuance of a certificate of registration of a local domestic plant variety shall be in accordance with the rules and procedure prescribed in the Ministerial Regulation.

**Section 47** When registration has been made for the protection of a local domestic plant variety of any locality, that locality shall have the exclusive right to develop, study, conduct an experiment or research in, produce, sell, export or distribute by any means the propagating material thereof. For this purpose, the local government organization, farmers' group or co-operative to which the certificate of registration of the local domestic plant variety has been granted shall be the right holder of such plant variety in the name of the said locality.

The provisions of paragraph one shall not apply to the following circumstances:

- (1) [any] act relating to a protected local domestic plant variety without an intention to use it as propagating material;
- (2) [any] act relating to a protected local domestic plant variety committed in good faith;
- (3) the cultivation or propagation by a farmer of a protected local domestic plant variety from the propagating material made by himself, provided that in the case where the Minister, with the approval of the Commission, publishes that local domestic plant variety as promoted plant variety, its cultivation or propagation by a farmer may be made in the quantity not exceeding three times the quantity obtained;
- (4) [any] act relating to a protected local domestic plant variety for non-commercial purposes.

Source: *Plant Varieties Protection Act B.E. 2542 (1999)* of Thailand.

### Box 24 Exceptions to plant variety protection

The Certificate of Plant Variety Protection shall not extend to:

- a) Acts done for non-commercial purposes;
- b) acts done for experimental purposes;
- c) acts done for the purpose of breeding other varieties, except when Sections 39 and 40 apply; and
- d) the traditional right of small farmers to save, use, exchange, share or sell their farm produce of a variety protected under this Act, except when a sale is for the purpose of reproduction under a commercial marketing agreement. The Board shall determine the condition under which this exception shall apply, taking into consideration the nature of the plant cultivated, grown or sown. This provision shall also extend to the exchange and sale of seeds among and between said small farmers: *Provided*, that the small farmers may exchange or sell seeds for reproduction and replanting in their own land.

Source: Article 43 of the *Plant Variety Protection Act of Philippines*.

### Box 25 Limitations of breeder's rights

- (1) The breeder's right shall not extend to:
  - (a) any act done privately on a non-commercial basis;
  - (b) any act done for an experimental purpose;
  - (c) any act done for the purpose of breeding other plant varieties and any act referred to in paragraphs 30(1)(a) to (g) in respect of such other plant varieties, except where such other plant varieties have been essentially derived from the registered plant variety;
  - (d) any act of propagation by small farmers using the harvested material of the registered plant variety planted on their own holdings;
  - (e) any exchange of reasonable amounts of propagating materials among small farmers; and
  - (f) the sale of farm-saved seeds in situations where a small farmer cannot make use of the farm-saved seeds on his own holding as a result of natural disaster or emergency or any other factor beyond the control of the small farmer, if the amount sold is not more than what is required in his own holding.

Source: Section 31 of *Protection of Plant Varieties Act of Malaysia*.

Countries that become members of the 1991 Act of the UPOV convention adopt PVP legislation that doesn't recognize farmers' rights but allows a "farmers' privilege", one that is very limited in scope – permitting farmers to use for propagating purposes "on their own holdings" the product of the harvest which they obtained by planting a protected variety "on their own holdings." It explicitly bars farmers from selling any amount of saved seed. This principle was reflected in Viet Nam's Rights of Plant Variety Law developed in the framework of Intellectual Property Law conforming to UPOV 1991 Act (see below).

### Box 26 Limitations to the right of a plant variety protection certificate holder

1. The following acts are not considered as infringements of the rights over a protected plant variety:
  - a. Using the variety privately for non-commercial purposes;
  - b. using the variety for breeding and for scientific research purpose;
  - c. using the variety to create new plant varieties distinctive from the protected plant varieties;
  - d. *production households may use the harvested products of the protected variety for propagation and cultivation in the next season in their own field.*
2. Rights over a plant variety shall not be extended to the acts related to any materials of the protected variety which have been sold or otherwise taken out of the Vietnamese or overseas market by the breeder or his or her nominee, for the following acts:
  - a) Relate[d] to the continuous propagation of such a plant variety; b) relate[d] to the export of propagating materials of such plant variety to a country where the genus or species are not protected except where such materials are exported for consumption purpose only.

Source: Article 190 of *Intellectual Property law: Rights for the Plant Variety* (2005) of Viet Nam.

## Land rights

Secured land rights are a key determinant of farmers' willingness to invest in resources and use new technologies to improve the productivity of smallholder agriculture. The implications of uncertainty and insecurity surrounding land rights are particularly felt in countries where competition for access to land is intense because of increasing population pressure, dwindling land resources, and fragmentation of land holdings. This is also important for adoption of approaches of SCPI because the kinds of inputs and management practices applied are geared to producing incremental benefits over time and space rather than immediately. The same is true for future endeavours to promote agriculture technologies to mitigate and/or adapt to climate change. Weak and unprotected land rights can undermine incentives for longer-term investments by land users in such programmes. The importance of access to land is stressed as follows:

*Access to land is a crucial factor in the eradication of food insecurity and rural poverty. Inadequate rights of access to land and insecure tenure of those rights often result in entrenched poverty and are significant impediments to rural development and the alleviation of food insecurity. Secure access to land often provides a valuable safety net as a source of shelter, food and income in times of hardship, and a family's land can be the last available resort in the instance of disaster.<sup>63</sup>*

Land rights encompass the following rights:

- *Use rights*: rights to use the land for grazing, growing subsistence crops, gathering minor forest products, etc.
- *Control rights*: rights to make decisions how the land should be used including deciding what crops should be planted and to benefit financially from the sale of crops, etc.
- *Transfer rights*: rights to sell or mortgage the land, to convey the land to others through intracommunity reallocations, to transmit the land to heirs through inheritance, and to reallocate use and control rights.

