



Food and Agriculture
Organization of the
United Nations

COMMISSION ON
GENETIC RESOURCES
FOR FOOD AND
AGRICULTURE

Voluntary Guide for National Seed Policy Formulation



Voluntary Guide for National Seed Policy Formulation

Food and Agriculture Organization of the United Nations
Rome, 2015

The designations employed and the presentation of material in this information product do not imply the expression of any opinion whatsoever on the part of the Food and Agriculture Organization of the United Nations (FAO) concerning the legal or development status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. The mention of specific companies or products of manufacturers, whether or not these have been patented, does not imply that these have been endorsed or recommended by FAO in preference to others of a similar nature that are not mentioned.

The views expressed in this information product are those of the author(s) and do not necessarily reflect the views or policies of FAO.

ISBN 978-92-5-108867-8

© FAO, 2015

FAO encourages the use, reproduction and dissemination of material in this information product. Except where otherwise indicated, material may be copied, downloaded and printed for private study, research and teaching purposes, or for use in non-commercial products or services, provided that appropriate acknowledgement of FAO as the source and copyright holder is given and that FAO's endorsement of users' views, products or services is not implied in any way.

All requests for translation and adaptation rights, and for resale and other commercial use rights should be made via www.fao.org/contact-us/licence-request or addressed to copyright@fao.org.

FAO information products are available on the FAO website (www.fao.org/publications) and can be purchased through publications-sales@fao.org.

Contents

Foreword	v
List of acronyms	vii
I. Introduction	1
II. Background	5
III. Section A: What is a seed policy?	7
IV. Section B: Policy Formulation	13
V. Section C: The seed policy document	21
VI. Section D: Key elements of national seed policy	27
VII. Section E: Seed policy implementation	53
VIII. Conclusions	57
Bibliography	59

Foreword

Ensuring that farmers have access to affordable quality seeds and planting materials of the most suitable crop varieties is essential for improving food security and nutrition as well as the livelihoods of farming communities. In many developing countries, there is a lack of adequate seed policies – i.e. principles that guide government action and define the roles of stakeholders. The absence of such policies weakens countries' capacity to provide smallholders with adequate access to quality seeds of the crops most suited to their farming systems, conditions and needs. This Guide has been developed to assist governments in formulating policies which help create an enabling environment for seed sector development.

The means for spurring seed sector growth in developing countries have evolved considerably over the last three decades. For instance, until the 1980s, national governments had a predominant role in the various components of the seed industry including variety development, seed multiplication and extension services. Governments were therefore the main drivers for seed sector development. Since then, national agencies have largely disengaged from seed production. In some countries and for certain crops, this has led to the development of a dynamic private seed sector, but in many other countries the public seed sector has collapsed and no private sector has emerged to replace it. In fact, the seed industry of many developing countries cannot provide farmers with adequate access to quality seed, and the informal seed sector continues to be the main source of the seeds used by farmers.

The 2008 food price crisis, along with the consequent renewed recognition of the importance of continued investment in agriculture for food security, economic growth and preparedness for climate change was a watershed moment. The result

has been a rekindled interest of donors and governments in investing in the development of the seed sector as a critical step in agricultural development. At the same time, it is important to recognize that seed sectors have become more complex with a diversity of actors, including the public sector organizations, agricultural research institutes, large commercial companies, small-scale enterprises, community seed production groups, farmers' associations and cooperatives, NGOs and the farmers themselves. Therefore, promoting an approach that recognizes and integrates the roles of these various players is critical for the development of viable seed sectors. This is where seed policies come into play by guiding government action and stipulating the roles the relevant stakeholders, from both formal and informal sectors, play in the coordination, structure, functioning and development of the system for delivering quality seed to farmers. Linkages between all stakeholders are essential for creating a responsive and viable seed system that can effectively deliver quality seeds of the diverse array of appropriate crop varieties to farmers. There can be no substitute to well formulated seed policies guiding this process.

The endorsement of this Guide by FAO's Commission on Genetic Resources for Food and Agriculture at its 15th Regular Session in January 2015 signals global agreement on the importance of effective seed systems. However, as with all internationally agreed instruments, the real test of success lies in the implementation or the process of turning the policy into practice. This greatly requires the commitment and dedication of individual countries.

I congratulate the many countries, experts and stakeholders that have contributed to bringing this Guide to fruition. This is clearly an important tool which will enable national seed sectors to run smoothly. Looking into the future, it is important to keep in mind that while seed policies must be reasonably stable, they should be able to adapt to changing situations and should therefore be reviewed on a regular basis in order to meet the changing needs of the seed sector, farming communities and the agricultural sector as a whole.



Ren Wang

*Assistant Director-General
Agriculture and Consumer Protection Department
Food and Agriculture Organization of the United Nations*

List of Acronyms

AFSTA	African Seed Trade Association
APSA	Asia and Pacific Seed Association
CGRFA	Commission on Genetic Resources for Food and Agriculture
CRS	Catholic Relief Services
DNA	Deoxyribonucleic Acid
DUS	Distinctness Uniformity and Stability
FAO	Food and Agriculture Organization of the United Nations
FFS	Farmer Field School
GDP	Gross Domestic Product
GM	Genetically Modified
ICARDA	International Center for Agricultural Research in the Dry Areas

IPPC	International Plant Protection Convention
IPR	Intellectual Property Right
ISF	International Seed Federation
ISTA	International Seed Testing Association
LMO	Living Modified Organism
NARS	National Agricultural Research System
NGO	Non-Governmental Organization
OECD	Organization for Economic Cooperation and Development
PBR	Plant Breeders' Right
PGRFA	Plant Genetic Resources for Food and Agriculture
PPB	Participatory Plant Breeding
PVS	Participatory Variety Selection
QDS	Quality Declared Seed
Second GPA	Second Global Plan of Action for Plant Genetic Resources for Food and Agriculture
TRIPS	Trade Related Aspects of Intellectual Property Rights
UPOV	International Union for the Protection of New Varieties of Plants
VCU	Value for Cultivation and Use
WTO	World Trade Organization

I. INTRODUCTION

The availability of, and access to, quality seeds of a diverse range of adapted crop varieties is essential for achieving food and livelihood security and for eradicating hunger, especially in developing countries. Strengthening both formal and informal seed systems is therefore an integral part of the sustainable use of plant genetic resources for food and agriculture (PGRFA).

Under the Second Global Plan of Action for Plant Genetic Resources for Food and Agriculture (Second GPA), adopted by the FAO Council in 2011, seed production and distribution is one of the five priority activities for enhancing the sustainable use of plant genetic resources.¹ Many developing countries do not have policies regarding the seed sector, and their absence weakens the national capacity to provide smallholders with adequate access to quality seed. Thus, appropriate policies that promote sustainable practices particularly for smallholder agriculture can create the enabling environment for seed sector development and facilitate the use of PGRFA in accordance with national and regional agricultural objectives.

The Commission on Genetic Resources for Food and Agriculture (Commission) recognizes the importance of effective seed systems and has requested FAO to continue providing technical and policy assistance to promote seed sector development and partnerships at national and regional levels.² Upon the Commission's request, the Commission's Intergovernmental Technical Working Group on PGRFA reviewed the Voluntary Guide for National Seed Policy

1 Priority Activity 12. Supporting seed production and distribution.

2 CGRFA-13/11/Report, paragraph 40.

The absence of policies at country level weakens the national capacity to provide smallholders with adequate access to quality seed.

Formulation (Guide) at its Seventh Regular Session. The Commission, at its Fifteenth Regular Session, endorsed the Guide. In addition, “the Commission, agreed that nothing in this Voluntary Guide should be interpreted to aim at limiting any rights that farmers have to save, use, exchange and sell farm-saved seed/ propagating material, subject to national law and as appropriate.

When using the Voluntary Guide, countries are invited to take into account gender equality and women’s empowerment and, as appropriate, the important role of customary use of landraces.”³

The Voluntary Guide for National Seed Policy Formulation is part of a series of publications prepared by FAO to support developing countries in the implementation of the Second GPA. The key objective of the Guide is to assist developing countries in formulating effective seed policies, create enabling environments for seed sector development and facilitate the access to, and use of, PGRFA. The document is specifically intended for use by policymakers, national seed agencies, civil society, and public and private sector organizations, including national seed associations and farmers’ organizations involved in the seed sector.

The preparation of the Guide is part of the delivery of the Product and Service, *Advice and support on governance strategies and options to enhance productivity and sustainability of different production or farming systems*, which is being implemented under FAO’s Strategic Objective 2, *Increase and improve provision of goods and services from agriculture, forestry and fisheries in a sustainable manner*. The preparatory process of these guidelines has benefited from FAO’s hands-on experience in assisting seed sector development, through, *inter alia*, policy formulation, harmonization of rules and regulations, training and capacity development. FAO has also sponsored a series of multi-disciplinary dialogues and global expert consultations⁴ on this theme with the participation of a wide range of stakeholders from the public and private sectors, civil society, National Agriculture Research System (NARS), national and regional institutions, legal and academic experts in relevant fields, including agricultural policy and economics, with the aim of getting better understanding of the current state of their seed system so as describe it in some coherent manner.

3 CGRFA-15/15/Report, paragraph 52.

4 FAO. Report on the Expert Consultation Workshop on Seed Policy Formulation Milan Italy (2011); Africa Rice/FAO Atelier Regional sur la Politique Semenciere en Afrique de l’Ouest Rapport General (2011); and ICARDA/FAO Report on Workshop on Seed Policy in the ECO Region (2011).

The Guide is organized in five sections which explain what seed policies are and how they differ from seed laws; describe the participatory process of seed policy formulation; the nature and layout of seed policy documents; key elements contained in seed policies; and address issues involved in their implementation.

■ **Section A: What is seed policy?**

A national seed policy is a statement of principles that guides government action and explains the roles of relevant stakeholders in the coordination, structure, functioning and development of the seed system comprising both formal and informal sectors. The seed policy normally serves as the overall framework for regulatory instruments, such as the seed law and related legislation. The seed policy ensures that the government's vision is adequately reflected in day-to-day operations within the seed sector. This link is important because well prepared seed policies help stakeholders to understand their roles, responsibilities and contributions within defined boundaries, thus facilitating the smooth operation of the sector. Seed policy formulation should be undertaken within the wider context of national agricultural policy development, while ensuring synergy and consistency with environmental, trade and socio-economic policies at national, regional and international levels.

