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COMMISSION ON GENETIC RESOURCES FOR FOOD AND AGRICULTURE

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DRAFT GUIDE FOR NATIONAL SEED POLICY FORMULATION

At its last session, in November 2012, the Commission's Intergovernmental Technical Working Group on Plant Genetic Resources for Food and Agriculture (Working Group), in considering the sustainable use of plant genetic resources for food and agriculture, noted that there was not sufficient time to review the *Draft Guide for National Seed Policy Formulation*, and agreed that Members of the Working Group and relevant organizations would submit written comments on the Draft Guide by 15 January 2013, for consideration by the Commission at its next session.¹

This document contains the *Draft Guide for National Seed Policy Formulation*, as presented to the Working Group, and, in the *Appendix*, comments received from members of the Working Group and relevant organizations.

¹ CGRFA-14/13/20, paragraph 19.

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DRAFT GUIDE FOR NATIONAL SEED POLICY FORMULATION

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I. INTRODUCTION

1. The availability of quality seeds of a diverse range of adapted crop varieties is essential for achieving food and livelihood security and for eradicating hunger. Strengthening national seed systems is, therefore, an integral part of the sustainable use of plant genetic resources for food and agriculture (PGRFA) and was one of the priority activities of the first *Global Plan of Action for Plant Genetic Resources for Food and Agriculture* (GPA), adopted in 1996.

2. The *Second Global Plan of Action for Plant Genetic Resources for Food and Agriculture* (Second GPA), adopted in 2011, addresses a number of new challenges and opportunities that have arisen with respect to the conservation and use of PGRFA. Seed production and distribution systems are identified as priority areas for enhancing the sustainable use of plant genetic resources. Many developing countries do not have seed policies, and their absence weakens national capacity to provide smallholders with adequate access to quality seed. Appropriate policies can create the enabling environment for seed sector development and facilitate the exchange and use of PGRFA in accordance with national and regional agricultural objectives.

3. The Commission on Genetic Resources for Food and Agriculture (CGRFA) 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. The Working Group on PGRFA considers effective seed systems as dynamic repositories of PGRFA and has reiterated the need for appropriate seed policy and regulatory frameworks to improve linkages between conservation, plant breeding and seed systems for the sustainable management of PGRFA.

4. This document provides guidance on the formulation of seed policies in developing countries. The preparation 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. In addition, FAO has sponsored a series of multi-disciplinary dialogues and global expert consultations² 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 academia experts in relevant fields, including agricultural policy and economics.

5. The *Draft guide for national seed policy formulation (Draft guide)* is intended for use by policymakers, national seed agencies, and public and private sector organizations, including national seed associations and farmers' organizations involved in the seed sector. This Draft guide can assist national authorities in setting priorities, identifying the conditions necessary for the sustainable use of plant genetic resources, establishing partnerships, improving coordination and sharing experiences, and initiating or improving national programmes. It should complement the national PGRFA strategy for improving the overall efficiency of conservation, plant breeding and the delivery of high quality seeds and planting materials to farmers.

II. EXECUTIVE SUMMARY

6. The Draft 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 Global Plan of Action on Plant Genetic Resources for Food and Agriculture (Second GPA). The Draft guide's key objective is to assist countries in formulating effective seed policies in order to create enabling environments for development of the seed sector and facilitate the exchange and use of PGRFA. Well designed seed policies can contribute to informed and consistent decision-making

² 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).

that strengthens national capacity to provide farmers with access to quality seed of adapted varieties for enhanced crop production and food security.

7. Although individual country circumstances differ, these guidelines are meant to address policy, coordination, operational and technical issues, and to show how these issues interact and need to be integrated within one national seed system. The main target audience is policymakers, national seed agencies and public and private sector stakeholders, including national seed associations and farmer organizations involved in the seed sector.

8. This document 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 guide government action and explain the roles of relevant stakeholders in the coordination, structure, functioning and development of the seed sector. Although not legally binding, 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 those constraints and promoting a functioning and effective national seed sector depend 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, followed by a participatory formulation process based on a thorough assessment of relevant technical and institutional aspects of the seed sector. 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.

- *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 Draft guide identifies 11 elements which are the main drivers that contribute to a successful seed sector – one that attracts investment, and grows and adapts more effectively to prevailing and changing circumstances. These elements reflect functional and structural dimensions of the seed sector and, therefore, cover a broad spectrum of seed supply chain processes and activities: variety development, seed production, 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 agriculture sector. However, a national seed policy should not be seen simply as the sum of the individual 11 elements; it must also take into account the links and interactions among them, since all need to be integrated within one national seed system.

- *Section E: Seed policy implementation*

Implementation is the process of putting the policy into practice, after it has been developed in agreement with all stakeholders. Implementation is critical: the seed policy formulation process will fail if policy documents are left unused on office shelves and have no influence on seed sector development. 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 to achieve the intended policy objectives.

9. On the whole, seed policy development should be considered a dynamic process, which can be adversely affected by instability in the political environment. Continuity and stability are important to successful policy formulation and implementation – for example, they encourage private sector investment. Therefore, it is important to insulate the process from the effects of short-term changes in government structure by ensuring that the final policy document is well prepared, has official approval, minimizes ambiguity and fosters continuity.

III. BACKGROUND

10. Crop improvement and seed supply are essential for food and livelihood security 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 in many developing countries leads to inconsistent, ill-informed decision making which, in turn, limits the capacity to provide farmers with adequate access to quality seed of adapted varieties.

11. The Commission on Genetic Resources for Food and Agriculture (CGRFA) recognizes the importance of effective seed systems. This *Draft guide* has been developed in response to the need, expressed by the Working Group on PGRFA, for FAO to provide countries with assistance in the formulation and implementation of seed policies and regulations, and in improving linkages between conservation, plant breeding and seed systems for the sustainable management of PGRFA.

12. Strategies for seed sector development have evolved considerably in developing countries over the last three decades³. 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, 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. Consequently, the seed sectors of many developing countries are unable to provide farmers with adequate access to quality seed of adapted varieties.

13. 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

³ 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.

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, agricultural research systems, NGOs and farmers, within the wider context of both domestic and international agriculture.

14. To assist countries in accelerating seed sector development, this document provides guidelines for national seed policy formulation and implementation. The preparation of the guidelines has benefited from FAO's long engagement in facilitating seed policy dialogue, including regional meetings on seed policy and programmes in the 1990s (FAO, 1999, 2000) and, more recently, expert consultations involving national representatives of the public and private sectors as well as regional institutions and technical experts (ICARDA/FAO, 2011; FAO, 2011). To assist governments, FAO provided a multi-disciplinary team comprising experts in the areas of plant genetic resources, seeds, agricultural policy and development law.