Farmers can have access to one or all of these types of rights depending on the terms and conditions of access granted to them under existing land tenure. For example, a farmer under a sharecropping arrangement may have use and control rights but not transfer rights. Land tenure is a framework of laws, regulations and custom that defines how access is granted to use these rights. Therefore, governance interventions to improve security of land rights are primarily focused on improving security of land tenure.

**The key governance challenges in improving security of tenure are to:**

- Optimize the application of both formal (individual land titling) and customary systems of land tenure that maximize the efficiency of land use for crop cultivation and protect the rights of indigenous communities, women and other vulnerable groups;

<sup>63</sup> FAO. 2007. *FAO's land tenure service*. Rome.

- modernize customary systems of land tenure by:
  - ◆ introducing a transparent and accountable system of recording individual land rights, for example land use certificates;
  - ◆ delineating legally valid boundaries, which will bolster individual responsibility and create incentives for investment;
  - ◆ identifying existing rights that may overlap or be of a seasonal nature (between herders and sedentary agriculturalists), and registering them as appropriate;
  - ◆ devolution of authority for land management through innovative institutional approaches that allow a transparent and accountable mechanism for reflection on customary rules and traditions so that conflicts are resolved in ways that are respected by all.
  
- use appropriate tools and methods for land reform that best fit a country's need at a particular juncture of its socio-economic development, for example:
  - ◆ Confiscation of land from large land holders with or without compensation and redistribution to landless and land-poor farmers (often to redress historical injustices), for example, as was done in Zimbabwe and South Africa;
  - ◆ de-collectivization of land ownership toward more individual responsibility, for example, the household responsibility system introduced in China since the late 1970s and the introduction of market-oriented land rental programmes that simplify procedures for renting in and out. Land rental markets in China have improved tenant household welfare by 25 percent, enabled landlords to diversify occupationally and increased plot productivity by about 60 percent. Poorer groups have also benefited because as better educated people join the non-farm labour force, poorer, less educated farmers are able to rent in land from them.
 

In Viet Nam, in 1988, under the Doi Moi reform process, agricultural collectives were converted to contract land to households for 15 years for annual crops and 40 years for perennial crops. A land law passed in 1993 extended land tenure to 20 years for annual crops and 50 years for perennial crops. These reforms generated strong incentives to invest in agriculture, which led to greater food security and better nutrition;
  - ◆ introduction of greater tenurial security and enhanced entitlement of tenants under sharecropping arrangement. For example, a tenancy reform programme called "*Operation Barga* (sharecropping)" implemented in the late 1970s in the West Bengal state of India aimed at improving crop shares and security of tenure for tenants. An empirical study using district-level data found that about 28 percent of the subsequent growth of agricultural productivity in the state could be traced to the tenancy reform programme;<sup>64</sup>and
  - ◆ expanding the land rights of tenants and sharecroppers to access rural financial services including credit and government subsidies to enable them to undertake sustainable crop production practices.

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<sup>64</sup> Banerjee, A.V., Gertler, P.J., & Ghatak, M. 2002. Empowerment and efficiency: Tenancy reform in West Bengal, *Journal of Political Economy*, 110(2): 239-278.

Other challenges are to:

- Enforce land rights by implementing a set of procedures, such as
  - ◆ Procedures for land rights include defining how rights can be transferred from one party to another through sale, lease, loan, gift and inheritance;
  - ◆ procedures for land use regulation include defining the way in which land use controls are to be planned and enforced;
  - ◆ procedures for land valuation and taxation include defining methodologies for valuing and taxing land;
- design appropriate approaches to counteract the increasing trend of land grabbing (defined in Box 27) by forces and processes that can be traced to both domestic and international origins, often with the involvement of transnational companies. These should consider the following:
  - ◆ Revisiting government policies of confiscation of disputed land, particularly those that directly affect land rights of minorities and other weaker sections of the society; enforcement of strict regulation for distribution of land under government's jurisdiction including transparent policies for awarding ownership titles of naturally acclaimed lands, where applicable, and eliminating the nexus of land capture by local elites. This nexus is mediated by privileged access to government through bribery and the coercion of land officials to transfer title to themselves and deploy gangs to harass resident owners, primarily peasant proprietors, to relinquish their holdings;
  - ◆ developing a national policy with regard to the large-scale acquisition of agricultural land for commercial purposes that entail physical displacement and eviction of peasant farmers, fisherfolk, artisans, and other weaker sections for whom livelihood options are critically determined by ownership of land;
  - ◆ developing a national consensus and comprehensive policy on buying or long-term leasing of agricultural land on a large scale by foreign investors, often under the guise of FDI in the agriculture sector. This is designed primarily to address the food security concerns of their home countries by exporting food grown on land acquired in far away countries. Administration of such land deals must be transparent and accountable with adequate safeguards for protecting livelihoods of smallholder farmers, pastoralists, and other vulnerable groups.