■ **Section B: Policy formulation**

The effectiveness of a seed policy depends on the capacity of government to manage the policymaking process, as well as the full participation of seed sector stakeholders. Governments often have difficulty developing successful seed policies for several reasons. They include weak capacity and insufficient data, rapidly changing political context, complex inter-relationships between different issues affecting the seed sector, and political pressures exerted by interest groups. Success in overcoming these constraints and promoting a functioning and effective national seed sector depends largely on the processes and institutions through which the national seed policy is developed and implemented. Sound seed policy development requires a sequence of steps: careful problem analysis to determine the need for a seed policy, a thorough assessment of relevant technical and institutional aspects of the seed sector followed by a participatory formulation process involving all relevant stakeholders including small farmers. The extent to which these steps are followed in practice varies greatly from country to country, and depends in large part on the institutions and administrative settings within which policy decisions are taken.

Seed policy formulation should be undertaken within the wider context of national agricultural policy development, while ensuring synergy and consistency with environmental, trade and socio-economic policies at national, regional and international levels.

■ **Section C: Structure of national seed policy document**

In order to communicate effectively with the intended users of the policy document, the seed policy drafting process needs to ensure, first, that the document is clear and coherent, with effective use of language, style, etc. Second, the content of the document should be concise, to the point, action-oriented and organized around a logical and coherent structure. The seed policy document should reflect the formulation process and the steps that were followed.

■ **Section D: Key elements of national seed policy**

The guide identifies key elements that reflect functional and structural dimensions of the seed sector and, therefore, cover a broad spectrum of the seed supply chain processes and activities: variety development including conservation and sustainable use of PGRFA, seed production in both formal and informal sectors, seed quality assurance, agricultural extension, seed marketing, seed import and export, seed enterprise development, seed value chain, seed security, capacity building and seed legislation/standards. The relative roles and overall importance of the various elements within the national seed policy depend on individual country circumstances, including the level of development of the agricultural sector and the interests and needs of the different farming systems including those practised by smallholder farmers.

■ **Section E: Seed policy implementation**

Implementation is the process of putting the policy into practice. The three main conditions for successful seed policy implementation are: designation of a government agency with responsibility for implementation; translating the policy provisions into an operational plan and guidelines; and coordinating operations and resources within the responsible agency and between it and other relevant agencies in order to achieve the intended policy objectives.

II. BACKGROUND

Crop improvement and affordable and adequate seed supply are essential for food security and nutrition and improved livelihoods in developing countries. Appropriate policies are needed, therefore, to create the enabling environment for seed sector development and facilitate the use and exchange of PGRFA in accordance with national and regional agricultural objectives. The absence of well-designed seed policies and appropriate consultative mechanisms in many developing countries lead to inconsistent, ill-informed decision making which, in turn, limits the capacity to provide farmers with adequate access to quality seeds and planting materials of adapted varieties.

Strategies for seed sector development have evolved considerably in developing countries over the last three decades⁵. Until the 1980s, national governments had a predominant role in the various components of the seed sector and in seed sector development. Since then, national agencies have largely disengaged from seed production. In some countries and for certain crops, this has led to the development of a dynamic private seed sector, but in many other countries the public seed sector has collapsed and no private seed sector has emerged to replace it. The seed industry of many developing countries cannot provide farmers with adequate access to quality seed so the

5 FAO.1999. *Seed Policy and Programmes for Sub-Saharan Africa*. FAO Plant Production and Protection Paper 151. Rome; FAO. 2000. *Seed Policy and Programmes in the Near East and North Africa*. FAO Plant Production and Protection Paper, 159. Rome; FAO. 2000. *Seed Policy and Programmes in Asia and the Pacific*. FAO Plant Production and Protection Paper, 160. Rome; FAO. 2001. *Seed Policy and Programmes in Latin America and Caribbean*. FAO Plant Production and Protection Paper, 164. Rome.



FAO/Paballo Thekiso

informal seed sector continues to be the main source of seed used by farmers.

The 2008 food price crisis, along with the renewed recognition of the importance of agriculture in food security, economic growth and preparedness for climate change, has renewed the interest of donors and governments in investing in the development of the seed sector as a critical step in agricultural development. However, the development of a viable seed sector is complex, involving public and private sectors, commercial and subsistence agriculture, agricultural research, NGOs and farmers, within the wider context of both domestic and international agriculture.

III. SECTION A.

WHAT IS A SEED POLICY?

A seed policy is a statement of principles that guides government action and explains the roles of relevant stakeholders in the coordination, structure, functioning and development of the seed sector. The seed policy serves as the basis for seed legislation and should inform all elements of the national seed law.

■ Seed policy and seed law

Nationally, the instruments that regulate the seed sector, including the seed policy, seed law (or legislation), and the associated regulations, are referred to as the “seed regulatory framework”.

As integral part of this framework, a national seed policy generally sets out, in broad terms, the goals, targets and objectives of the government for the seed sector, and identifies the guiding principles, institutional arrangements and mechanisms for achieving those aims.

A seed law, on the other hand, establishes the specific principles, standards and procedures that must be adhered to. Laws generally establish an institutional framework for enforcement, including the powers and functions of public bodies as well as provisions which can be used to hold both public and private actors accountable. The law also establishes the penalties for non-compliance.

So, while the policy sets out the aims and desired activities, the law is the rule that is enforced by an institution. In effect therefore, the national seed policy and the seed law are complementary. This is because the institutional and legal frameworks which the law, act of parliament or legislation provides are needed for the policy to be adhered to.

The national seed policy and the seed law are complementary. The policy sets out the aims and desired activities, and the law is the rule that is enforced by an institution.

A policy is legitimized, in a broad sense, by widespread social acceptance. In a more narrow interpretation, policy legitimization is official sanction or recognition, frequently through the enactment of a law. It may be necessary to amend the existing regulatory framework or to introduce a new legal instrument to allow a particular policy to be implemented and enforced.

In view of the above, it is generally advisable to develop, first, the national seed policy, which defines the government's

overall objectives and an institutional structure for the sector, and only thereafter to develop the seed law which implements the policy by providing legally binding enforcement. If a seed law is already in force, the development of a seed policy can provide important input into the revision of the seed law.

Most countries already have primary seed legislation (a Seed Act or a Seed Law) which is implemented and detailed through one or more seed regulations. The seed law defines the framework and essential principles that govern seed marketing. It identifies the competent authorities, sets up prohibitions and obligations, stipulates registration and seed production systems and other quality requirements. The need for such a law reflects a fundamental problem: that the quality and the identity (variety) of seed cannot be reliably assessed by farmers at the time of purchase. Seed laws protect the farmer by establishing a legal obligation for the seller to guarantee the quality of seed by means of standardized inspection and testing procedures. Those procedures, which may consist of a certification system or accreditation and authorization procedures, protect and promote enterprises that engage in quality seed production and consumers in the commercial sector and small farming communities.

It should be recognized that the main purpose and benefit of seed laws are to improve the overall quality and reliability of seed in the marketplace and to protect farmers from using seed of low quality. Seed laws may also be used to provide a facilitating environment for the development of farmer managed seed systems as well as local seed enterprises. Despite the importance of legislation, however, there are many aspects of seed sector operations that do not need to be subject to legal provisions and enforcement, but are best managed through voluntary procedures. Many of those aspects are covered in policy documents. In this way, the law and the policy are complementary – the policy provides objectives and frameworks, within which the law provides legal force to certain key issues, notably those relating to seed quality and the legal mandate of the authority in charge of implementation.

Existing seed laws might need updating to reflect the policy priorities and meet the needs of farmers, the seed industry and other stakeholders. Seed laws sometimes include a brief reference to the preparation of a policy and its purpose, thereby linking the two documents and mechanisms for addressing liability and redress.



■ Why and when is a seed policy necessary?

A seed policy ensures that the government's vision is adequately reflected in day-to-day operations of the seed sector. This link is important because well designed seed policies can enable the sector's stakeholders to understand their roles, responsibilities and expected contributions. Thus, seed policies guide activities and enable smooth running of the seed sector without the need for constant government intervention.

A seed policy becomes essential when coherence in the practical operations of the seed sector is lacking or limited. Development of the seed sector is usually constrained by one of the following:

Lack of a clearly defined direction for the sector

Seed programmes in developing countries are normally established in line with objectives outlined in the country's agricultural policy or strategy document. In these early stages, any written part of the agricultural policy on the role of seed, or expressed intentions of the government to address the seed needs and concerns of farmers, can be regarded as "official policy on seeds". Incorporating official statements or intentions into a national seed policy is advisable because it provides consistency, promotes consultation in policy formulation, broadens ownership to all relevant stakeholders and formalizes verbal statements in a written document. It can also enhance stability and continuity in seed policymaking, allows for revision of regulatory arrangements that may be constraining development of the sector, and creates confidence that fosters national and international collaboration and support.

Insufficient clarity of vision for the sector

In some cases, a national seed policy may need to be formulated *ex novo*. This is usually the case where a country has no written agricultural policy or where the national agricultural policy or plan provides little guidance on the role and function of the seed sector.

Where a national seed policy does exist, revision or modification will be required when it does not cover all relevant issues; it is derived from the policy of another country and is therefore not in line with the real needs and circumstances of the country; is not amenable to regional or global compacts to which the country has subscribed to or it is not in harmony with other national policies.

Specific factors hindering seed sector development that the *de novo* development or revision of a national seed policy could address may include:

- limited clarity regarding the roles of different stakeholders, especially the public and private sector and the respective roles of the formal and informal seed sectors⁶;
- a regulatory framework that does not sufficiently reflect the needs of the formal and informal seed sectors as well as their inter-linkages;
- lack of, or weak, coordination of activities implemented by development partners;
- limited access to quality seed owing to weakness of delivery mechanisms;
- limited testing and release of new varieties to meet needs and preferences of the farmers;
- lack of demand for seed owing to economic constraints;
- limited funding for plant breeding for the development of suitable varieties; and
- lack of clear understanding of the different needs of the large scale commercial sector and small farming systems.

With a clearer understanding of the meaning and role of seed policy, as well as the crucial relationship between national seed policy and legislation, policymakers will be in a better position to determine whether a seed policy review or formulation as explained in the next section, should be undertaken.