IV. WHAT IS A SEED POLICY?

15. A seed policy is a statement of principles that guide government action and explain the roles of relevant stakeholders in the coordination, structure, functioning and development of the seed sector. The seed policy serves as the basis for the seed legislation and should inform all elements of the national seed law. Box 1 summarizes some basic principles that found consensus among participants in several workshops about national seed policies⁴.

Box 1. National seed policy: some basic principles regarding:

- A national seed policy should have an overall objective and subsidiary objectives for each of its policy elements. Objectives will vary from one country to the other depending on specific needs and circumstances.
- A seed policy could be considered to be a vision of the seed sector that is shared by all of the sector's stakeholders.
- The overall purpose of the seed policy is to improve the quality, diversity and security of the supply of seed to farmers in all parts of the country.
- The seed policy may also have other purposes, such as promoting food security, creating employment or stimulating an export industry, depending on the needs and vision of the country.
- The policy is meant to inspire action and should provide the guiding principles for all present and future actions for seed sector development.
- A seed policy can be particularly useful in the early stages of national seed sector development by providing a guide for transition and growth.
- By guiding decisions and resource allocation along the seed chain, from breeding to use by farmers, a seed policy provides a long-term vision and framework for the development of the seed sector. It is essential that the policy be endorsed by the government according to national legal procedures.
- The seed policy and its action plan should be harmonized with other strategic documents for agriculture, rural development and the wider economy.
- The seed policy should define the roles of the public and private sectors, and facilitate coordination (and seed flow) among institutions, companies and NGOs, where these exist.
- The seed policy should be monitored and periodically reviewed to reflect changing trends, maintain validity and relevance, and introduce new alignments as necessary.

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).

Difference between seed policy and seed law

16. Documents, instruments and procedures that regulate the seed sector, including seed policies, seed legislation, standards and procedures, are referred to as the “seed regulatory framework”. Within this framework, a national seed policy generally sets out, in broad terms, the goals, targets and objectives of the government on a particular issue within or related to the seed sector, and identifies the key methods and mechanisms for achieving those objectives. A seed law is one tool that can be used to implement the policy. In order to understand the regulatory framework as a whole, and to clarify the link between policies and legislation, it is first necessary to emphasize the difference between law and policy.

17. Laws are more precisely drafted than policy documents. They set out specific standards, procedures and principles that must be followed. 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.

18. 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 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.

19. 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.

20. 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.

21. It should be recognized that the main purpose and benefit of seed laws are to improve the overall quality of seed in the marketplace, to protect farmers’ from seed of low quality and to provide a facilitating environment for the development of 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.

22. 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.

Why and when is a seed policy necessary?

23. 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.

24. 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

25. 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 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, allow for revision of regulatory arrangements that may be constraining development of the sector, and create confidence that fosters national and international collaboration and support.

Insufficient clarity of vision for the sector

26. In some cases, a national seed strategy 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.

27. 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; or it is not in harmony with other national policies.

Specific factors hindering seed sector development

28. These factors 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 sectors⁵;
- A complex regulatory framework that has been adopted but not implemented;
- 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 of the farmers;
- Lack of demand for seed owing to economic constraints.

29. 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, explained in the next section, should be undertaken.

⁵ The formal seed sector is defined that in which seed of identified varieties produced under established quality assurance systems

V. POLICY FORMULATION

30. FAO's experience in seed policy formulation worldwide has demonstrated that sound seed policy development requires a sequence of steps, starting with careful problem analysis to determine the need for a seed policy, followed by a participatory formulation process based on thorough assessment of relevant technical and institutional aspects of the seed sector. The extent to which those 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.

31. The lack of guidelines for formulation and preparation of national seed policies has led to a variety of approaches to policy formulation. There are many reasons why governments in developing countries face difficulties in developing successful seed policies⁶. 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.

32. The quality of a seed policy depends on the capacity of the government to manage the policy-making process while encouraging the full participation of seed sector stakeholders. There needs to be a clear understanding of what constitutes a genuine policy formulation process and how it should be undertaken.

Suggested steps in seed policy formulation

33. The effectiveness and real 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 following nine steps (Box 2) should be seen as a guide and adapted to local conditions.

Box 2. Suggested steps in formulating a national seed policy

1. Define the context: problem analysis and identification of key policy issues.
2. Set objectives.
3. Choose policy options/strategy.
4. Collect and analyse data.
5. Convene a national seed forum as part of the consultation process.
6. Draft the policy.
7. Approval and adoption of the policy.
8. Raise awareness to facilitate implementation.
9. Periodic policy review.

Step 1. Define the context: problem analysis and identification of key policy issues

34. The starting point is to have a clear and detailed understanding of the context or problem/policy issues to be addressed. While this may be easy to state in principle, the reality may be more complex. For example, significant political considerations may be involved in

⁶ CGRFA/WG-PGR-5/11/Inf.5 Strengthening Seed Sector: Gap analysis of the seed sector.

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.

35. 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. For example, where most agricultural producers are subsistence farmers, the informal sector may provide more than 80 percent of all seed used and, in the absence of private sector participation in the seed industry, seed of improved varieties provided by the public may be of poor quality. The key policy challenges here relate to variety development, private sector promotion, seed multiplication, seed quality assurance and seed trade.

Step 2. Specification of objectives

36. The analysis of issues in step 1 will provide the basis for the formulation of a set of seed policy objectives, designed to address the problems identified **and to explore valid opportunities that may arise**. In other words, identifying the issues to be addressed should lead to the objectives to be achieved. As soon as the issues to be addressed are identified, it is necessary to agree on a statement of objectives.

37. 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 1, 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 potential of improved varieties and high quality seeds, 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 3. Choice of policy options/strategy

38. The next step is to identify and analyse the various policy options or strategies 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 perceived objectives. The options available to each stakeholder will depend on local circumstances as much as the broader context, and each stakeholder will have to develop its own unique approach to addressing its seed industry needs. For example, to achieve its policy objectives, a government may give a national seed committee or board the role of coordinating all seed industry functions, the private sector the role of main producer and distributor of certified seed, and the public sector to produce only early generation seed, while NGOs are encouraged to supply seeds that are unprofitable for the private sector but are more suitable for a community-based approach.

Step 4: Data collection and analysis

39. 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 and analysis 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 certification, extension, seed market, informal seed system management, agro-economy, and gender

40. After analysis and interpretation of the data, the final report of this study will serve as the main working document for the policy formulation process. The study 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 the formal seed sector and the potential future role of this sector in overall national agricultural policy objectives. However, as this informal seed sector underpins much of smallholder agriculture production in developing countries, it should also contain a clear description of farmers' seed supply systems and their

potential contribution to achieving the same objectives. Where resources are limited for a comprehensive review, a Strengths Weaknesses Opportunities and Threats (SWOT) analysis could be considered to identify the key elements.