### Box 27 Land grabbing

A "land grab" refers to those land acquisitions that have caused displacement, dispossession and disenfranchisement; or, according to the Institute of Development Studies, it may also more broadly refer to the mass purchasing of agricultural lands by transnational companies. Land grabbing is occurring on a scale and at a rate faster than ever known before. When over one hundred papers were presented at the International Conference on Global Land Grabbing in 2011, not one positive outcome could be found for local communities such as food security, employment and environmental sustainability. When such acquisitions occur in places of conflict, post-conflict and/or weak governance there is less monitoring and control and even greater negative impacts.

*Source:* Adapted from Cochrane L. 2011. Food security or food sovereignty: The case of land grabs. (Available at <http://sites.tufts.edu/jha/archives/1241>).

Tenure can also be made more secure by modernizing land administration through:

- Simplifying procedures for registration of land titles and recording of land transactions reflected in the reduction of transaction cost and fewer opportunities for corrupt officials to harass the public by demanding bribes;
- making greater use of computer-assisted tools and technologies for documentation of land records, transfer of land titles, better demarcation of land boundaries, inventories of land resources, and allocation of public lands for productive use;
- decentralizing land administration with greater devolution of land management authority to local-level elected bodies;
- updating regulatory framework and strengthening judiciary for enforcement of land rights and imposition of sanctions; and
- making the procedures of service provision by public sector administration responsible for land management transparent and accountable to elected representatives of the people.

Principles of good governance should be incorporated into land administration. Good governance in land administration aims to protect the property rights of individuals and enterprises as well as of the state by introducing such principles as transparency and accountability, rule of law, equity, participation, and effectiveness into land-related public sector management (Box 28).<sup>65</sup>

#### **Box 28 Principles of good governance in land administration**

<b>Efficiency</b>	Procedures to register property transactions should be short and simple. The fewer steps there are, the less opportunity for informal payments.
<b>Effectiveness</b>	The effectiveness of land administration depends on capacity building and financial provision, as well as the general socio-political conditions, such as political will and commitment, the rule of law, regulatory quality, and political stability.
<b>Transparency, consistency, and predictability</b>	Transparent recruitment of staff and transparent service standards and costs of service will contribute to higher efficiency, accountability, fairness and confidence in agency integrity.
<b>Integrity and accountability</b>	Accountability in land administration can be improved through the implementation of uniform service standards that are monitored, codes of conduct for staff (as well as mechanisms of sanction) and incentives such as awards for outstanding employees.
<b>Subsidiarity, autonomy, and depoliticization</b>	Increasing the autonomy of local land administration and introducing checks and balances at the national level can improve services and reduce corruption.

<sup>65</sup> Zakout, W., Whermann, B. & Torhonem, M-P. 2006. *Good governance in land administration: Principles and good practices*. World Bank and FAO.

<b>Civic engagement and public participation</b>	Client orientation and responsiveness in land administration can be achieved through improved access to information, customer surveys to measure customers' satisfaction and hotlines to enable customers to report corruption and misconduct.
<b>Equity, fairness, and impartiality</b>	All people should have the same access to services and receive the same service standards, independent of their political or economic status.
<b>Legal security and rule of law</b>	Good governance in land administration requires a consistent and coherent legal framework, a fair and transparent judiciary, and general provision of the rule of law to protect property rights.

## Environmental rights

The search for an alternative paradigm of agricultural production intensification was prompted by widespread environmental degradation triggered by rapid expansion of green revolution technologies since the 1960s. It is now widely accepted that this degradation for the most part was a result of environmental pollution from the dramatic increase in the application of external inputs and associated changes in management practices for reaping the benefits from growing high yielding crop varieties. The use of chemical fertilizers was excessive partly to compensate for the very inefficient way the fertilizer was used and partly as a result of the overly general nature of fertilizer use recommendations disseminated to farmers through research and extension services. These recommendations were mostly developed by major agro-ecological zones and key cropping patterns without due regard for location-specific variations in land quality and soil nutrient status. The use of chemical pesticides, the amounts applied and the methods and timings of application were excessive and indiscriminate in killing target organisms. The impact on agricultural ecosystems was disastrous – soil microbial activity and native biological processes of the soil were almost brought to a standstill. The toxins, heavy metals, and other contaminants left in the residues of the chemical inputs found their way to groundwater through percolation and leaching and downstream open water bodies through runoff, jeopardizing safety of drinking water and viability of life support systems of aquatic and marine resources. They also posed a significant public health hazard by vertical accumulation along the food chain.

Encouraging farmers to cultivate a limited number of high yielding crop varieties led to the disappearance of many local varieties, landraces, and wild relatives from their natural habitats. Ironically, the production of only a few key food crops central to food security in developing countries of Asia, which were originally centres of crop diversity, resulted in a fragile and narrow genetic pool of seeds and other planting materials. The valuable store of farmers' indigenous knowledge was also on the wane because of the indifference and contempt it received in the wake of institutional plant breeding and scientific research being considered the only source of valid useful knowledge.