6 The formal seed sector is defined as that in which seed of identified varieties are produced under established quality assurance systems, while the informal seed sector refers to farmer management of local varieties and methods of local seed production and distribution.

SOYABEANS

TGX-1119-2



IV. SECTION B. POLICY FORMULATION

FAO's experience in seed policy formulation worldwide has demonstrated that sound seed policy development requires a sequence of steps. The first is a thorough assessment of the current status of the relevant technical and institutional aspects of the seed sector, followed by a careful problem analysis to determine the need for a seed policy and culminates in a participatory seed policy formulation process. The extent to which these requirements are met in practice varies greatly from country to country, and depends in large part on the institutions or administrative settings within which policy decisions are taken. There are many reasons why governments in developing countries face difficulties in developing successful seed policies⁷. They include weak capacity and insufficient data, rapidly changing political context, complex inter-relationships between different issues within the seed sector, and political pressures from interest groups. Success in overcoming such difficulties depends largely on the processes and institutions through which the national seed policy is developed and implemented.

7 CGRFA/WG-PGR-5/11/Inf.5.

The effectiveness and usefulness of a seed policy depends on preparatory steps that lead to its formulation, and the provisions made for its implementation.

■ Suggested steps in seed policy formulation

The effectiveness and usefulness of a seed policy depends on preparatory steps that lead to its formulation, and the provisions made for its implementation. The leadership of the government, through the Ministry of Agriculture, is fundamental as it will be the main actor in the implementation of the policy. However, in order to ensure stakeholder “buy-in” and inter-sectoral

collaboration in the implementation of the policy, the formulation process needs to be conducted in a participatory manner.

The participation of stakeholders from other relevant ministries, departments and agencies, e.g. Ministry of Commerce, whose areas of responsibility impact on different stages of the seed supply chain, is therefore absolutely important. The private sector is increasingly important in both the development of varieties and in the marketing of seeds and planting materials and therefore must participate to the full extent possible in the development of the seed policy. Increasingly also, the civil society and farmer-based organizations are playing pivotal roles in crop improvement and therefore should be part of the seed policy formulation.

The following ten steps (itemized in Box 1) could guide the formulation of a national seed policy. These may need to be adapted to local conditions.

Box 1. Suggested steps in formulating a national seed policy

1. Assess the current status of the seed sector.
2. Define the context through problem analysis and identification of key policy issues.
3. Set the objectives.
4. Evaluate and choose policy options.
5. Assemble information.
6. Convene a national ‘Seed Forum’.
7. Draft the National Seed Policy.
8. Approve and adopt the National Seed Policy.
9. Raise awareness to facilitate implementation.
10. Review the National Seed Policy periodically.

Step 1. Assessment of the current status of the seed sector

For policy formulation to be effective, there needs to be careful planning, starting with the collection of relevant, reliable and up-to-date information and data on the seed sector. This will require a thorough study of the national seed system in relation to major national agricultural objectives. In order to carry out this study, it will be necessary to mobilize expertise at the international or national level in fields considered relevant in a particular country situation, such as seed system development, research and variety development, seed quality control, extension, seed marketing, landraces and informal seed system management, variety release and use, agro-economy, and gender.

The report of this study, which would identify the opportunities, challenges, needs and gaps, should cover the main elements that are described in Section D of this guide on the content of the policy document. It should describe the opportunities and constraints facing both the formal and informal seed sectors and the potential future roles of these sectors in overall national agricultural policy objectives.

Step 2. Definition of the context: problem analysis and identification of key policy issues

A clear and detailed understanding of the context or problem/policy issues to be addressed would be the next step. While this may be easy to state in principle, the reality may be more complex. For example, significant political considerations may be involved in identifying some critical issues, bringing these to attention of relevant leaders, and then garnering support from influential individuals/groups or the political system itself. Similarly, some individuals or interest groups may perceive certain relevant matters as not important and ignore such issues.

However, it is crucial, at this initial stage, to clearly define the context or principles that will guide the formulation process and provide the basis for a clear statement of policy issues to be addressed. The statement of issues should identify the key opportunities and constraints affecting seed sector development and be best drawn from a thorough analysis of the seed system through a transparent consultative process involving all relevant stakeholders from the formal and informal seed sectors, that will result in the identification of which opportunities to leverage; challenges to be mitigated and gaps to be bridged in order that farmers have reliable access to quality seeds and planting materials of suitable crops and varieties. For example, the following questions may be pertinent. What are the main seed sources (formal, informal and their linkages)? What is the degree of seed security for different crops in various regions of the country? How is the ownership structure in the seed sector (private, public, local, foreign companies, farmers' cooperatives, traditional

agriculture practised by small farmers)? What are the needs and preferences of farmers in terms of seeds and to what degree are they met? What is the status of plant genetic diversity?

Step 3. Specification of objectives

The results of the analysis of the issues in step 2 will provide the basis for the formulation of a set of seed policy objectives, designed to leverage the identified opportunities; mitigate the challenges and bridge the gaps.

The objectives, at this stage, may be tentative and modified as necessary in the light of information gathered and analysed during the process. For example, in attempting to address the policy issues highlighted in step 2, the government may define the overall objective of its seed policy as to create the conditions for a viable and integrated seed sector, one capable of harnessing the potentials of improved and adapted varieties and to develop an efficient production and delivery system to provide seed of good quality at a reasonable price based on real demand from, and benefit to, farmers.

Step 4. Evaluation and choice of policy options

The next step is to identify and evaluate the pros and cons of the various policy options that could be applied to achieve the set of policy objectives. It is critical in policy formulation to choose between different options with differing resource requirements and potential impacts on the identified objectives.

Step 5. Assemblage of information

All the information (data and reports of foregoing assessment and analyses) should be assembled into a coherent document that should be appropriately titled, e.g. 'Seed System Issues', which will serve as the main working document for the policy formulation process. It should highlight the main points which should be discussed for their possible inclusion in the seed policy. The document should cover all important commercial and subsistence/food security crops, and offer various optional approaches to seed policy, including considerations of the multiple roles the seed system and crops could play in the national agricultural policy. Specific position documents may be prepared by experts in the key component areas, such as the current state of research, Intellectual Property Rights and Farmers' Rights, state of agricultural biodiversity, seed multiplication, extension, quality control, marketing, state of the conservation and use of PGRFA, the role of the informal seed sector, etc., and projected future needs, as well as options for achieving them. Deliberations on these specialized documents will be the basis of discussion at a

stakeholder consultative meeting that may be referred to as the 'National Seed Forum', during which the working papers on key seed sector elements are presented and discussed by relevant stakeholders as part of the consultation process.

Step 6. National Seed Forum: the consultation process

The National Seed Forum is a consultation that brings together key stakeholders from across the seed sector to discuss ways of creating an enabling policy environment that fosters performance and improvement in the sector. The event should include presentations and group discussions aimed at stimulating stakeholders to exchange views and reflect on actions needed to strengthen the seed sector and improve seed security, and to improve collaboration between the public and private sectors, civil society and farmers. The outcomes of the consultation should be used as basis for drafting the seed policy. The outputs of the prior work in the preceding steps, i.e. the report of the assessment of the seed sector (that may be titled Seed System Issues'); the identified policy relevant issues and objectives and the evaluation and choice of the policy options should all constitute the basis of the Seed Forum and may be presented as working documents.

Participants and resource persons for the consultation should be carefully selected to ensure that each topic is effectively presented and discussed. There should be a balanced representation of decision makers from all stakeholder groups. A programme of one to three days, with opening and closing sessions conducted by a very high level government and ministerial authority, should be drawn up. High-level participants should be drawn from the entire spectrum of seed sector stakeholders, including representatives of farmers, seed companies, national seed associations, NGOs/civil society, agro-industry, institutions involved in research on, and conservation of PGRFA, and relevant ministries (e.g. agriculture, research, finance, environment).

The topics selected for discussion at the national 'Seed Forum' should cover all aspects of the seed sector. Working documents on analyses of the national seed sector including the needs of the informal seed sector/small farming communities, and presentations on current global trends affecting the seed sector will help participants gain a comprehensive understanding of the current status of the national seed system and of the options available for addressing various scenarios. The agenda should provide ample time for debates and working group discussions.

Papers and presentations – which should derive from the preceding steps in the formulation process – should give participants a good understanding of the complexity and synergies among elements of the seed sector. Presentations



©FAO/Ivo Balderi

can help stimulate a lively debate among stakeholders and help them reach a consensus on how to further strengthen the seed sector and improve seed security. Papers will also serve as resource documents that can later form the basis for the drafting of the national seed policy. Working documents should not be overly technical, but written in a simple and straightforward manner accessible to the full spectrum of forum participants.

The documents should not be prescriptive but rather present various options and provide the information needed for participants to be able to make informed decisions. The documents could include information on:

- general background of the activity, topic or subject and its relation to national seed and agricultural policy objectives; and
- benefits, constraints, main development issues and opportunities of each specific element of the seed sector.

Step 7. Drafting of the National Seed Policy

The outcomes of the National ‘Seed Forum’ should be used as the basis for drafting the National Seed Policy. The actual drafting of the policy document should be coordinated by the Ministry of Agriculture in cooperation with other relevant ministries. The following documents provide useful background information:

- the recommendations arising from the ‘Seed Forum’, which represent the opinions of the wider group of seed sector stakeholders;
- the specialist documents presented at the ‘Seed Forum’, which will serve as important reference documents during the deliberations of the task force;
- the national agricultural policy and/or plan;
- other relevant national policy statements (e.g. national food security policy, poverty reduction strategy document; national plant genetic resource use and conservation policy);
- seed sector studies;
- international Agreements, Treaties or Conventions signed by the country; and
- other relevant documents, such as seed legislation, plant quarantine regulations, plant breeders’ rights, impact of seed laws on farmers’ rights, people’s right to healthy and safe food, national investment code, conventions and norms governing the production and movement of seed in international trade and international exchange of plant genetic resources.

The draft National Seed Policy should be sent for public hearing in accordance with national procedures, in order to benefit from inputs from all stakeholder groups in the seed sector.