41. The authors of the final report of the study should summarize it into a Seed System Issues document that highlights the main points which should be discussed. The report should cover all important commercial and subsistence/food security crops, and offer varying approaches to seed policy, including consideration 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, seed multiplication, extension, quality control, marketing etc, and projected future needs, as well as options for achieving them. Deliberations on these specialized documents will be the basis of discussion at 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 5. National Seed Forum: the consultation process

42. 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 promote investment and participation in the seed sector, and to improve collaboration between the public and private sectors, civil society and farmers. The final objective is to arrive at a consensus on the package of short, medium and long-term interventions most likely to assure proper and effective resolutions of issues identified. Participants should leave the forum with a greater understanding of the challenges to seed sector development. The outcomes of the forum should be used as basis for drafting the seed policy.

- *Selection of participants*

43. Participants and resource persons for the forum should be carefully selected to ensure that each topic is effectively presented and discussed. 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 farmers, seed companies, national seed associations, NGOs, agro-industry, institutions involved in plant genetic resources research and conservation,, and relevant ministries (e.g. agriculture, research, finance, environment). The seed industry has multi-sectoral linkages, and each stakeholder makes an important contribution to the industry in its entirety.

44. In view of the past history of seed programmes in developing countries, particularly the lack of long-term sustainability, special attention should go to the participation of representatives of industries that utilize the primary produce of relevant crops covered by the seed sector. Since business regulations affect seed enterprises, the Ministry of Commerce should also be invited to participate. In some large countries or federal states, it may be advisable to conduct a consultative process at a decentralized level prior to holding a national seed forum. Other means of seeking the opinions of stakeholders may be used in place of a formal seed forum. In any case, a balance in representation is essential in order to avoid conflicts that would undermine the drafting process. It is advisable to ensure the participation of organizations that may not be formally recognized or legally constituted but are important players in the seed sector.

- *Agenda of the National Seed Forum*

45. The topics selected for discussion at the national seed forum should cover all aspects of the seed sector. Working documents, including analyses of the national seed sector and presentations on current global trends affecting the industry 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.

- *Preparation of working documents*

46. Papers and presentations should give participants a good understanding of the complexity and synergies among elements of the seed sector. Presentations can help stimulate a lively debate among stakeholders and help them reach a consensus on how to further the growth of the seed industry. 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.

47. The following guidelines may be useful for drafting technical documents, although authors should feel free to incorporate other issues and considerations:

- General background of the activity, topic or subject and its relation to national seed and agricultural policy objectives;
- Brief description of current technical and organizational arrangements, including level of harmonization with global standards for different elements of the seed programme chain
- Projected growth or other changes required to achieve policy objectives;
- Benefits, constraints, main development issues and opportunities of each specific element of the seed sector;
- Pros and cons of available options for development and effectiveness;
- A critical guide to selection of suitable option(s);
- An analysis of competition/profitability of seed production per crop, including potential of unexploited seed production opportunities.

Step 6. Drafting of the national seed policy

48. 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 undertaken by a National Seed Policy Drafting Task Force, i.e. small group of specialized seed sector representatives and other key experts in important areas of the sector, including seed science and technology. Task force members should be well informed of the positions of the government regarding critical issues, and able to express those positions accurately, in order to ensure that the government will approve and support it.

49. The following documents are required for the task force's work:

- The forum recommendations, which represent the consensus opinion of the wider group of seed sector stakeholders;
- The specialist documents presented at the 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;
- Other relevant documents, such as seed legislation, plant quarantine regulations, plant breeders' rights legislation, national investment code, conventions and norms governing the production and movement of seed in international trade.

50. Members of the task force can be identified by participants of the national seed forum or nominated by the Ministry of Agriculture. The suggested composition and Terms of Reference of the Task Force are presented in Annex 1.

51. The work of a drafting committee is intensive and should be assisted by one or more experienced experts in deliberating on topics which will eventually make up the chapters of the seed policy document. Circulation, correction and finalization of the policy document should be carried out by a smaller group within the task force, in regular consultation with the whole task force.

52. The length of time needed for drafting the policy depends on the priority given to the exercise. On average, the process – from initial submission of the draft document to national authorities to adoption and printing – takes from six months to one year. In some cases, another forum of key stakeholders may be necessary to examine the preliminary full draft in detail and make all necessary corrections.

Step 7. Approval and adoption of the policy

53. The final seed policy draft should be submitted to the relevant national authorities (normally the Ministry of Agriculture) for approval. 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 8. Awareness raising to facilitate implementation

54. 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, 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 9. Periodic policy review

55. 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 economic development.

56. 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 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.

57. The review would take the existing policy document as a starting point and critically evaluate each article, making amendments to reflect any changes in matters of fact or circumstances. 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.

VI. THE SEED POLICY DOCUMENT

58. 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 expressions;
- the layout, organization and structure of the document.

General characteristics of the seed policy document

59. 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 and 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:* A seed policy document that is easy to understand is less likely to result in dispute and also assists those involved in monitoring the implementation of the policy. However, the policy should not be over simplified to the extent that it becomes technically or legally vague. In effect, 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 also easy to translate into other languages or interpret to illiterate persons without loss of their essential meaning.
- *Promote effective communication:* Use content and language in ways that 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

60. There are many possible formats for seed policy documents. However, on the whole, a good document should be short and clear, with a logical and coherent structure and organization of contents that makes 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

61. The format of the seed policy should reflect the formulation process and the steps involved as discussed in Section B. The following arrangement of contents is recommended:

1. Foreword:

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 proposals and adds weight to the process. The ministerial foreword should outline the aims of the policy and express clearly the commitment of the government to ensuring its implementation for the benefit of the seed industry, farmers and the country as a whole.

2. Introduction:

The introduction (or background section) should provide an overview of the existing state in 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, rural development and research. Where the seed policy document supersedes a previous policy for the sector, complementarities and changes in focus should be explained.

3. 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.

4. 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, and the main activities that will be undertaken, are derived from the policy's principle objective. 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, 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. 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

5. 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. In general, the policy should be as comprehensive as possible. If some issue – such as vegetatively propagated crops (e.g., fruit trees or plantation crops) – is excluded, this should be noted and justified.

6. Administration of the policy:

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

7. 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 industry, and the expected outcome.

8. 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.

9. Effective date of entry into force:

It should be clear when the policy will come into force and whether it will have retroactive effect.