The use of water for irrigation, particularly in irrigated rice culture, was very inefficient. The resulting overdraft of groundwater for irrigation promoted by governments through subsidizing the cost of electric power, diesel fuel and pumps led to the drawdown of the groundwater table that disrupted the normal hydrological cycle of replenishment in many places. This led to acute shortages of water in the dry season, amplification of the impact of droughts and the intrusion of salinity upstream in the estuarine areas.



This process of environmental pollution was accelerated by high population density and the rapid pace of social transformation and economic development in many Asian countries. This is reflected in growing urbanization and the expansion of rural businesses, processing, manufacturing, and other industries equipped with outdated technologies. Many of these industrial units lacked essential pollution control features including safe disposal of effluents and wastes. Biological activity in many river systems of Asian countries came under severe stress because of uncontrolled dumping of industrial effluents and solid wastes in water. Many canals, lakes, and other water bodies providing unique ecosystem services were destroyed to pave the way for lucrative real estate projects often involving the criminal collusion of corrupt officials with local elites and powerbrokers.

The environmental laws in most developing countries were applicable mostly in cities and urban centres. There were no quality standards for soil and water in rural areas nor were there any safeguards for prevention and control of pollution from pesticides, fertilizers, industrial waste, and agricultural wastes. It is ultimately the farmers who have to bear the brunt of the cost of environmental pollution in terms of foregone production, poor nutrition and vulnerability to a variety of infectious diseases.

Farmers' environmental rights essentially refer to their rights over the key components of natural ecosystems – land, soil, air, water, and biodiversity – so that they are maintained in a healthy state adequate to support the sustainability of their production systems and the safety and security of their livelihoods. Human interventions that disrupt the regenerative capacity of the natural resource base supporting agricultural production can be viewed as an infringement of farmers' environmental rights.

The institutional basis for transforming this conceptual framework of environmental rights into a set of approaches, methods and tools for defining these rights and enforcing their protection is weak in many developing countries. A number of challenges need to be addressed before smallholder farmers have the ability to stake a claim to their environmental rights and defend them. These are as follows:

- Perceptions among farmers to changes in the natural environment are not always clear and consistent. Many are unaware of the fact that environmental conditions are worsening. Many farmers accept declining crop yields, water and air quality and biodiversity and the loss of wild habitats as something inevitable that comes along with industrialization and over which they have little control.
- Farmers are not always aware of what rights they have in relation to the environment vis-à-vis protection of their production systems and livelihoods from environmental pollution. This needs to be addressed through environmental education, advocacy, and training.
- Awareness building is a critical first step toward forging consensus around the need for positive actions in defence of environmental rights. NGOs and civil society organizations can play an important role in motivating farmers to take a pro-active approach to protecting their environmental rights.
- Farmers will need to be assisted to organize themselves to undertake large-scale environmental campaigns and adopt a variety of means and approaches to safeguard their environmental rights.

## Major governance challenges in protecting citizens' environmental rights are:

- Strengthening the role of grassroots organizations (local farmers' associations, cooperatives, producer organizations, development NGOs) to advocate for farmers' environmental rights, including pursuit of court cases as a legal entity on behalf of smallholder and resource-poor farmers;
- modernize environmental laws and regulations by:
  - ◆ recognizing the need to provide a sound environmental regulatory framework to impose restrictions on activities and practices that cause damage to the environment, including those in agricultural production, thus paving the way for the introduction of sustainable practices for intensification of agricultural production;
  - ◆ introducing a robust process of designing environmental laws based on transparency and the participation of a broad spectrum of stakeholders who through a variety of consultative approaches should articulate their views and opinions on the proposed text of the draft laws;
  - ◆ fixing the focus on achieving the purpose of the law by removing ambiguities while balancing the interests of different stakeholders in the society. These interests are rarely convergent and often opposing when circumstances dictate the need to regulate certain human activities and interferences that are likely to disrupt the equilibrium of the natural ecosystems;
  - ◆ recognizing that environmental laws are often designed to meet certain treaty obligations and/or on the basis of political expediency and have too many exceptions and give too much leeway making them inherently weak, difficult to enforce and of little practical use;
  - ◆ providing clear benchmarks and establishing authority with a transparent chain of command, accountability and penal provisions to ensure compliance with the law;
  - ◆ reviewing existing environmental standards for their suitability and adequacy; setting separate standards for water, soil, land, and air quality for rural areas so that perpetrators of environmental pollution can be held accountable through judicial procedures;
  - ◆ regulating the use of chemical fertilizers and pesticides and disposal of wastes so that safe environmental thresholds of contaminating elements are not exceeded;
  - ◆ strengthening the enforcement component of laws through upgrading institutional capacity of the public sector administration responsible for environmental management;
  - ◆ revamping the organizational structure, capabilities, and resources of existing environmental bureaucracies in many developing countries with more emphasis on decentralization and close collaboration with local governments and grassroots organizations and a pro-active professional focus in dealing with existing and emerging environmental problems.
- strengthening environmental monitoring in rural areas by:
  - ◆ mandating government agencies responsible for environmental management to expand the task of environmental monitoring to rural areas;