Step 8. Approval and adoption of the policy

The final seed policy draft will be approved by the relevant national authorities (normally the Ministry of Agriculture). In some countries, some higher level endorsement, such as that of parliament, may be necessary. Once the policy is approved, media releases should help explain the process of policy development and implementation.

Step 9. Awareness raising to facilitate implementation

Promulgation and dissemination of the policy document among seed sector actors and stakeholders is a significant step, representing the bridge between formulation and implementation. It is important to present the new policy in a positive manner,

One key purpose of a national seed policy is to provide stability in the management of the sector and to promote consistency in decision-making by all stakeholders.

as a significant step forward for the seed sector and for the overall development of the country. Stakeholders should be sensitized to the rationale of the policy, to the process of consultation and consensus building that produced it, and to the need for agreement on action points for implementation.

Step 10. Periodic policy review

One key purpose of a national seed policy is to provide stability in the management of the sector and to promote consistency in

decision-making by all stakeholders. The policy must reflect the current status of the seed sector while providing a roadmap for the evolution of the sector to meet national policy priorities, such as sustainable economic development, community seed production or inclusion of small farmers.

The policy should be regarded as a “living document” and subject to periodic revision as necessary. The frequency of such reviews should be stated clearly in the policy document, with five years as a recommended (although not fixed) timeframe. The review mechanism could also be described. Normally, this would be initiated by the National Seed Council, or similar body, assuming that it exists. In fact, it should be part of the terms of reference for the National Seed Council (or similar) to monitor the implementation of the policy and plan on a regular basis. The council would, therefore, be in position to decide when a review is required and which particular areas need attention.

The review would take the existing policy document as a starting point and critically evaluate each article, making amendments to reflect any changes based on facts or circumstances or the changing nature of seed sector development. It could also start with an overview of progress made since approval or last revision of the document, noting areas in which the policy has had a positive impact and the main issues that remain to be addressed. The review process should be similar to the process for preparing a policy *ex novo*, i.e. with stakeholder meetings and a national forum. It can be expected to move more swiftly if there is a general familiarity with the policy among the stakeholder community. However, if the original policy is not well-known, or has had little impact, then it will be necessary to examine the reasons for this more critically as part of the consultation.

V. SECTION C. THE SEED POLICY DOCUMENT

The content of a seed policy document should be concise, to the point and action-oriented, with a logical and coherent structure. In drafting a seed policy, two important factors must be taken into account in order to communicate effectively with the intended users of the document:

- general characteristics, including style, the use of language, construction of sentences, coherence and clarity of expression; and
- the layout, organization and structure of the document.

■ **General characteristics of the seed policy document**

The users of seed policies are diverse, ranging from government officials, donor agencies and implementing partners to technical and extension officers, seed producers and dealers, contract growers, commercial and small farmers. These actors and stakeholders need a policy document that is easy to read, understand and interpret.

At the same time, the document needs to be comprehensive, providing clear guiding principles and practices for seed sector development and defining clearly the roles of all parties. The following general features should be taken into account when drafting a seed policy:

- Use plain language: The objective should be to produce a policy that is both easily read and understood as well as legally and practically effective in achieving the desired policy objectives. Policy statements which are easily understood are

The content of a seed policy document should be concise, to the point and action-oriented, with a logical and coherent structure.

also easy to translate into other languages or interpret to illiterate persons without loss of essential meaning.

- Promote effective communication: The text should be clear and concise, making use of “every day” words as far as possible and avoiding ambiguity. The use of language should be consistent.
- Use appropriate words and phrases: Make it clear whether provisions in the policy are mandatory or discretionary by using the words “must” or “may”; use gender-neutral language, for example: “chairperson” rather than “chairman”; and do not include information (e.g., specific names or titles) that may become quickly outdated.
- Use authoritative language: Seed policy statements should reflect authoritative and clear positions of the government in all matters regarding the seed sector. Therefore, use affirmative phrases such as “the Government believes that” and “the Government recognizes that”.
- Take a practical approach: Seed policy statements should be practical and realistic, and reflect strong intentions and commitments on the part of the government. In this case, the members of the drafting task force should also maintain close contacts with relevant government authorities and other stakeholders in order to seek clarifications of official positions on specific issues.

■ **Structure, organization and content of the seed policy document**

A good document should be concise and clear, with a logical and coherent structure and organization of contents that make it consistent and easy to use. The content should be divided into numbered sections, making it easy to locate topics or subjects and move from one topic to another.

■ Suggested format of seed policy

The following arrangement of contents is recommended:

Foreword

A foreword outlines the aims of the policy and expresses clearly the commitment of the government to ensuring its implementation for the benefit of the seed industry, farmers and the country as a whole. It is important that the national seed policy document begins with a foreword from the relevant government minister, normally the Minister of Agriculture. This helps to raise the profile of the policy and adds weight to the process.

Introduction

The introduction (or background section) should provide an overview of the current state of the seed sector and explain why the new policy is needed to improve it. This section can also provide information on how the policy was developed. It is important to highlight the links between the seed policy and broader national policies for agriculture, food security and nutrition, rural development and research. Where the seed policy document supersedes a previous policy for the sector, complementarities and changes in focus should be explained.



Context

The context is the preamble of the policy document and should describe the general framework within which the policy has been conceived and prepared and will be implemented. The context of any seed policy is generally complex and it may be difficult to define the boundaries of the policy in relation to other issues in the agricultural sector. However, a brief analysis of the main linkages between the seed sector and broader issues in agriculture and crop production may be sufficient to put the seed policy in perspective and to provide a better understanding of the processes or change that may arise as a result of the policy.

Objectives

This section contains an exposition of the seed policy's rationale and the needs it seeks to address. The thrust and direction of the entire policy, the key elements and the main activities that will be undertaken, are derived from the policy's principal objectives. It defines the role of the seed sector in achieving the overall goals of the government in agriculture and in economic and social development. It is important to recognize that the seed sector grows in tandem with agriculture in distinct stages of development, and that management of the seed sector, and more broadly the agricultural sector, aims at meeting multiple objectives, such as achieving food security and nutrition, increasing agricultural production and agricultural GDP, and conserving important plant genetic resources. The seed sector is frequently seen in developing countries as a vehicle for achieving national food security and nutrition. However, for some crops, farming systems or countries, the main objective of seed sector management may be to maximize economic returns or the returns to export crops. It is clear that the type of policy measures needed to achieve those goals are different, and this needs to be explicitly recognized in the policy document, which should make clear how multiple objectives are considered in the seed policy development.

Scope and strategy

This section should define the boundaries of the seed policy and how the policy relates to other issues in the agriculture sector. Within the scope of the policy, strategies should be developed to achieve the specified policy objectives. Since more than one strategy may be needed, depending on the range of objectives, a strategic choice should be made among the priorities.

Administration of the policy

The administration and monitoring of the policy should be assigned to a body or committee such as the National Seed Council, where it exists, and its function explained in the policy document. The Council should be the same body that is responsible for the approval and periodic review of the policy.

Elements of the policy

This part of the document should include sections on all areas of the seed sector having significant policy dimensions. These key elements are the actual building blocks of the seed policy document and cover all the pertinent technical issues. These should be presented in sections or sub-sections with clearly defined headings and arranged in logical order. Key seed sector elements are explained in detail in Section D. Each key element should be introduced with a short statement describing its current status and the government's overall position regarding related issues. This should be followed by an explanation of the main options and strategies adopted by the government, and the expected outcome.

Implementation of the policy

This section should describe the procedures for the implementation of the policy. A seed policy counts for little unless it is implemented. The organization in charge of monitoring and evaluating the implementation of the policy has to be defined. Aspects related to resources and facilities for implementation also need to be described and estimated.

Effective date of entry into force

It should be clear when the policy will come into force.

Revision and updating of the policy

The policy must be dynamic, as it will need to adapt to changing situations in the future. Seed policies are usually much easier to review and adopt than seed laws. Therefore, while keeping in mind that the policy must be reasonably stable, the document should contain a provision for periodic revision to meet changing needs of the seed industry, farming community and the agricultural sector as a whole.



VI. SECTION D. KEY ELEMENTS OF NATIONAL SEED POLICY

This section shows how a national seed policy can contribute to an environment which, by fostering the participation of both the formal (public and private) and informal (small farming families) sectors, can enhance the benefits of seed sector investment and development of the entire farming community. It describes key elements that need to be addressed in order to build a successful and effective seed sector.

The relative roles and overall importance assigned to the various elements within the national seed policy will depend on individual country circumstances, particularly the economic structure, the level of development of the agriculture sector and importance of the informal sector in the national seed supply. However, the quality of a national seed policy should not be seen simply as the sum of the individual elements outlined below but should be evidenced from how these are interlinked. The successful deployment of new crop varieties requires a comprehensive strategy that takes full account of the linkages between, for example, the release of new varieties and the state of the seed delivery mechanism, including the existence of functional seed enterprises.

The main objective of crop variety development is to provide improved or progressively more appropriate varieties that meet the needs of farmers.

■ **Crop variety development**

The main objective of crop variety development is to provide improved or progressively more appropriate varieties that meet the needs of farmers. Variety development covers activities such as the evaluation of plant genetic material (wild and improved) for their use in breeding programmes, and their selection in trials for adaptation to diverse agro-ecological

conditions and farming practises. Any newly introduced variety should be better than existing ones in some attributes, such as yield potential, adaptation to growing conditions and tolerance to environmental stresses, climate change, suitability for crop rotation, and resistance to pests and diseases. To achieve the objectives, several factors should be considered, including:

- Linkage between conservation and utilization of plant genetic resources. The main sources of the traits for developing new varieties are: existing cultivated varieties, plant genetic material conserved in national, regional or international genebanks (*ex situ*), and materials found on-farm and in natural habitats (*in situ*), which includes local landraces and crop wild relatives. The seed policy should ensure adequate support for plant genetic conservation activities, and establish strong linkages with variety development. Strategies might include facilitating access for public and private plant breeders to materials stored in genebanks, and the adoption of international agreements facilitating germplasm exchange., such as the International Treaty on Plant Genetic Resources for Food and Agriculture (this important area should be addressed in more detail in the national PGRFA strategy) and the Convention on Biological Diversity. Where applicable, commercial utilization of plant genetic resources should be guided by the principles of prior informed consent as well as fair and equitable benefit sharing.
- Time and funding required for developing new varieties. The process of developing, registering and releasing a new crop variety usually requires considerable investment and can take several years. A programme for sustaining a 'pipeline' of new crop varieties must fit within the country's overall agricultural development plan. Critical considerations include the needs of small-scale farmers, nutritional and other food requirements of the local population, the partnerships available

for developing new varieties of specific crops at the national (public and private), regional or international levels, and the level of investment required in human and other resources.