10. 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 must contain a provision for periodic revision to meet changing needs of the seed industry and the agricultural sector as a whole.

VII. KEY ELEMENTS OF NATIONAL SEED POLICY

62. This section shows how a national seed policy can contribute to an environment which, by fostering the participation of both the public and private sectors, can enhance the benefits of seed sector investment and development to the entire farming community. It describes the key elements that need to be addressed in order to build a successful and effective seed sector – one that attracts investment, and grows and adapts to prevailing and changing circumstances. The elements reflect the main functional and structural dimensions of the seed sector, and should cover, therefore, the full spectrum of seed supply chain processes and activities. There are many ways to arrange seed sector elements in a policy document. The sequence suggested below is derived from several consultation processes with national and international experts.

63. 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. However, the quality of a national seed policy should not be seen simply as the sum of the individual 11 areas outlined below. It must also take into account the interactions among them, since they need to be integrated within one national seed system. For example, attempts to boost variety development through accelerated variety release without considering its interaction with the seed production and marketing systems are unlikely to be effective. 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 seed enterprise development.

64. The descriptions below of each of the elements includes a brief definition and an outline of the policy initiative and its rationale, strategies to achieve the policy objectives, and outcome targets where they are appropriate.

1. Crop variety development

65. The main objective of crop variety development is to provide improved or more appropriate varieties that meet the needs of farmers. Variety development covers activities such as the evaluation of plant genetic material of wild and improved types for their use in breeding programmes, and their selection in trials for adaptation to diverse agro-ecological conditions. Any newly introduced variety should be better than existing ones in key attributes, such as yield

potential, adaptation to growing conditions and tolerance to environmental stresses, climate change, pests and diseases.

66. To achieve the objectives, several factors should be considered, including:

- Linkage between conservation and utilization of plant genetic resources. The main sources of genetic potential for developing new varieties are: plant genetic material conserved in national, regional or international gene banks (*ex situ*), and material 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, giving particular importance to the role of women and the need to 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.)
- Time 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 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.
- Changing roles in plant breeding. For more than 40 years, the CGIAR Centers have been the main partners of National Agricultural Research Systems (NARS) in many developing countries in crop improvement activities, including plant breeding and variety selection. However, there has been a shift from public to private sector predominance in variety development where national or international seed companies have acquired sufficient capacity to undertake their own plant breeding activities, and intellectual property rights laws ensure adequate returns to investment. Civil society is also becoming involved in some aspects of variety development, usually in partnerships with NARS. It is important, therefore, that national seed policies recognize the dynamics of changes taking place in variety development, the role of different actors (including farmer participation) and the potential benefit for farming communities.
- Addressing the diverse breeding needs of crops. Private sector plant breeding is generally restricted to a few profitable crops, particularly those with hybrid potential such as maize and some commercial vegetables. Governments in developing countries should explore the potential of private/public partnerships for promoting the genetic improvement of crops that are important for local farming systems and food security but 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.
- 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 varieties. Links can be strengthened by facilitating the access of commercial seed companies 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.
- Biotechnology tools and genetically modified crops. Genetically Modified (GM) crops are becoming increasingly important in some developing countries thanks to the use of improved biotechnology tools in plant breeding and the introduction of bio-safety protocols. Many GM varieties of important crops are now widely cultivated. 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. Given the growing application of biotechnologies in crop improvement and the controversies associated with certain uses, it is important for governments in developing countries to avoid ambiguity and unnecessary bottlenecks by stating their positions clearly in national seed policies.

67. As the private sector becomes more focused on breeding a few profitable crops, and public investment shrinks, 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. These new dynamics need to be factored into national seed policies, which should actively foster institutional collaboration and partnerships, including NARS, CGIAR centres, regional research and development agencies as well as national and international seed companies, treaties and organizations. In this regard, Policy environments and legal frameworks that encourage collaboration are vital for stimulating development of the seed sector.

2. Seed production

68. 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) suggests 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 seed of crop varieties that are useful for diverse and evolving farming systems.

69. 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 appropriate crop varieties to farmers through a systematic process of 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. For example, the policy might specify institutional arrangements and roles such as assigning to agricultural research institutes the task of early generation seed production, while independent national seed enterprises, state farms or regional seed centres take care of producing seed of particular crops. 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 seed of traditional or improved varieties. This system is generally the main source of seed in developing countries for most food crops, and often involves women.

70. Important policy dimensions of seed production in developing countries include:

- Development of seed sector and factors determining the role 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 and market opportunities.

71. 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 with the private sector.

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 and this can be the only source of seed in countries with a seed sector in an early stage of development. But as commercial agriculture develops, the role of the informal sector often diminishes.

- Early generation seed production: Early generation seed production is the basis of seed multiplication and, by making seed quickly available to farmers, 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. The involvement of the private sector in early generation seed production is often controversial, especially when it involves varieties developed by the public sector. It is, therefore, important that the national seed policy defines clearly the government's position in this regard. Any perceived barriers to private sector participation in early generation seed production should also be explained and the government's intention and strategies for the future made clear.

72. The options for fully public, fully private or public/private system of early generation seed production have advantages and disadvantages, as outlined in Table 1:

Table 1. Options for early generation seed production

Options	Advantages	Disadvantages	Investment implications and system requirements
Fully public	- Seed production is under full government control and can therefore be planned to meet government objectives; - Seed sales revenue serves as working capital for research institutes.	- Costly, especially if seed is not sold at real prices; - Often diverts researchers from their functions; - Strict quality assurance systems are often required.	- High investment is required in seed production facilities; - An efficient seed production planning system needs to be implemented
Fully private	- Relieves government of expensive production costs; - Private management may offer more efficient use of resources.	- Private sector will not invest in less profitable crops or varieties which may be of interest to the government for food security reasons.	- Seed quality control needed to verify seed quality; - Credit is needed to facilitate development of early generation seed enterprises.
Public/private system	- Better crop coverage; - Public costs minimized.	There may be some transitory competition between the public and private sectors.	Investment needed to support public and private seed production; Effective monitoring system needed to manage public sector involvement.

- *Role of contract growers.* The use of contract growers in seed production is popular worldwide. It 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 seed 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. A sound agricultural contract law can do much to facilitate contract seed production.
- *Role of the informal sector.* In most 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. Since this is likely to remain the case for the foreseeable future, national seed policies must recognize the informal sector’s important role and help mobilize support of the government and development partners in areas such as extension, training schemes for farmers, community seed banks, germplasm conservation, seed quality control and sourcing of emergency seed stocks. The role of women in these various functions should be given particular attention.