- ◆ developing a participatory mechanism for rural environmental monitoring including representatives of local government, farmers' organizations, NGOs, and civil society groups in local environment monitoring teams;
  - ◆ focusing on major manufacturing, agroprocessing, intensive poultry and livestock production units, construction and other businesses for safeguards against environmental pollution and compliance with environmental standards in the disposal of effluents and industrial wastes;
  - ◆ enforcing a *polluter-pay* principle on any enterprise if it fails to meet its emission control targets. In general, the penal provisions for violation of environmental law should be made stricter.
- improving farmers' ability to protect their environmental rights by:
    - ◆ disseminating environment-related information to farmers;
    - ◆ sensitizing them to how specific human interventions trigger processes that degrade the quality of natural resources on which they depend for their livelihoods;
    - ◆ enabling them to identify cases of environmental pollution occurring in their villages and to trace the origins of such pollution;
    - ◆ training them on applicable environment-related laws; environmental dispute-resolution mechanisms, including procedures for initiating legal action to safeguard their environmental rights.

NGOs, civil society groups and the media, including newspaper, radio, and television, can play important roles in providing such training and information. This would improve farmers' organizational and technical capability to protect their environmental rights and would guarantee safety and security of their livelihoods.

## Legal support for protection of rights

Legal support is a tool to empower resource-poor smallholder farmers to exercise their legal rights making the best use of all available means including the state-controlled law and justice system. A vast majority of these farmers in many developing countries have poor knowledge about their rights and responsibilities conferred by laws that govern access to natural resources vital for agricultural production. These laws are often weak with loopholes that allow the exploitation of farmers' ignorance of their legal rights to deprive them of their fair share of access to natural resources. The power structure in many agrarian societies is so constructed that the existence of laws in itself is no guarantee that farmers will be able to protect their rights even when they are aware of them. Many avoid seeking redress in the court of law for fear of reprisals from the perpetrators often belonging to various crime syndicates with a web of connections with corrupt officials and political elites. Such connections in many instances help them to manipulate the legal system and avoid the reach of the law despite individual efforts to bring accountability to them. In many cases, the exorbitant fees professional lawyers charge for litigation of cases in courts deter farmers from seeking justice through the court system. This has set the stage for external organizations getting actively involved in bolstering the weak party's hand (poor smallholder farmers) in the resolution of disputes and in organizing effective institutional means for the protection of their rights.

The areas where infringement of farmers' legal rights is widespread and legal assistance is needed to secure their rights are:

- Land and tenurial rights – granting of false titles, insecure tenancy rights of sharecroppers and the threat of eviction by landowners, grabbing of public land designated for the poor and landless by influential people in collusion with corrupt officials, poor demarcation of land borders, manipulation of land records, and land acquisition with scant regard for adequate compensation and alternative livelihoods for people to be affected by such acquisitions.
- Environmental rights – pollution of land, air and water by upstream industrial emissions and disposal of toxic wastes and effluents in the natural system; improper construction of irrigation, drainage, and rural infrastructure projects leading to waterlogging, salinization and decreasing biodiversity.
- Traditional knowledge systems rights – protection of indigenous knowledge about conservation and the use of PGR and seed supply systems; rights to continue improvement of crop varieties using indigenous knowledge and skills and save seeds for replanting, sale, and informal exchange; protection of farmers' natural agro-ecological environment against unintended contamination through cultivation of proprietary biotech seeds produced by the corporate seed sector.

Farmers, therefore, need various types of legal assistance depending on the context and the type of right to be protected, which is difficult to provide using a single approach. Moreover, provision of direct legal aid to help seek redress through litigation in every instance of injustice is unrealistic and prohibitively expensive. This is one of the reasons publicly-funded legal aid services for rural areas are rudimentary or non-existent in most developing countries and this also explains why enforcement of laws designed to protect the rights of farmers frustratingly lags behind the enthusiasm and political will in putting such laws in place.

**The key governance challenge is, therefore, to:**

- Modernize the national justice system by undertaking appropriate administrative reform and capacity building to improve efficiency, transparency, and accountability of the judiciary; and remove obstacles for ordinary citizens to seek redress in the court of law without harassment by vested interest groups deeply entrenched in different branches of the justice system;
- devise cost-effective and sustainable institutional approaches for delivery of legal support services. This can be done by:
  - ♦ Innovative PPPs where the administrative and support service mechanisms of government institutions are combined with efficient service delivery and outreach capacity of mass organizations. For example, the government of Viet Nam under an Asia Foundation-supported project entitled Legal Literacy for Supporting Governance partnered with mass organizations – the Viet Nam Women's Union and the Viet Nam Farmers' Union – to provide legal information, training, and other support services to target clients;<sup>66</sup>

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<sup>66</sup> The Asia Foundation. 2001. *Strengthening law and governance in Viet Nam*. (Available at [www.asiafoundation.org](http://www.asiafoundation.org)).

- ◆ establishment of low-cost community legal support capacity through creating a cadre of paralegal workers with active involvement of non-government and civil service organizations. These paralegal workers educate fellow citizens about the law and assist them in reaching solutions to legal problems.