- Addressing the diverse breeding needs of crops. Private sector plant breeding is often restricted to a few profitable crops, particularly those with hybrid potential such as maize and some commercial vegetables. The top ten seed companies globally have highly increased their market share of seeds over the last decades with increasing focus on few lucrative commercial crops. Governments in developing countries should consider to continue or establish public funding schemes for plant breeding, explore the potentials of private/public partnerships or farmer participation for promoting the genetic improvement of crops that are important for local farming systems and food security (underutilised, nutritional crops) which do not attract private investment. In some countries, germplasm in public genebanks is made available to the private sector for breeding, and the private sector is encouraged, in return, to market varieties that are developed by public institutions. Such complementarity of public/private sector roles in crop varietal development, which has the potential to cover all important cash and food crops, should be supported explicitly in national seed policies. Furthermore, such partnerships could also be sought in order to ensure sufficient investments in pre-breeding. Countries might also consider the prioritization of some crop species when resources are limited.
- Linkages between variety development and seed production. Effective linkages must exist between variety development, seed production and distribution in order to ensure that farmers have easy access to new and adapted varieties. Links can be strengthened by facilitating some access of commercial seed companies through licensing to varieties developed by public research, by encouraging the production of early generation seed of those varieties, or by encouraging private breeding through intellectual property rights. Another approach is Participatory Plant Breeding (PPB) and Participatory Varietal Selection (PVS) and the active involvement of farmers, particularly women in these processes. In most developing countries, the informal sector is the main source of seed. The ability to easily access, exchange and use seeds underpins the informal sector and is a crucial practice for facilitating access to seeds.

- Biotechnology tools and genetically modified (GM) crops. GM crops are crops that have been developed using the recombinant DNA technique, genetic engineering. In addition, other non-GM biotechnologies, such as tissue culture, DNA fingerprinting and marker-assisted selection, are also being used increasingly to improve the efficiency of plant breeding. However, there is still a lack of consensus on the safety of these crops. Given the growing application of biotechnologies in crop improvement and the difference in potential benefits and risks associated with the various biotechnology tools particularly relating to GM crops, it is important for governments in developing countries, the majority of which are parties to the Cartagena Protocol on Biosafety to the CBD, to put in place biosafety laws consistent with the Protocol and precautionary approach, and to state their positions regarding biotechnology clearly in national seed policies and legislation.

Considering the increasing involvement of the private sector in crop varietal development and being that the private sector tends to be more focused on breeding a few profitable crops, the development and deployment of new crop varieties not handled by the private sector will be largely neglected, to the detriment of food security and rural development. It is for this reason that developing country governments may consider increasing investment in plant breeding and collaborate with smallholder farmers in developing varieties that are suitable for national and regional needs and conditions. Where relevant, appropriate collaboration could be fostered, for example, with NARS, CGIAR centres, regional research and development agencies as well as national seed companies.

■ Seed production

The seed policy should address the respective roles of the formal (public and private) and informal sectors in meeting its objectives, ways in which each could be improved, as well as the need for coordination between both components of the seed system. Louwaars *et al.* (2012) suggested that countries develop integrated approaches that strengthen both the formal and informal seed systems and the connections between them, in order to ensure the production of the seeds of crop varieties that are useful for diverse and evolving farming systems.

Formal seed production involves all the stages or classes of seed multiplication, from small quantities of early generation (breeder/pre-basic, foundation/basic and registered) seeds to larger quantities of seed that is eventually sold to farmers. The objective of formal seed production is to deliver and promote appropriate crop varieties to farmers through a systematic process of variety evaluation and registration, and seed multiplication, in which the roles of various agencies (public, private, contract growers or civil society) at different stages are clearly defined and guidelines are provided on how the seed production activities should be



carried out. Formal seed production requires means of assuring quality standards and a mechanism for coordinating seed industry functions. In the informal seed production system, farmers save and exchange their own seeds of traditional or improved varieties, and in some cases undertake the same processes of variety evaluation and selection. In countries where this activity prevails, a Seed Policy may consider how to support or recognize it. This system often involves women and may be the main source of seed for food crops in some developing countries for most food crops. National seed policies may recognize the informal sector's important role and promote support in appropriate areas such as extension, training schemes for farmers, community seed banks, germplasm conservation, and seed quality control, or even promote official recognition of some of these activities. The role of women in these various functions should be given particular attention. Community seed banks, i.e. collections of seeds that are maintained and administered by the communities themselves, are also important sources of seeds. Seeds can be stored by a community either in large quantity to ensure that planting material is available, or in small samples to ensure that genetic material is available should varieties become endangered. The aim of seed banks is to increase local seed security and contribute to the continued utilisation of locally important genetic diversity (Development Fund, 2011).

Important policy dimensions of seed production in developing countries include the status of the development of the seed sector and factors determining the roles of different players in seed production. Organized, formal seed systems in many developing countries consist of agricultural research institutes, universities, other government agencies and sometimes NGOs. These players have become significantly engaged in seed production activities, including the production of early generation and other seed classes of major food security crops (self-pollinating cereals and food legumes). Over the last 20 years, private sector involvement has been growing but with the main focus on higher value crops, particularly hybrid cereals and vegetables. Another recent trend in seed production is a general and significant reduction in public sector investment in seed production. Farmers' access to quality seed remains limited, and in many developing countries informal seed systems remain the main source of seed for local and, in some cases, improved varieties. Formal seed companies and informal farmer seed systems often operate side by side, with different degrees of success depending on the crop, the agro-ecological zone, market opportunities and regulations. The seed policy should strive at strengthening both seed systems as well as their inter-linkages.

The extent of the involvement of the public, private and informal sectors in seed production in a country is determined by a number of factors, including:

- Stage of agricultural development. Generally, government plays a leading role in agricultural development when the sector is subsistence or semi commercial in nature and the private sector is absent or not well developed. As agricultural development accelerates, the private sector gradually becomes more active.
- Types of crops. The extent of participation can also depend on whether the crops concerned are food security crops, vegetables or hybrids. When the seed of specific crops is more profitable, its production attracts greater interest from the private sector, while other less commercial seed is managed by the public sector.
- Capacity of the public/private sectors. The capacity of the public or private sector to produce quality (i.e. early generation and certified) seed in a cost effective way may depend on the real cost of public seed production and its effect on the seed market and competition between the private , informal and public seed sectors.
- Ease of seed production. With self-pollinated crops such as rice or wheat it is relatively easy for farmers to produce and save their own seed while for hybrids or many vegetables, farmers will need to buy seeds for every season in order to have good harvests.
- Early generation seed production: Early generation seed production is the basis of seed multiplication and, by making seeds of varieties that farmers are willing to use quickly available to them, determines how widely new varieties are adopted. It is, therefore, a particularly important step in development of the seed sector. The supply of quality early generation seed is a major bottleneck in many countries. Multi-year production planning and realistic pricing of early generation seed are essential for clearing the bottleneck in the medium term.
- Role of contract growers. This is considered a cost-effective and technically efficient way of producing quality seed, which relieves seed companies of the day-to-day management of seed crops. Progressive farmers are normally selected as contract seed growers and form a diverse network across a variety of agro-climatic conditions, thus allowing production of quality seeds to meet a wide range of customer requirements. Contract growing can serve a useful

extension function and provide a means for farmers to benefit from the seed programme, as both producers and customers.

- Role of the informal sector. In many countries, the informal sector – symbolized by farmer-saved seeds, in-kind seed exchanges and seed sales in local markets – is the most important source of seed for traditional crops and others not commercially attractive to the formal sector.

■ Seed quality assurance

Seed quality assurance – which guarantees that farmers have access to, and use, good quality seeds for producing their crops – requires clear rules and guidance in seed production and testing. The most common mechanism used for this purpose is seed certification. This is usually carried out by inspectors, with no connection to either seed producers or seed buyers. Farmers should participate in identifying the criteria to define the properties of seeds that could be certified. The institution responsible for the certification process is responsible for the quality of the seeds. A certification system protects farmers against the risk of buying and using bad seeds.



The system should take into consideration the different needs and preferences of various farmers and cropping systems as well as the importance of sustainable use of plant genetic resources. Seed production schemes, whether certified or uncertified, can take different forms, as follows:

- “Truth in labelling” (without minimum standards) in which the seed supplier is required to label the seed container strictly according to the quality specification of its contents, without adhering to any prescribed standards. There is little government involvement in verifying the quality of seed on the market, and the buyer decides whether the seed meets his or her needs. This system is more appropriate for advanced markets with highly developed seed companies and well educated and well informed farmers. Farmers can resort to the legal system if seed companies fail to provide seed of the declared quality.
- Mandatory certification with established quality standards and government enforcement of prescribed standards. The official certifying agency is the unit with final responsibility for seed quality. Setting up and operating such official systems with large number of inspectors usually require substantial government investment.
- FAO Quality Declared Seed (QDS) system, in which seed-producing farmers are responsible for seed quality and the government plays a monitoring role, e.g. using its extension staff for field inspection (FAO, 2006).
- Non-certified seed, in which the seed producer bears final legal responsibility for seed quality, must comply with minimum quality standards and conducts its own inspections. There is little involvement of the government in monitoring or controlling seed quality apart from random checks. Farmers who buy non-certified seeds trust the producing company and its labels. A voluntary initiative, such as a code of conduct or participatory guarantee scheme, could complement a formal regulatory instrument. Labelling should be well regulated in this system.
- Accreditation of certification, in which a seed company obtains the license to produce seed labelled as certified seed. The license is obtained after training by the seed authority, which also audits seed inspections.

A certification system protects farmers against the risk of buying and using bad seeds.

It is possible, therefore, to choose from a number of regulatory options, depending on crop-specific requirements. For example, there is generally no mandatory certification for vegetable seeds, but some countries may raise the level of control according to the quantity of seed that is commercialized.