3. Seed quality assurance

73. The government’s vision of seed quality assurance needs to be articulated in the seed policy. 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 the seed certification, which is carried out by inspectors, with no connection to either seed producers or seed buyers, during the production process. The institution responsible of the certification process is responsible for the quality of the seed. A certification system protects farmers against the risk of buying and using bad seed. Seed production schemes, whether certified or uncertified, can take different forms, as follows:

- (i) “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.
- (ii) 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 usually require substantial government investment.
- (iii) 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).
- (iv) Non-certified seed, in which the seed producer bears final 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. Farmers who buy non-certified seed trust the producing company and its labels. A voluntary initiative, such as a code of conduct, could complement a formal regulatory instrument.
- (v) 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.

74. 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 OECD seed schemes. The OECD regulatory schemes can be implemented fully by government or – in order to reduce public costs and improve efficiency – by the private sector under the supervision of public authorities.

4. Agricultural extension

75. 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 promotion. The objective of seed-related agricultural extension is to create awareness among farmers of new crops, varieties and quality seed and to show how these factors contribute to increased agricultural production. The overall objective of quality seed promotion is to increase demand, which can be achieved in different ways, including:

- Stimulating demand for quality seed of improved varieties and extending knowledge 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. For example, the private sector could provide sales and technical support, while the government extension services would not.
- Using different extension strategies to promote varieties and seeds, including seed fairs, field days, displays at agricultural shows, posters, radio and television broadcasts.

5. Seed marketing

76. Seed marketing aims at satisfying the specific seed needs of farmers. Demand drives seed industry development and pragmatic seed policies must create awareness of how seed markets operate and address the essential role of marketing in stimulating seed demand. This means clearly 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. Under true market conditions, the price of seed should be set by the forces of supply and demand. Governments often intervene in seed markets in order to ensure:
 - Seed is sold at low (subsidized) prices to farmers. However, fixing prices too low may discourage seed-producing enterprises, and the contract farmers they use for quality seed production, thereby inhibiting growth of the seed industry. At the very least, the seed price of a particular crop must be set above that of grain.
 - Seed is sold at prices that cover costs and make production profitable and attractive. However, this approach may dampen demand and limit farmers' access to seed. To maintain the real market price of seed while also improving the availability of seed to farmer, the seed policy might provide for safety nets such as subsidies, seed vouchers and cash transfers.

77. An effective subsidy scheme can stimulate effective seed demand, make seed available to farmers at affordable prices and ensure reasonable returns to seed enterprises. The seed policy document should clearly 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. Agricultural input dealers and small-scale vendors in rural markets are often involved in seed sales, but with varying degrees of success. 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.
- 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 seed demand, thus leading to increased crop productivity and to improved food and livelihood security. 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 seed – farmers tend buy more seed 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.

6. Seed import and export

78. 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 bio-safety 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. 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 national seed availability and also regional trade.

79. Other important issues that could be addressed in the policy document include:

- Compliance of the national regulatory framework with international standards and regulations, such as those of the International Plant Protection Convention (IPPC) and regional harmonized seed trade regulations (e.g., those of the Regional Economic Communities in Africa). Enactment of plant quarantine legislation, in harmony with IPPC provisions, is particularly important.
- Membership of the OECD or adherence to its protocols for seed certification for the purposes of seed export.
- Accreditation of seed laboratories with the International Seed Testing Association (ISTA) or adherence to its procedures and standards.
- The national seed association's joining the International Seed Federation (ISF)

80. Given the crucial role that seed imports and exports play in the availability to farmers of quality seed of improved varieties, it is important that countries use comparable quality assurance standards to facilitate international seed trade, while avoiding overly restrictive regulations.

7. Seed enterprise development

81. The seed policy should create an environment conducive to the establishment and growth of seed enterprises, especially within the private sector, which has a clear comparative advantage in many seed sector operations. However, despite recent significant growth in seed industries around the world, private sector participation in the seed sector is still limited in some developing

countries. Policy measures are needed, therefore, to stimulate the emergence and development of private seed enterprises in:

Seed production: ensuring the availability of improved varieties and early generation seed, and clearly defining roles of the public and private sectors;

Seed marketing: stimulating seed demand;

Import and export: establishing a clear vision and regulations regarding the seed trade;

Regulatory framework: creating a regulatory framework conducive to fair competition among seed enterprises, without imposing unduly strict bureaucratic procedures, and establishing a clear policy on intellectual property and farmers' rights.

82. Other policy measures may be needed to improve the operational capacity of seed enterprises. The following recommendations are drawn largely from lessons learnt from recent seed enterprise studies in developing countries (Neate & Guéi, 2010; Van Mele et al., 2011).

Capacity building. The production and marketing of seed requires 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 the 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.

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 is adequately 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, as appropriate.

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

8. Seed value chain

84. 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 agricultural systems efficiency, and create more rewarding positions in the market place for products.

85. Two important value chains are found in the seed industry:

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.

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.

86. 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, and contract arrangements with farmers are applicable in both cases. For example, the food industry may require their contract farmers to use high quality seed of specific varieties to ensure product uniformity or other desired characteristics. This kind of linkage is important for the seed industry, as it would lead to an assured seed market. Further benefits for farmers may come in the form of contracts with the food industry that include credit for seed and other inputs, which would be deducted from their final harvests.

9. Seed security

87. 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.

88. 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 (keeping large stocks of seed for a long period is costly and technically difficult). 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 or community seed banks.

Establishing an early warning system for determining rapid action as needed.

Importing and evaluating good varieties from neighbouring countries for inclusion in the national list for commercialization when necessary.

Conducting seed system security assessments to collect relevant data in vulnerable areas of the country.

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 seed and non-adapted varieties, reliance on seed imports rather than locally-produced seed, distortion of seed markets through deflation of seed prices, and undermining both local seed enterprises and the resilience of farmers. 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.

10. Capacity building

89. 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.

90. 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 Agriculture 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, through field-based practical training including farm visits, with attention to gender roles.

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

11. Seed legislation

92. 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 industry 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 seed law and regulations should guide the orderly production and marketing of seed by protecting the interests of both sellers and buyers. That is done by clearly defining the scope, mandate, and compulsory procedures relating to variety release and registration, field level seed multiplication, seed quality control, marketing, and exports and imports. The objective is to ensure that farmers receive seeds of best quality of the right crop varieties, while minimizing quality misrepresentation.

93. 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. It is commonly recommended that related areas – such as phytosanitary protection, plant genetic resources or intellectual property rights associated to seed production – are regulated under different laws to preserve the consistency of the various regulatory objectives.

94. 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.
- *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 seed of a particular category (e.g., certified seed) or all types of seed including uncertified seed. 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. It is recommended that the definitions follow international or national reference definitions to facilitate trade and ensure smooth implementation.