In Bangladesh, for example, BRAC, a leading non-government organization, operates a Human Rights and Legal Services (HRLS) programme using the concept of paralegal workers to bring awareness of human rights, gender perception, and judicial opportunities. Currently the HRLS programme operates in 61 out of the 64 districts in Bangladesh and has established 541 legal aid clinics. The HRLS programme is recognized as the largest NGO legal aid programme in the world.<sup>67</sup>

The approach by Timap for Justice, a not-for-profit organization offering free justice services in sites across Sierra Leone, has also demonstrated important results. Paralegals backstopped by lawyers have assisted communities to address disputes and grievances since 2003. Qualitative research has shown that Timap's interventions have empowered clients (especially women) to claim their rights. Community perceptions of institutional fairness and accountability of the police, traditional leaders, and courts also improved as a result of Timap's work.<sup>68</sup>

### Box 29 Paralegals – a community's great asset

Paralegals are generally local actors (community leaders, social workers, teachers, law students, development workers, etc.) who receive training and education on legal questions and act as assistants to lawyers in locating evidence and other information that might be necessary to defend their cases. They may also conduct research on certain cases and make referrals to lawyers where necessary. Furthermore, they often play a wider social role, mediating conflict situations, mobilizing communities and assisting in the establishment of people's organizations.

Source: Ravindran, D.J. (ed.) 1988. *A handbook on training paralegals: Report of a seminar on training of paralegals*. ICJ, Geneva.

- find the best-fit approaches specific to country contexts for complementing the formal justice system with different widely accepted and time-tested community systems of dispute resolution and conciliation;

Traditional systems all over the world settle disputes over land, property, and family issues. As many as 80 percent of the people in today's fragile states rely on non-state actors for various forms of security and justice. For instance, in Kenya – where land is frequently a source of private and communal disputes, even when and sometimes because it is titled – traditional institutions are widely held to be more reliable in resolving conflict than the state. In Mali in recent years, combinations of local traditional institutions and the state have settled land disputes, with community groups adjudicating between contestants, and all parties then recording the judgment at the local prefecture.<sup>69</sup>

<sup>67</sup> <http://www.global1.youth-leader.org/2011/03/brac-bringing-legal-aid-to-millions-of-the-poor>.

<sup>68</sup> Maru, V. 2010. Allies unknown: Social accountability and legal empowerment. *Health and Human Rights in Practice*, 12 (1): 8393.

<sup>69</sup> World Bank. 2011. *World Development Report*, 2011.

- develop effective approach and institutional capacity to help farmers and other affected citizens undertake, collectively, legal actions against violation of their environmental rights. This can be done by providing public sector support to specialized environmental NGOs with a corps of committed grassroots environmental lawyers to strengthen their capacity to undertake public interest environmental litigation;
- strengthen the capacity of the civil society groups and organizations that monitor and act as whistleblowers in tracking:
  - ◆ irregularities in the performance of state institutions responsible for maintenance of law and justice;
  - ◆ violations of human rights, including the rights of minorities, women, resource-poor farmers, indigenous communities, and other vulnerable sections of the society in their interactions with state institutions and private sector organizations;
  - ◆ efforts of the global corporate agriculture sector in coming up with solutions that are often not compatible with the socio-economic contexts of smallholder farming and are widely contested in terms of environmental safety and jeopardizing the autonomy of resource-constrained smallholder farmers.
- ensure accountability of the justice system to the top level of the country's political authority by increasing oversight of concerned institutions by the Parliamentary Committee responsible for law and justice.

## Group exercise

### Objectives

- Assess how well participants grasp the meaning and substance of the materials delivered through formal presentation by a training facilitator;
- evaluate the extent to which participants are able to apply the acquired knowledge for problemsolving; and
- assess the efficacy of the training provided for its potential to develop practitioners of good governance for smallholder crop production.

### Method

*Following the presentation of a module, the training facilitator will ask the participants to form several groups and distribute the work sheet for the group exercise. Each group will consist of four participants. Three persons will provide inputs consistent with the worksheet for preparation of the group report. The fourth person will be responsible for organizing the information and presenting the group report. After the presentation of all group reports, the training facilitator will designate a moderator to synthesize the group reports and present the key findings.*

## **Module 1: What is governance?**

### **THE CHALLENGE:**

Group members brainstorm on the following questions, list their answers and prepare the group report for presentation before the class.

- ❖ Describe your perception of the concept of governance? Briefly highlight what prompted the need to shift the focus on to governance rather than on to government.
- ❖ Describe in your own words how governance differs from government?
- ❖ How do you define agricultural governance?
- ❖ Identify the main actors of governance in a specific context of the agriculture and the rural development sector.
- ❖ How is agricultural governance of the crop sector in your country organized?
- ❖ Who are the main actors involved at different hierarchical levels of crop governance?
- ❖ Describe the institutional mechanism for partnership, collaboration and cooperation between the state and non-state authorities involved in agricultural governance in your countries.
- ❖ Describe in your own words the key challenges facing agricultural governance of the crop sector in your countries. Identify the strengths and weaknesses of governance.
- ❖ Explore the salient features of the ways and means national level agricultural governance in your countries interacts with global agricultural governance.
- ❖ Consider the hypothetical situation in which you have been instructed by your government to prepare a one-page concept note on a project proposal seeking technical assistance to develop the hybrid seed sector. List the name of probable development partners and the mechanism of how this assistance can be provided to target beneficiaries and stakeholders through national authorities.
- ❖ Prepare a short report and present to the class.