While there is some flexibility in options for the quality assurance of national seed production and trade, international seed trade usually requires compliance with the Organisation for Economic Co-operation and Development (OECD) seed schemes. The OECD regulatory schemes can be implemented by the government or by the private sector but under the supervision of public authorities.

Finally, it is important to have a seed quality assurance system which is in harmony with the seed sector in the country in order to meet the needs and preferences of farmers for quality seeds. Technical details about seed quality are outside the scope of the seed policy document but could be included in the national seed regulations.

■ **Agricultural extension**

Agricultural extension is usually addressed in a country's overall agricultural policy while the national seed policy is concerned with that part of agricultural development that relates to seed management. The objective of seed-related agricultural extension is to create awareness among farmers of new crops, varieties, quality seed and which seeds that are suitable under different agroecological conditions, and to show how these factors, together with sowing techniques etc, contribute to increased agricultural production with highest possible capacity to adapt to climate change. The overall objective of quality seed promotion is to increase the number of farmers having access to the most suitable seeds, which can be achieved in different ways, including:

- Stimulating demand for quality seed of improved and other local varieties and coupling their usage to information on the adoption of improved practices and technologies, such as conservation agriculture, soil fertility management, and integrated pest management.
- Using Farmer Field Schools (FFS), managed by extension staff, to demonstrate, exchange experiences and teach farmers about new varieties and related best practices, with particular attention to the roles of men and women.



- Adopting a pluralistic approach to extension using diverse service providers – NGOs, public and private sectors, universities and other agencies – with different modes of operation.
- To promote varieties and seeds, and inform the farmers about existing seed diversity, different extension strategies could be used, including seed fairs, field days, displays at agricultural shows, posters, radio and television broadcasts.
- Supporting and promoting farmer-to-farmer extension networks and ensuring that small-scale farmers have the freedom to save, sell, exchange, use and re-use seeds of their own varieties.

■ Seed marketing

Seed marketing aims at satisfying the specific seed needs of farmers. Demand drives seed industry development and seed policies must create awareness of how seed markets operate. This means defining the government's position on seed-related issues such as pricing, subsidies, dealer networks, credit, import and export. The following are important policy dimensions of seed marketing:

- **Seed pricing and subsidies.** An effective subsidy scheme can stimulate seed demand, make quality seeds of the most suitable varieties available to farmers at affordable prices and ensure reasonable returns to seed enterprises. The seed policy document should define the objective and intended recipients of such subsidies and include a plan for their gradual withdrawal. In order to boost efficiency in food production, seed subsidies could be combined with other measures for improving farmers' access to complementary inputs or to training in appropriate agronomic practices.
- **Seed dealer networks.** A major constraint to seed marketing in some countries is the absence or limited capacity of commercial channels for selling seeds as well as reliable infrastructure such as roads, transport facilities and physical outlets. Agricultural input dealers and small-scale vendors in rural markets are often involved in seed sales. Policy measures should promote and strengthen commercial networks in rural areas, not only for marketing seeds but also for related inputs such as fertilizers, registered pesticides and small-scale tools and equipment.
- **Network used by small farmers.** The seed policy may consider recognizing, supporting and improving the traditional seed exchange mechanism by farmers, which may be the predominant system in many developing countries.
- **Production loans and micro-finance.** The vast majority of farmers in developing countries are low-income smallholders whose very limited access to institutional credit also limits their access to productive resources such as land, agricultural inputs and equipment. Increasing the availability of seasonal credit or micro-finance is a key strategy for boosting the number of farmers able to buy and use seeds of suitable varieties, which would lead to increased crop productivity and to improved food security, nutrition and livelihoods. To encourage high repayment rates, production loans could be provided through community groups, farmers' associations and cooperatives.

- Prices of farm produce. Attractive producer prices stimulate demand for seeds as farmers tend buy more seeds if they are assured of a good market for their grain or other final produce. The seed policy document should affirm the government's commitment to fair prices for farmers' produce and how this will be achieved.

■ **Seed import and export**

The policy on seed imports and exports should expound the vision and position of the country regarding the international seed trade and define import and export regulations. A variety of approaches is possible. For example, the import policy may seek to enhance crop productivity, food security, farm incomes and export earnings by improving farmers' access to the best planting materials available outside the country. At the same time, policy provisions might aim at safeguarding the environment, health and biosafety by ensuring that only seeds of varieties that have been tested, released and registered in the country may be imported. The export policy on the other hand, may encourage the production of valuable seeds for export so as to raise the country's share of international trade. To facilitate this, the government might consider the establishment of seed export promotion programmes, provide information on the international seed export market or establish testing and certification facilities in conformity with international requirements. As with imports, seeds are exported normally only to those countries where particular varieties are registered. For both imports and exports, there are several possible types of interventions including permits granted on case-by-case basis, free market conditions for varieties, and regulatory control of seed quantities. The state's role in the regulation of the seed trade needs to be clearly stated in the seed policy document, since it can affect seed availability in the country and also regional trade.

The seed policy should evaluate the potential roles that seed imports and exports may play in the availability to, and affordability by, farmers of quality seed of improved and suitable varieties. Countries with similar agricultural structure and agro-ecological conditions might be the most relevant trading partners. It is important that countries use comparable quality assurance standards to facilitate international seed trade and exchange, while avoiding overly restrictive regulations.

■ Seed enterprise development

The seed policy should create an environment conducive to the establishment and growth of seed enterprises, including within the private sector and establishing farmers' cooperatives and other forms of small-scale enterprises. Policy measures can stimulate the emergence and development of seed enterprises in:

- Seed production: ensuring the availability of seeds, including early generation seeds, of improved and adapted varieties, and clearly defining the roles of the public and private sectors.
- Seed marketing: stimulating seed demand and promoting the use of new and adapted varieties.
- Import and export: establishing a clear vision and regulations regarding the seed trade.
- Regulatory framework: creating a regulatory framework conducive to local seed enterprises, without imposing unduly strict bureaucratic procedures, and establishing a clear policy on intellectual property (IP) and farmers' rights. A comprehensive review and assessment of the IP system should be undertaken as part of the seed policy formulation process.

Other policy measures may be needed to improve the operational capacity of seed enterprises, for example (Neate & Guéi, 2010; Van Mele *et al.*, 2011):

- Capacity building. The production and marketing of seeds require a range of technical skills and capacities at different levels – for example, for operations such as field level seed production and post-harvest processing and storage. Specific business skills in seed production planning, management and marketing are fundamental for successful seed enterprises. The need for adequate training of seed entrepreneurs should be underscored in seed policies.
- Access to credit. Seed production and commercialization require access to credit for the purchase of inputs and raw seed from contract growers, as well as for investment in field and seed handling equipment. Providing fledgling seed enterprises with access to credit at subsidized rates can foster their early development and growth.



©FAO/Saul Palma

- Access to public infrastructure. As part of policies for promoting private sector development, unused public land and facilities – such as storage on inactive state seed farms - could be rented or leased to the private sector under some special contractual agreements.
- Fiscal advantages. Tax exemptions and import and export privileges could also be granted to seed enterprises.
- Involvement in decision-making. In order to formulate appropriate policy measures for seed enterprises, governments should ensure that the private sector and farmers are adequately consulted and represented on all relevant governing bodies involved in seed sector decision-making. The private sector could be represented through a national seed association or related institutions and farmers' unions.

Seed enterprise development should be a gradual process, with start-up assistance targeted at those enterprises which demonstrate high potentials for success, taking into account factors such as technical efficiency, economies of scale, potential profitability and benefits to farmers.

■ Seed value chain

The value chain approach in agriculture has gained prominence in recent years and is now a recognized modern agriculture business strategy. The approach analyses the transformation processes around a product, from the provision of inputs to production, transportation, processing, marketing and final consumption. Since different partners are involved in different parts of the value chain and the creation of differentiated products, collaboration among industry partners is essential to improve the quality of products, increase the efficiency of agricultural systems, and create more rewarding positions in the market place for products. Two important value chains are found in the seed industry:

- i) Production and marketing seed to farmers. The chain includes raw seed production by contract growers; purchase of raw seed, processing and storage by seed enterprises; and marketing through dealers and other retail networks as appropriate. The good functioning of the seed value chain, from production to marketing, depends on the profitability of the different components of the chain, which determines the level of motivation of the private sector and farmers to participate in the seed industry.
- ii) Market for farmers' output. This value chain relates to the output market in which farmers sell produce. It covers production of grain or other kinds of produce, depending on the crop, and all associated industrial functions, such as milling, oil extraction, packaging and canning.

The efficient functioning of both chains requires that the output market is accessible to farmers or growers and offers them attractive prices. In this regard, cell phones are revolutionizing market information systems for farmers by helping them obtain the best available prices for their products; the same technology has potential application in the seed industry. Furthermore, linkage between the two value chains is essential.

■ Seed security

A country is said to be “seed secure” when its farmers have access to seed and other planting materials of acceptable quality at affordable prices, in adequate quantities, and in time for planting. Seed security is closely related to food and livelihood security, as it enables farmers to produce food for their own consumption and for sale.

It is important that governments put in place appropriate policies for achieving and maintaining seed security. At the policy level, preparedness and response are two critical aspects of seed security, especially considering the risk of sudden and slow-onset disasters, as well as of protracted crises.

- Preparedness. A range of policy measures can ensure that farmers have access to seed in normal and crisis situations:
 - Producing seed under irrigated conditions even in the dry season in order to maintain an adequate seed supply during periods of drought.
 - Producing in favourable areas the seeds of varieties that are adapted to more seed insecure agro-ecological zones.
 - Establishing strategic seed stocks in appropriate quantities . Small strategic stocks of early generation seed of important varieties could be kept for further multiplication as necessary. Other measures include supporting on-farm seed conservation and community seed banks.
 - Establishing an early warning system based on real time information for determining rapid action as needed.
 - Importing and evaluating adapted varieties from neighbouring countries for inclusion in the national list for import and commercialization when necessary.
 - Conducting seed system security assessments to collect relevant data in vulnerable areas of the country.

A country is said to be “seed secure” when its farmers have access to seed and other planting materials of acceptable quality at affordable prices, in adequate quantities, and in time for planting.