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. The role and functions of seeds authorities have evolved in recent decades. In many countries in the past, they directly controlled all activities regulated by the seed legislation. Today, there is a growing trend towards delegating or outsourcing many activities and functions, including quality assurance. Seed authorities may wish to outsource or delegate the implementation of some of the tasks and duties conferred by the seed legislation to one or more specialized institutions. However, they should ensure that key functions which reflect national sovereignty (such as the approval of regulations or the signature of official certificates or documents) are not compromised and that the final responsibility for the delegated functions rests with the delegating authority. All of these issues should be clearly spelled out in the legislation to avoid ambiguity or barriers in implementation.

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. Seed sold in a country is 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. It is recommended that countries harmonize their national legislation, wherever possible, with international seed standards. For example:

- National seed laboratories with accreditation from the International Seed Testing Association can issue ISTA tags for seed being traded internationally.
- Some 60 countries participate in OECD schemes for certification and movement of seed in international trade, which promote the use of agriculture seed of consistently high quality. Certified seeds are produced and officially controlled according to common, harmonized procedures.
- National seed associations and seed companies that are members of the International Seed Federation (ISF) can make use of its trade disputes settlement procedure.

95. 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 Bio-safety 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. Prior to defining the scope and objective of legislation on variety control, it is important to clearly distinguish variety control systems and registration from Intellectual Property Rights (IPRs) systems and more specifically plant breeders' rights (PBRs).

The process for registering a new variety for the purpose of protecting the intellectual property rights of the breeder requires a full description of the variety and confirmation that it is different from other varieties known in the country, has not been sold before, and that it is uniform and stable.

In the realm of seed legislation, establishing a variety list is also a form of registration, but its objective and consequences are completely different. The registration process of a variety for the National List aims at generating information for the user about the characteristics and performance of the variety.

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 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 tory legislation.

96. National seed policies should take account of legal instruments which respond to different regulatory objectives but have a direct impact on seed production and trade. The regulatory

protection of intellectual property rights in plant varieties is particularly relevant for the seed sector.

97. *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). To protect new plant varieties, countries may apply general IPR protection. They may also approve specific legislation to protect Plant Breeders Rights (PBRs), which protect new varieties of plants that are distinct, uniform and stable. The legal protection of PBRs means that the plant breeder is granted an exclusive, temporary IPR and the variety is considered to be a 'protected variety'. The plant breeder gains control of the new protected variety and the right to collect royalties for a number of years. Sound legal frameworks protecting breeder's rights can promote plant breeding as well as progress in agriculture.

98. The two major treaty systems that regulate rights issues are those established under the auspices of the Union internationale pour la protection des obtentions végétales ("UPOV"), and the WTO Trade-Related Aspects of Intellectual Property (TRIPS) Agreement. The UPOV treaties adopt a *sui generis* system of protection especially tailored to the needs of plant breeders. 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. These major treaty systems need to be taken into consideration in the national seed legislation framework.

99. The *sui generis* system that is more widely used is the UPOV system. Patents are granted normally on inventions that have fulfilled the three cumulative eligibility requirements for patentability (novelty, inventive step and industrial application). There are significant differences in approach between *sui generis* plant breeders' rights systems and patents. In the case of plant breeders' rights, the eligibility requirements for protection are not onerous, but the scope of protection granted is quite narrow, both in terms of exclusive rights and the various exceptions to and limitations on those rights. Patent laws strike a very different balance. Eligibility requirements are high and difficult to meet, but once granted a patent conveys broad rights to exclude third parties from exploiting the patented invention.

100. Intellectual property rights in plant varieties must also take account of farmers' rights and farmers' privileges. Farmers' rights are the rights that farmers have to benefit from varieties which have been developed from local landraces and which they have been using for long time. This point is defined in the International Treaty on Plant Genetic Resources (part III article 9), which recognizes the importance of local communities and farmers in conservation and development of plant genetic resources and gives governments the responsibility of sharing the benefits arising from the use of such resources. Farmers' privilege refers to the right that small farmers may have to save and re-use IPR-protected seed without any obligation of payment. In fact, in the UPOV Act of 1991, Article 15 (2) incorporates an optional exception to breeders' rights to permit the use of the product of the harvest by the farmer on his own holding. In national plant variety protection laws, the scope of this so-called farmers' privilege varies widely, however. While some countries only permit farmers to replant saved seeds on their own land holdings, others allow them also to sell limited quantities of seeds for reproductive purposes.

101. Under TRIPS article 27.3(b), countries that are not signatory members of the UPOV Convention may choose to approve a different *sui generis* system or to apply general patent law. General national **patent law** might protect PBRs through patents and trademarks. Countries under regular patent systems may recognize farmers' privilege through specific PBRs provisions, or may not recognize it, claiming that such an exception could unreasonably prejudice the "legitimate interests" of the patent owner.

Other legal instruments relevant to seed

102. 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 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 protection legislation in implementation of the International Plant Protection Convention; and the Convention on Biological Diversity and its Nagoya Protocol.

VIII. SEED POLICY IMPLEMENTATION

103. The policy formulation process should lead to a clear understanding of the policy on the part of stakeholders, and their agreement on the basic objectives of the policy and on what is required to carry it out, including their roles in implementation. Those roles will be clearly spelt out in the policy document.
104. Implementation – the process of turning the policy into practice – is critical. It could also become the weakest link in the entire seed policy development process if a well designed and well prepared policy document is left languishing on office shelves without having any influence on seed sector development.
105. When developing a seed policy, the difference between the policy and the strategy for its implementation can often cause confusion. The policy must make clear its aims, objectives and broad principles, and explain how they will contribute to the overall development of the seed industry. 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.
106. 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. For example, the policy might foresee that the public sector withdraws from certified seed production, thus allowing the private sector to supply all the certified seed needed to enhance national food security. To implement this policy, the strategy might be to build an enabling environment for local seed enterprises in rural areas; action required for doing so would include training, services, credit, tax incentives, linkage to basic seed and other services for producing certified seed of the major food crops.
107. The policy framework, therefore describes in concise statements the desired future outcome or objective (e.g., food security) and what needs to be done strategically (e.g., promoting private sector) in order to bring about the necessary change, while the strategy describes how to attain the objective, in this case by using a seed enterprise development plan.
108. 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 policy 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*. Examples of regulatory instruments are laws and regulations, while economic instruments include tax credits, quotas, tariffs and licence fees. This distinction is useful because the same objective can often be strategically served by several alternative instruments. It is only by distinguishing between objectives, strategies and instruments that one can begin to assess the relative efficiency of different instruments. Conversely, a single policy instrument may influence progress toward several policy objectives. For example, an instrument used to reduce seed prices will normally affect the welfare of seed producers and farmers (consumers) as well as the level of seed production.
109. Implementation of a national seed policy requires:
- Designation of a government agency with responsibility for policy implementation;
 - Translation of the policy provisions into an operational plan and guidelines;
 - Coordination by the responsible agency, and management of its resources, to achieve the intended policy objectives.