## **Module 2: Principles of good governance**

### **THE CHALLENGE:**

Group members brainstorm the following questions, list their answers and prepare a group report for presentation to the class.

- ❖ Briefly explain your understanding of the principles of good governance.
- ❖ Use a definition of governance from the training module 1 and show how well it reflects the principles of good governance.
- ❖ Explain how these principles can be incorporated into project design.
- ❖ Explain how activities planned in an initiative suffer if the principles of participation and accountability are inadequately addressed in project design.
- ❖ How do you approach the concept of measuring governance quality using different quantitative approaches?
- ❖ Are there any specific advantages or disadvantages of measuring governance quality?
- ❖ Explain how these structured attempts to measure governance quality affect the policy making of national governments.
- ❖ Prepare a short report and present to the class.

### ***Module 3: Agricultural governance in the context of sustainable intensification of smallholder crop production***

#### **THE CHALLENGE**

Group members brainstorm the following questions, list their answers and prepare the group report for presentation to the class.

- ❖ Briefly explain your understanding of the concept of “Sustainable Crop Production Intensification (SCPI)”. In what ways does it differ from the concept of the green revolution?
- ❖ Analyze the contents of Box 1A. What is the novelty in the suggested approaches given that some elements, for example IPM and IPNM, are already being addressed in the ongoing research and extension programmes of many countries.
- ❖ How do you assess the advantages or disadvantages of SCPI, particularly in the context of accelerating growth in crop productivity at rates higher than achieved before?
- ❖ What are the key challenges of governance facing implementation of SCPI approaches in programme mode?
- ❖ Briefly explain in your own words what type of restructuring in agricultural research, extension, and education will be needed to make SCPI the key paradigm of future agricultural growth.
- ❖ Provide examples of how specific measures of governance can accelerate implementation of SCPI approaches.
- ❖ Prepare a short report and present it to the class.

## **Module 4: Agricultural governance in the context of sustainable crop diversification**

### **THE CHALLENGE**

Group members brainstorm the following questions, list their answers and prepare the group report for presentation to the class.

- ❖ How do you define crop diversification?
- ❖ How can it be tailored to suit the needs of resource-constrained smallholder farmers?
- ❖ In what ways does crop diversification help the agenda of SCPI?
- ❖ What are the major trade-offs in policy considerations for crop diversification in smallholder crop production systems?
- ❖ What are the governance challenges facing sustainable crop diversification in land-scarce intensive crop production systems?
- ❖ Identify the entry points of governance interventions to facilitate diversification in the crop sector.
- ❖ How can you incorporate principles of good governance into the design and implementation of a crop diversification project?
- ❖ Prepare a short report and present it to the class.

## **Module 5: Agricultural governance: Seed supply systems and plant genetic resources (PGR) management**

### **THE CHALLENGE**

Group members brainstorm the following questions, list their answers and prepare the group report for presentation to the class.

- ❖ Briefly explain your understanding of the importance of seed and plant genetic resources in sustainable crop production systems and seed supply systems using examples of the countries you are representing.
- ❖ Briefly highlight key policy and institutional changes that shaped the evolution of the seed industry in the agriculture sector of your countries.
- ❖ Identify the major entry points in seed production and supply chain for incorporation of specific governance inputs.
- ❖ Briefly explain the trend of commercialization in the seed sector and the increasing enforcement of intellectual property rights, major international agreements regulating access and how they impact on traditional farmer-based seed systems and smallholders' access to seeds.
- ❖ Describe the type of legislation and institutional arrangement needed to protect farmer's rights.
- ❖ If you are asked to identify specific governance measures in the seed sector for advancement of the SCPI agenda, which ones are you going to suggest?
- ❖ Prepare a short report and present it to the class.

***Module 6: Agricultural governance: Access to inputs (other than seed) and improved production technology for sustainable crop production***

***THE CHALLENGE***

Group members brainstorm the following questions, list their answers and prepare the group report for presentation to the class.

- ❖ Describe your understanding of the importance of farmers' access to inputs (fertilizer, pesticides, irrigation water) and improved production technologies in the adoption of SCPI practices.
- ❖ Taking examples from the experiences in your countries, highlight major institutional and policy changes that have affected the input supply system.
- ❖ Focusing on technology development and dissemination systems in your countries and the research-extension-farmer linkages, what principles of governance do you suggest to foster this linkage to make it more effective and efficient in the context of SCPI?
- ❖ What in your opinion are the main governance challenges in improving smallholder farmers' access to production inputs?
- ❖ Describe how principles of good governance can be incorporated into the design of specific interventions that address institutional shortcomings and policy gaps in improving access to inputs and technology.
- ❖ Prepare a short report and present it to the class.

## **Module 7: Agricultural governance: Improving food safety**

### **THE CHALLENGE**

Group members brainstorm the following questions, list their answers and prepare the group report for presentation to the class.