- Response. For many years, direct seed distribution has been the most commonly used approach, worldwide, for responding to food and seed security crises. Although this has enabled farmers to restart agricultural production, the approach has many negative side effects, including the distribution of poor quality seeds and non-adapted varieties, reliance on seed imports rather than locally-produced seeds, distortion of seed markets through deflation of seed prices, and undermining both local seed

enterprises and the resilience of the farming system. In some cases, direct distribution programmes have continued for several years, with no serious analysis of the seed security situation. “Seed give-away” programmes have also been conducted in normal non-emergency situations by national governments, NGOs and other donors as a means of “boosting crop production”. The result is market distortions and the weakening of local seed systems. To minimize these problems, the following policy measures are recommended:

- Establish a code of conduct for responding to emergency situations, to be followed by all relief agencies, including NGOs and donor agencies. The code should include minimum seed quality standards, approved variety lists and authorized assessment methodologies (FAO, 2004b; 2010).
- Promote market-based seed relief interventions, such as seed fairs, vouchers and cash-transfers (CRS, 2002).
- Strengthen the capacity to conduct seed security system assessments and use them as the basis for informed seed security-related actions (Sperling, 2008).
- Explore sustainable long-term strategies for coping with anticipated crises, such as climate change.



■ Capacity building

Capacity building is a cross-cutting factor in seed sector development and should be considered, therefore, an integral part of all other seed policy elements. It includes capacity development at the institutional level, particularly the strengthening of human resources. Capacity development should be included in the national seed plan/action plan, along with cost estimates. Once developed, the potential capacity should be maintained and improved as the seed sector itself develops.

The policy dimensions of capacity building in the seed sector include the following:

- Institutional capacity: Building of capacity of seed sector institutions through effective management systems, qualified staff, and adequate facilities and equipment.
- Training and curriculum development: Development at national level of university and technical school curricula related to plant breeding, seed enterprise management, seed production and processing and international seed regulations.
- Short courses for both the public sector and local seed enterprises, conducted through universities.
- Development of programmes for international or regional training in order to increase awareness of recent seed sector development in other countries.
- Linkage to international experience in seed sector development: Linking the national seed sector to international organizations that can provide technical assistance in seed sector development.
- Building the capacity of National Agricultural Research Institutes to collaborate with the national seed association and local seed enterprises on finding technical solutions to constraints in seed production, processing and supply.
- Enterprise development and seed sector regulation: Building capacities in enterprise management, seed production, quality control, legislation and enforcement, for both management and support personnel, and developing the capacities of the national seed association in plant breeding or seed production.

- Development of capacity for assisting in creation of private seed enterprises, especially in smallholder and family agriculture, with special attention to women.
- Farm level capacity: Enhancing the capacity of farming communities in seed-related agricultural practices such as seed selection, cleaning and storage of farm-saved seeds, participatory plant breeding and participatory variety selection, through field-based practical training including farm visits, with attention to gender roles.

FAO projects provide developing countries with technical advice, training and equipment to assist them in reinforcing institutional and human capacities in the seed sector.

■ Seed legislation

Seed legislation regulates the various activities, responsibilities and mechanisms involved in the production and marketing of seeds, and is an essential part of the seed regulatory framework. While the national seed policy sets out the goals of the seed sector and its planned activities, the seed law and regulations provide legally binding rules which are instruments for implementing that policy. Seed legislation consists of primary legislation (seed acts or Laws) and secondary or implementing legislation (regulations, decrees, orders, etc.). The objective of seed law and regulations is to ensure that farmers receive seeds of best quality of the right crop varieties, while minimizing quality misrepresentation.

As with seed policies, seed legislation should be designed and formulated with the full participation of stakeholders (public, private, civil society, farmers, etc.) in order to ensure smooth implementation. Together with their seed legislation, countries normally approve a number of other laws that influence directly or indirectly the seed sector such as phytosanitary protection, plant genetic resources, and biosafety which are often regulated under different laws. In such cases, it is important to ensure mutual supportiveness between them.

The objective of seed law and regulations is to ensure that farmers receive seeds of best quality of the right crop varieties, while minimizing quality misrepresentation.

Which elements are incorporated into seed legislation depends on a country's policy priorities and its national seed system, as well as its legal tradition and other national legislation. However, the following key areas of seed policy will need to be incorporated in seed legislation:

- Objective of the seed legislation. The primary objective of seed legislation is regulating seed production and marketing so as to protect farmers and the seed industry from fraudulent sales of low quality seeds. Seed legislation also aims at stimulating research and innovation, fostering a fair seed market – one in which farmers have access to seeds of the varieties they need, at a price they can afford – and promoting food security and sustainable rural livelihoods as well as sustainable management of plant genetic resources.
- Scope of the seed legislation. The scope of seed legislation defines the types of seeds and other products (such as seedlings) to which the law applies and the seed management activities that are subject to regulation. The scope of the law may cover only selected plant species or varieties of species registered in the national catalogue. It may or may not incorporate seedlings, and may cover only seeds of a particular category (e.g., certified seeds) or all types of seeds including uncertified seeds. Different processes within the seed production and marketing chain may also be regulated - for example, seed registration, certification, distribution or trade.
- Definitions. The seed law should incorporate a provision with clear definitions in order to facilitate implementation. Terms and concepts, such as 'seed', 'certification', 'marketing', 'labelling', and 'inspection', should be clearly defined so that they are interpreted in the same way by all stakeholders.
- Institutional framework for implementation and coordination. Seed laws should specify the national authority which will have the mandate and legal power to effectively implement or enforce the seed legislation and regulations.

- Regulating the pre-marketing phase. The pre-marketing phase covers all stages prior to seed marketing, including variety testing and release, seed production, quality control and certification. Regulating this phase is not a prerequisite for a viable seed supply chain, but most countries with seed laws nowadays tend to regulate some or all of the stages within the pre-marketing phase.
- Seed trade regulations for the marketing phase. Seeds sold in a country are expected to meet standards defined in its national seed regulations. Labelling, marking and packaging standards are, in general, indicated in seed laws and specified in seed regulations. Seed import and export provisions are also influenced by other countries' legal instruments, particularly the phytosanitary import and export requirements included in phytosanitary legislation. Seed legislation may further be influenced by the Cartagena Biosafety Protocol of the Convention on Biological Diversity, which provides a regulatory framework for the transboundary movement 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.
- Variety testing, release and registration. The registration process of a variety for inclusion in a National List of varieties authorized in the country aims at generating information for the user about the characteristics and performance of the variety and that the new variety is different from others known in the country.
- Variety testing enables the screening, selection and characterization of a crop variety and the availability of valid information pertaining to that variety. The criteria normally used is distinctness, uniformity and stability (DUS) testing. The usefulness of this criteria differs depending on the varieties being tested and is more relevant in the case of improved varieties and less for landraces, and also differ among species since it is hard to define clear DUS for crops of less agronomic value. The best performing variety is selected using value for cultivation and use (VCU) testing.
- Capacity for enforcing the seed legislation. Governments need to ensure that there is an adequate capacity and appropriate provision in their seed laws for enforcement and consistent implementation. Enforcement mechanisms will include inspection bodies with the mandate to undertake monitoring and control activities, most often under the direct or indirect responsibility of the

national seed authority. The powers of inspectors should be clearly defined in the primary legislation. Legislation should also clearly define infringements and provide for proportional sanctions and dispute settlement mechanisms.

- Closing provisions. The seed legislation should contain provisions for an interim period, including transitional measures, to avoid overlapping and contradictory legislation.

■ Other legal instruments relevant to seed

In order to complete the legal framework for seeds, a national seed policy also needs to pay attention to other regulatory instruments related to seed production, including: in signatory countries, the Agreement on Trade-Related Aspects of Intellectual Property (TRIPS) of the World Trade Organization (WTO); the protection of plant genetic resources and the implementation of the mechanisms resulting from the International Treaty on Plant Genetic Resources for Food and Agriculture; phytosanitary regulations and legislations in the implementation of the International Plant Protection Convention; and the Nagoya Protocol on Access and Benefit Sharing to the CBD.

Intellectual property: Intellectual property rights (IPRs) are legal rights granted by governmental authorities to control certain products of human intellectual effort and ingenuity (FAO, 2004a).

The two major treaty systems that regulate rights issues are those established under the auspices of the Union for the Protection of New Varieties of Plants (UPOV), and the WTO's TRIPS Agreement. The TRIPS Agreement article 27.3(b) requires WTO members to protect plant varieties using patent law, an effective *sui generis* system or a combination of elements from both systems. Least developed countries (LDCs) are given an extended transition period to protect intellectual property under the TRIPS Agreement until 1 July 2021. The mission of UPOV is to provide and promote an effective system of plant variety protection, with the aim of encouraging the development of new varieties of plants, for the benefit of society.

Patents are granted normally on inventions that have fulfilled the three cumulative eligibility requirements for patentability (novelty, inventive step and industrial application). Plant Breeders' Rights are granted normally for plant varieties that are novel, distinct, uniform and stable. There are significant differences in approach between different types of plant breeders' rights systems, and between plant breeders' rights and patents. The main difference is the so called "breeding exemption" in Plant Breeders' Rights legislation. It means that access for research and breeding to the new protected variety is totally free for



©FAO/Jon Spaul

other breeders which is not always the case with patents. Another major difference is the level of recognition of Farmers' Rights. Some national laws combine the protection of Plant Breeders' Rights and Farmers' Rights in one single law. Other patent and Plant Breeders' Rights laws make exemptions to the right of the title holder so that farmers can, to different degrees, save, use, exchange and sell farm-saved seeds of protected varieties.⁸

Plant genetic resources: seed legislation and intellectual property rights laws should be in harmony with sustainable management of plant genetic resources. The main international instrument in this regard, is the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA). The objectives of the International Treaty are the conservation and sustainable use of plant genetic

⁸ Farmers' Rights are basically about enabling farmers to continue their work as stewards and innovators of agricultural biodiversity, and about recognizing and rewarding them for their contribution to the global pool of genetic resources. Thus, Farmers' Rights are critical to ensuring the conservation and sustainable use of genetic resources for food and agriculture and consequently for food security – today and in the future. Farmers' Rights are also a central means in the fight against rural poverty in developing countries. More information: <http://www.farmersrights.org/>

resources for food and agriculture and the fair and equitable sharing of the benefits arising out of their use, in harmony with the Convention on Biological Diversity, for sustainable agriculture and food security. The treaty describes possible measures for *ex situ*, *in situ* and on-farm conservation of PGRFA, sustainable use of PGRFA and for the recognition of Farmers' Rights. Furthermore, it establishes a multilateral system for access and benefit sharing.