110. Seed policy development is a dynamic and fluid process, which can be affected by changes in the political environment, such as in the leadership of the Ministry of Agriculture. It is therefore important that a policy formulation process is brought to conclusion as quickly as possible, as new governments often tend to introduce new rules. In the event of change, it may become necessary to present and explain the policy process to the new administration, so that it will understand and take ownership of it. Continuity and stability are important considerations for the private sector; to encourage investment, the policy should be insulated as much as possible from day-to-day politics and from the effects of changes in government.

Responsibility for implementation, oversight and coordination

111. Once the government has approved and adopted the national seed policy, the implementation strategy should be operationalized. A government agency, normally the national seed board 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. One advantage of designating a specific authority for seed sector development is that it becomes less likely that a new government will change an existing policy if a strong institutional arrangement is already in place for its implementation.

112. Oversight and coordination are absolutely essential in the seed industry, 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 committee 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

113. 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.

Mobilizing and coordination of resources

114. 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

115. 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

116. 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. This review may be done in the context of regional harmonization or changing regulations.

IX. CONCLUSIONS

117. Developing countries recognize the urgent need to provide their farmers with access to quality seed of adapted varieties, which is essential for agricultural development and for attaining food and livelihood security. To be effective, however, seed sector development programmes need to be informed by a well designed national seed policy.

118. 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.

119. This *Guide for National Seed Policy Formulation* offers a process for formulating 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 exchange of PGRFA, and to provide all farmers with access to the seed 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.

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ANNEX 1

Composition and Terms of Reference of the National Seed Policy Drafting Task Force

The small group of eight to 14 Task Force members, representing all major stakeholders in the seed sector, may include representatives of the following:

- Ministry of Agriculture policy office,
- Agricultural Research,
- Seed programmes (public),
- Seed companies (private) or national seed association,
- Seed quality control,
- Agricultural extension,
- Agricultural input suppliers,
- Plant protection officers,
- Farmers as seed users,
- Agro industry,
- Agricultural credit,
- Ministry of Finance,
- Agricultural economics
- Ministry of Planning.

To enhance inter-ministry collaboration, it is important that senior-level technical officers should represent their respective ministries. It is also recommended to search for an appropriate balance of representation between the public and the private sector.

The Terms of Reference of the Task Force will be specific to the particular situation of the country but common elements may be:

- To take into account the recommendations, submissions and position papers generated by the National Seed Forum and other expert consultations as a basis for drafting a national seed policy aimed at effective development of the national seed industry.
- To advise the Ministry on the wide public circulation of the initial draft document, and assist in achieving consensus on contentious issues.
- To undertake the necessary revision of the draft document based on comments received from the Ministry of Agriculture and other stakeholders and present a final document to the Ministry for approval and publication.

ANNEX 2**List of Acronyms**

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
GPA	Global Plan of Action
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
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

ANNEX 3

Acknowledgements : To be added

APPENDIX

WRITTEN COMMENTS RECEIVED FROM MEMBERS OF THE INTERGOVERNMENTAL TECHNICAL WORKING GROUP ON PLANT GENETIC RESOURCES FOR FOOD AND AGRICULTURE AND RELEVANT ORGANIZATIONS

I. Canada

In general, we find that the main elements are there and there is some useful information. There are few factual errors. In our view, however, there are problems with the length of the draft Guide and in some cases what is not there. The document is verbose and repetitive. This takes away from a clear focus on the issues which need to be addressed. To be a really useful, the document needs to be shorter and more focussed, with a better executive summary.

Developing countries may need to try and get a handle on the current state of their seed system by whatever means they have available (the only suggestion in the document is through a formal stakeholder consultation). Once you know what you're dealing with, it is easier to attempt to describe it in some coherent manner. Then the draft Guide can offer suggestions for "add-ons" that might make sense now or in the future.

The draft Guide could do a better job of providing examples of pros and cons of various alternatives. It could more clearly distinguish between physical quality of seed (e.g. germination, vigour physical damage), seed purity (e.g. freedom from seeds of other kinds, freedom from weed seeds), seed sanitation (e.g. freedom from diseases, freedom from insect infestation) and genetic integrity. There is a tendency to mix in philosophical/political elements which are not really seed policy issues.

With the growing international investment in crop genomics, it's important for the Guide to concisely distinguish the various potential functions of a national seed policy. In other words, the Guide could provide direction for a framework to address:

- traditional high visibility seed programs to ensure compliance with mechanical or physical purity and germination standards;
- traditional low visibility quality assurance programs for compliance with genetic or varietal identity certification program requirements, traditionally based visually distinguishable morphological characteristics evolving to address non-visual distinguishing characteristics;
- newer intellectual property protection concerns which vary among countries; and
- linkages, where required, to phytosanitary and biotechnology regulatory concerns which also vary among countries.

II. France

General comments

Para 38. It's introducing already a single (and all and classical) approach of a seed policy. We have not to preempt the result.

Para 72: It's not coherent to develop both formal and informal sectors.

Specific comments

Para. 38- *Delete 4th sentence*

Para. 42- *Insert as 4th sentence*: If there is no consensus, the objective is at least to have a clear understanding of different opinions.

Para.66- *Insert as 3rd bullet*: Importance of Intellectual Property Rights: Because the process of developing new varieties is long and costly, the sustainable funding of this activity has to be supported by some IPR legislation on plants. The plant breeders' rights legislation seems the more convenient to give some money back to all breeders without problems of access to new protected varieties as genetic resources.

Para.69-*Delete 3rd sentence*:

Para.70-*Insert final sentence*: Seed policy has to avoid to create unfair competition between the formal seed sectors with a lot of controls and obligations and informal seed sector because in that case the formal seed sector will never grow.

Para 71- *Insert as 1st bullet*: Subsidize policy: Very often developing countries are Subsidy on seeds to facilitate access by farmers in developing countries very often these supports are reserved to public sector and creates unfair competition which weakens the private sector.

Para 72- *Delete 3rd and 4th sentence*.

Para 74- *Insert as 4th sentence*: Finally it is important to have a seed quality assurance system which is well balanced with the importance and level of development of the formal seed sector. If not the risk is to create too much obstacles against the formal seed sector.