- ❖ How do you approach the concept of food safety, particularly in the context of food security at the household level in developing countries?
- ❖ What are the major food safety issues in the countries you are representing? How do they arise?
- ❖ Describe the institutional structure of the governance of food safety in your countries?
- ❖ Briefly highlight your understanding of how food safety is regulated – codes, standards, laws, and regulations.
- ❖ What are the major global food safety standards? How they can be adapted to ensure food safety in the context of smallholder farming?
- ❖ What in your opinion are the major challenges facing the enforcement of food safety in developing countries?
- ❖ Provide a few examples of specific governance measures that you think may improve food safety control in your countries?
- ❖ Prepare a short report and present it to the class.

## **Module 8: Improvement of governance: Control of corruption**

### **THE CHALLENGE**

Group members brainstorm the following questions, list their answers and prepare the group report for presentation to the class.

- ❖ Explain your understanding of corruption.
- ❖ How does it affect the delivery of public services, particularly in relation to agriculture and rural development?
- ❖ How do you evaluate the country-specific assessment of corruption performed by anti-corruption watchdogs? How do citizens in your countries relate to such assessments of official corruption?
- ❖ What measures in your opinion are suitable for combating corruption?
- ❖ If you are tasked to design anti-corruption strategies for public sector agricultural services, what areas are you most likely to focus on?
- ❖ What measures do you think are most appropriate for keeping the government's attention focused on curbing corruption? How do you evaluate the effectiveness of such government institutions, for example anti-corruption bureaus in fighting corruption in public services? How do you assess the public demand in many countries to create the office of a powerful public ombudsman with the authority to prosecute independently public officials at any level?
- ❖ Cite, from your own experience, a few examples of how delivery of certain public services, for example land administration, can be reorganized to minimize opportunities for indulging in corruption.
- ❖ Provide a few examples of governance interventions to control corruption in public services.

## **Module 9: Improvement of governance: Enforcement of rights**

### **THE CHALLENGE**

Group members brainstorm the following questions, list their answers and prepare the group report for presentation to the class.

- ❖ Name a few rights farmers are entitled to in your countries.
- ❖ In the recent past, the issue of farmers' rights was hotly debated in the negotiation of an international treaty that formalizes rules and procedures for accessing plant genetic resources for food and agriculture. What is the name of the treaty? How does it define farmers' rights?
- ❖ What are the best possible means in your opinion to ensure that farmers continue enjoying these rights at national levels?
- ❖ The above- mentioned treaty also refers to such concepts as "facilitated access" and "benefit-sharing". Analyze the information provided in Box 14 and explain your understanding of these concepts.
- ❖ Analyze the information provided in the Box 12 and Box 13. Explain your understanding of how these rights can be protected in national legislations?
- ❖ Analyze the information in Box 15. Explain your understanding of how farmers' rights can be adequately protected in national legislations.
- ❖ Land tenure determines farmers' access to land. What in your opinion are the major governance challenges in improving the security of land tenure for smallholder farmers?
- ❖ How can principles of good governance be incorporated into improving land administration?
- ❖ What constitutes farmers' environmental rights? Briefly explain why protection of this right is paramount for the advancement of SCPI practices?
- ❖ Conceive specific governance measures to protect farmers' environmental rights.
- ❖ Suggest specific governance measures for the provision of legal support to farmers to help protect their rights.



**This resource guide is a follow up of the recommendations of the expert consultation on small-farmer-focused good governance in crop sector agriculture held at the FAO regional office for Asia and the Pacific during November 28-30, 2010. It has been designed as a resource guide for training senior level officials in the public sector agricultural services and elected representatives of people responsible for application of state authority through design, reform, and implementation of policies, laws, regulation and allocation of resources in management of the affairs of a country's agriculture and rural development sector. The target audience also includes senior level managers in the non-state sector – NGOs, CSOs, producer organizations, private sector – involved in provision of public goods and services.**

The resource guide is organized in nine chapters. Each chapter is written as a separate module designed to meet a specific number of learning objectives. It consists of lecture materials for presentation and work sheets for group exercise to assess learning outcomes.

**Chapter one** sets out conceptual framework of agricultural governance in the broad context of governance

**Chapter two** examines the principles of good governance and highlights the growing importance of incorporating sound governance principles in design and implementation of projects

**Chapter three** introduces the concept of Sustainable Crop Production Intensification (SCPI) in the context of smallholder farming and sets the framework of SCPI as elucidated in FAO's programme approach of new paradigm of agriculture – Save and Grow

**Chapter four** deals with diversification of smallholder crop production systems

**Chapter five** focuses on the issues of governance in relation to farmers' access of seeds and plant genetic resources

**Chapter six** examines the issues of access to inputs (other than seed) and improved production technology for SCPI

**Chapter seven** shifts the focus on the issue of food safety in smallholder crop production systems.

**Chapter eight** concentrates on the most contentious issue of contemporary governance in developing countries

**Chapter nine** analyzes the issues of governance in relation to enforcement of rights, particularly farmers' rights; land rights; environmental rights; and legal support for protection of rights

Group exercises have been designed as a tool for training facilitator to evaluate how well training participants understand the content and are able to apply the acquired knowledge in problem-solving

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