Biosafety: national biosafety law is also highly relevant in terms of seed legislation. The main international instrument in this regard, the Cartagena Protocol on Biosafety to the Convention on Biological Diversity, which aims to ensure 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. In addition to the rules governing import and export, the national biosafety law should also describe the criteria for approval of GMOs for cultivation (deliberate release) and for contained use. Criteria for approval of GMOs could include level of accepted risks to the environment and public and animal health, ethical considerations and socio-economic impacts. The biosafety law should also define the procedures for risk assessment, risk management, labelling of GMO products, monitoring, liability and redress.

VII. SECTION E: SEED POLICY IMPLEMENTATION

The implementation – the process of turning the policy into practice – is critical. The policy must make clear its aims, objectives and broad principles, and explain how they will contribute to the overall development of the seed sector. A strategy indicates what needs to be done in order to implement the policy and the kind of compliance or roles expected from different stakeholders. Close integration of policy and strategy is important to ensure that the strategy is in line with the policy objectives and that they are not contradictory. The strategy defines a ‘means to an end’, and can be a separate document or a section of the policy in a summarized form. In general, the policy is a statement of best practices, guiding rules or principles that the government has chosen to follow in order to achieve some desired outcome. It identifies priorities according to the impact they might have and the specific roles of stakeholders or partners in the process. As well as defining the desired outcome, the policy guides the direction of the seed sector by laying down general principles to regulate, direct and control the actions and conduct of the various stakeholders. The strategy on the other hand, is a specific, high level plan of action aimed at achieving, through the most efficient and effective use of both human and physical resources, the outcome, goals or objectives set in the policy.

A national seed policy must also distinguish between policy objectives, strategies and policy instruments. Policy instruments describe some methods used by governments to achieve desired results or objectives. The strategies involve the choice between different instruments and how these are used to reach the policy objectives. The two basic types of policy instruments are regulatory and economic.

A strategy indicates what needs to be done in order to implement the policy and the kind of compliance or roles expected from different stakeholders.

Examples of regulatory instruments are laws and regulations, while economic instruments include tax credits, quotas, tariffs, subsidies, public funding schemes and licence fees. This distinction is useful because the same objective can often be strategically served by several alternative instruments.

Implementation of a national seed policy requires:

- i) designation of a government agency with responsibility for policy implementation;
- ii) translation of the policy provisions into an operational plan and guidelines, i.e. a strategy or series of strategies; and
- iii) coordination by the responsible agency, and management of its resources, to achieve the intended policy objectives.

■ **Responsibility for implementation, oversight and coordination**

Once the government has approved and adopted the national seed policy, the implementation strategy should be operationalized. A government agency, normally the National Seed Council or a similar institutional arrangement, should be designated as responsible for implementation of the new policy. To be effective, this agency should be given the necessary resources and authority for ensuring that the new policy is implemented as intended.

Oversight and coordination are absolutely essential in the seed sector, given the diversity of functions carried out by different actors and stakeholders. In many countries, the coordination role is usually assigned to a National Seed Council or board comprising representatives of key stakeholders or partners drawn from across the industry – the public and private sector, the national seed association, civil society and farmers. Strong ownership of the policy by the government and all the stakeholders is also essential. The functions of variety release may best be delegated to a sub-committee, usually called a variety release committee. Other sub-committees could be formed for specialized functions. The composition of these bodies is often political; it is advisable to aim at a balanced representation of key stakeholders to ensure that decisions taken reflect their consensus view and are more likely to be widely accepted and implemented. The policy document should define the roles and mandates of these subcommittees, which may take on a variety

of functions: advising the Ministry of Agriculture, monitoring the implementation of the policy, updating crop-specific information and minimum quality standards, and signing international agreements. The cross sectoral nature of the seed policy may require coordination and involvement of several government ministries.

■ **Elaboration of a national seed plan**

The first practical step in making a seed policy operational is developing a national seed plan. The seed plan is part of the strategy and sets both targets and operational guidelines. The plan should be realistic, relatively short term in nature and with specific targets and activities. The formulation of the national seed plan can be done as part of the seed policy formulation process. The objectives, outputs, activities, budgets and timelines of different stakeholders should be monitored. Resources needed for the seed plan should be realistic and sourced from the Ministry of Finance, donors and other partners, including the private sector. The national seed plan generally provides more details of the institutional framework for the implementation of the policy.



■ **Mobilization and coordination of resources**

The government should be guided by the seed policy when allocating funds for seed-related activities. The implementing agency must have sufficient well-trained staff and adequate resources in order to carry out effective policy implementation. A common problem with seed policies is that the coordinating agencies do not have the means to ensure that policy guidelines are respected and standards enforced. It is therefore important that the total cost of future implementation is calculated, and funds secured, during the formulation of seed policy. If this process is not thoroughly done, the whole implementation process could be compromised. Funds should be managed by the organization responsible for implementation.

■ **Policy promotion and awareness raising**

The benefits of the new or revised national seed policy will need to be communicated to all sector stakeholders, including farmers, government, the private sector and donors, as well as the general public. Clear, concise messages can be delivered at media events and seed related meetings or gatherings, through advertisements or notices in local newspapers, and through media releases. Creating awareness of the existence of the policy will help ensure that it is used as reference guide for all seed-related activities. Translation into key national languages, professional editing and design, and wide distribution of copies are essential.

■ **Periodic policy review**

Depending on changes in the seed sector, a periodic review of the seed policy may be necessary after few years to reflect changing trends and to maintain validity and relevance.

VIII. CONCLUSIONS

Developing countries recognize the urgent need to provide their farmers with access to quality seeds and planting materials of the most suitable crop varieties, which is essential for agricultural development and for attaining food security and nutrition and improved livelihoods. To be effective, however, seed sector development programmes need to be informed by a well-designed national seed policy.

Many countries, however, still do not have a seed policy in place, and this has resulted in weakened capacity of governments to adequately address the seed needs of farmers. The lack of specific guidelines for formulation and implementation of such policies has aggravated the problem.

This Guide for National Seed Policy Formulation offers a process for formulating and implementing a seed policy and outlines key elements that can be used as a basis for policy formulation in different contexts. Since the purpose of a seed policy is to guide decision-making in the seed sector, it must be formulated using a participatory approach that takes into account the views of all relevant stakeholders, draws on a thorough documentation of the sector, and is supported by government with the legal measures and resources needed for effective implementation.

The types of national seed policy that emerge from this process will vary greatly among countries, since each policy will be based on the particular needs and vision of the stakeholders and the specific stage of development of each country's seed sector. The ultimate objective, however, will be the same: to create an enabling environment for efficient seed production and marketing, to facilitate the use and



©FAO/Danfung Dennis

exchange of PGRFA, and to provide all farmers with access to the seeds and planting materials they need at a price they can afford. By creating one national seed system, in which the interests of government and all stakeholders are balanced and protected, good seed policies can have an enormous positive impact on seed supply in developing countries – and the world.

Bibliography

Africa Rice/FAO. 2011. Atelier Regional sur la Politique Semenciere en Afrique de L'ouest Rapport General 2011. (unpublished)

CRS. 2002. *Seed Vouchers and Fairs: a manual for seed-based agricultural recovery in Africa*. Baltimore Maryland, USA.

Development Fund. 2011. *Banking for the Future: Savings, Security and Seeds. A short study of community seed banks in Bangladesh, Costa Rica, Ethiopia, Honduras, India, Nepal, Thailand, Zambia and Zimbabwe*. http://www.utviklingsfondet.no/files/uf/documents/Rapporter/Banking_for_the_future.pdf

FAO. 1999. *Seed Policy and Programmes for Sub-Saharan Africa*. FAO Plant Production and Protection Paper, 151. Rome.

FAO. 2000. *Seed Policy and Programmes in the Near East and North Africa*. FAO Plant Production and Protection Paper, 159. Rome.

FAO. 2000. *Seed Policy and Programmes in Asia and the Pacific*. FAO Plant Production and Protection Paper, 160. Rome.

FAO. 2001. *Seed Policy and Programmes in Latin America and Caribbean*. FAO Plant Production and Protection Paper, 164. Rome.

FAO. 2004a. *Intellectual Property Rights in Plant Varieties: Intellectual Legal Regimes and Policy Options for National Governments*. FAO Legislative Studies No. 85. Rome.

FAO. 2004b. *Towards Effective and Sustainable Seed Relief Activities*. FAO Plant Production and Protection Paper 181. Rome.

FAO. 2006. *Quality Declared Seed System*. FAO Plant Production and Protection Paper, 185. Rome

FAO. 2010. *Seed in Emergencies: A technical handbook*. FAO Plant Production and Protection Paper, 202. Rome.

FAO. 2011. Report on the Expert Consultation Workshop on Seed Policy Formulation Milan, Italy 2011. (unpublished).

ICARDA/FAO. 2011. Report on workshop on seed policy in the ECO Region 2011. (unpublished)

Louwaars, N.P. & De Boef, W.S. 2012. Integrated Seed Sector Development in Africa: A Conceptual Framework for Creating Coherence Between Practices, Programmes, and Policies. *Journal of Crop Improvement*, 26:39-59.

Neate, P.J.H. & Guéi, R.G. 2010. *Promoting the Growth and Development of Smallholder Seed Enterprises for Food Security Crops*. Rome.

Sperling, L. 2008. *When Disaster Strikes: A Guide to Assessing Seed System Security*. Kampala, CIAT.

Van Mele, P., Bentley, J.W. & Guéi, R. G. (eds) 2011. *African Seed Enterprises: Sowing the Seeds of Food Security*. Wallingford, UK. CAB International. 256pp.

The availability of, and access to, quality seeds of a diverse range of adapted crop varieties is essential for achieving food and livelihood security and for eradicating hunger, especially in developing countries. This guide explains what seed policies are and how they differ from seed laws; describes the participatory process of seed policy formulation; the nature and layout of seed policy documents; key elements contained in seed policies; and addresses issues involved in their implementation. It is specifically intended for use by policymakers, national seed agencies, civil society, and public and private sector organizations, including national seed associations and farmers' organizations involved in the seed sector.