Para 77- *Insert as 3rd sentence*: The seed policy should clearly exclude any subsidy which would be reserved to some category of stakeholders

Par 78 – *Insert as last part of 4th sentence*: because the final purpose of a seed policy is to provide farmers with the best adopted varieties, the import policy will avoid unnecessary tests and experimentations.

Para 79- *Insert as last part of 4th bullet point* –or regional seed federation as AFSTA in Africa or APSA in Asia and Pacific.

Para 81. *Add-in* Seed Marketing - Promoting the use of new varieties

Para.88- *Insert* - Establishing an early warning system using a system of information from bottom to top on the seed production (quality, quantity) for determining rapid action as needed.

Para 99-*Insert as last sentence*: 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 other breeders and farmer-breeders which is not the case with patents

Annex 1 – *Add* : Seed registration and Seed growers

III. Poland

Para.100 - *Insert in 5th sentence*: optional exception to breeders' rights to permit the use of the product of the harvest by the farmer on his own holding within reasonable limits and subject to the safeguarding of the legitimate interests of the breeder. *Insert in 7th sentence*: according to UPOV provision.

IV. Union for the Protection of New Varieties of Plants (UPOV)

Para 95-*Replace 2nd sentence of the 1st point* with: To be eligible for protection, varieties have to be (i) distinct from existing, commonly known varieties (common knowledge is not restricted to national or geographical borders), (ii) sufficiently uniform, (iii) stable and (iv) new in the sense that they must not have been commercialized prior to certain dates before the application for protection

Para.97 –*Replace 3rd and 4th sentence* with: The breeders’ right means that, during the period of protection, the authorization of the breeder is required to propagate the variety for commercial purposes. The breeder may make his authorization subject to conditions and limitations, which can include the payment of a royalty.

Para 99- *Replace 3rd sentence* with: The legislation governing patents and plant breeders’ rights have different subject matter of protection, conditions for protection, scope and exceptions .

Para 100- *Delete 1st and 4th sentences*. Add as 6th sentence : Under the optional exception of Article 15(2) of the 1991 Act of the UPOV Convention, UPOV members may, within reasonable limits and subject to safeguarding the legitimate interest of breeders, permit farmers, on their own holdings, to use part of their harvest of a protected variety for the planting of a further crop. In addition, Article 15 (1) of the 1991 Act of the UPOV Convention provides for “compulsory” exceptions to the plant breeder’s right. Article 15 (1) states that the breeders’ right shall not extend to acts done privately and for non-commercial purposes. That exception suggests that, for example, the propagation of a variety by a farmer exclusively for the production of a food crop to be consumed entirely by that farmer and the dependents of the farmer living on that holding, may be considered to fall within the meaning of acts done privately and for non-commercial purposes. Therefore, activities, including for example “subsistence farming”, where these constitute acts done privately and for non-commercial purposes, may be considered to be excluded from the scope of the breeder’s right, and farmers who conduct these kinds of activities freely benefit from the availability of protected new varieties (see document “Explanatory Notes on Exceptions to the Breeder’s Right Under the 1991 Act of the UPOV Convention” (UPOV/EXN/EXC/1), available at http://www.upov.int/edocs/expndocs/en/upov_exn_exc_1.pdf).

Para 95: Though the above highlighted paragraph relates to a general section on Intellectual Property Rights (IPR) and is not specific to the International Union for the Protection of New Plant Varieties (UPOV), it should be noted that, according to the UPOV Convention, to be eligible for protection, varieties have to be (i) distinct from existing, commonly known varieties, from any country, (ii) sufficiently uniform, (iii) stable and (iv) new in the sense that they must not have been commercialized prior to certain dates established by reference to the date of the application for protection.

Regarding the notion of novelty, the UPOV Convention foresees the possibility of sale prior to filing of an application for plant breeders’ rights, under certain conditions. The different periods for selling or disposing of the variety for purposes of exploitation of the variety in the territory of the member of the Union where the application is filed and in other territories without affecting the novelty have been established in recognition of the lengthy nature of the evaluation by the breeder of the variety in each territory in order to take a decision to seek protection. The longer period for trees and vines takes into consideration the slower growth and multiplication for these types of plants. Article 6 (1) of the 1991 Act of the UPOV Convention states:

“(1) The variety shall be deemed to be new if, at the date of filing of the application for a breeder’s right, propagating or harvested material of the variety has not been sold or otherwise disposed of to others, by or with the consent of the breeder, for purposes of exploitation of the variety

(i) in the territory of the Contracting Party in which the application has been filed earlier than one year before that date and

(ii) in a territory other than that of the Contracting Party in which the application has been filed earlier than four years or, in the case of trees or of vines, earlier than six years before the said date.”

Para.97 : 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. The UPOV Convention provides the basis for UPOV members to encourage plant breeding by granting breeders of new plant varieties an intellectual property right: the breeders’ right.

The UPOV Convention specifies the acts that require the breeders' authorization in respect of the propagating material of a protected variety and, under certain conditions, in respect of the harvested material. The breeders' right means that the authorization of the breeder is required to propagate the variety for commercial purposes. In this sense, Article 14 (1) (b) of the 1991 Act of the UPOV Convention establishes that "the breeder may make his authorization subject to conditions and limitations."

Para.99: Most countries and intergovernmental organizations which have introduced a plant variety protection system have chosen to base their system on the UPOV Convention in order to provide an effective, internationally recognized system. Since the legislation governing patents and plant breeders' rights have different subject matter of protection, conditions for protection, scope and exceptions, it would not be appropriate to seek to compare the two systems

Para. 100: Since farmers' rights under the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA) are subject to national law, there is no conflict with national laws that are developed in conformity with the UPOV Convention. It is important to clarify that the notion of farmers' rights under the ITPGRFA is not linked to the optional exception under Article 15(2) of the 1991 Act of the UPOV Convention, which refers only to varieties covered by the scope of the breeders' right. Under the optional exception of Article 15(2) UPOV members may permit farmers, on their own farms, to use part of their harvest of a protected variety for the planting of a further crop. Under this provision, members of UPOV are able to adopt solutions, which are specifically adapted to their agricultural circumstances. However, this provision is subject to reasonable limits and requires that the legitimate interests of the breeder are safeguarded, to ensure there is a continued incentive for the development of new varieties of plants, for the benefit of society.

The 1991 Act of the UPOV Convention also establishes that the following acts in respect of the propagating material of the protected variety shall require the authorization of the breeder: (i) production or reproduction (multiplication); (ii) conditioning for the purpose of propagation; (iii) offering for sale; (iv) selling or other marketing; (v) exporting; (vi) importing; (vii) stocking for any of the purposes mentioned in (i) to (vi) above.