



Scoping Study for a Seed Laws Toolbox

Joep van den Broek, Abishkar Subedi and Marja H. Thijssen

Scoping Study for a Seed Laws Toolbox

Joep van den Broek, Abishkar Subedi and Marja H. Thijssen

1 Resilience B.V.

2 Wageningen Centre for Development Innovation, Wageningen University & Research

Wageningen Centre for Development Innovation
Wageningen, February 2020

Report WCDI-20-100

Joep van den Broek, Abishkar Subedi and Marja H. Thijssen, 2020. *Scoping Study for a Seed Laws Toolbox*. Wageningen Centre for Development Innovation, Wageningen University & Research. Report WCDI-20-100. Wageningen.

Keywords: seed law, seed regulations, enabling environment, toolbox

This report can be downloaded for free at <https://doi.org/10.18174/516963> or at www.wur.eu/cdi (under publications).



© 2020 Wageningen Centre for Development Innovation, part of the Stichting Wageningen Research. P.O. Box 88, 6700 AB Wageningen, The Netherlands. T + 31 (0)317 48 68 00, E info.cdi@wur.nl, www.wur.eu/cdi.



The Wageningen Centre for Development Innovation uses a Creative Commons Attribution 4.0 (Netherlands) licence for its reports.

The user may copy, distribute and transmit the work and create derivative works. Third-party material that has been used in the work and to which intellectual property rights apply may not be used without prior permission of the third party concerned. The user must specify the name as stated by the author or licence holder of the work, but not in such a way as to give the impression that the work of the user or the way in which the work has been used are being endorsed. The user may not use this work for commercial purposes.

The Wageningen Centre for Development Innovation accepts no liability for any damage arising from the use of the results of this research or the application of the recommendations.

Report WCDI-20-100

Photo cover: picture taken by Marja Thijssen.

Contents

List of abbreviations and acronyms	5
Executive summary	7
1 Introduction	9
2 Methodology	11
3 Focus and scope	13
3.1 Key topics	13
3.2 Priority countries	15
4 Knowledge and services of the Netherlands	17
4.1 Naktuinbouw and the Board of Plant Varieties	18
4.2 NAK	19
4.3 NVWA and MinLNV	20
4.4 WUR-WCDI, Resilience and KIT	21
4.5 Centre for Genetic Resources, the Netherlands	22
4.6 Oxfam-Novib	23
4.7 Plantum and seed companies	24
5 International agreements and standards	25
5.1 International Union for the Protection of New Varieties of Plants	25
5.2 Convention on Biological Diversity and Nagoya protocol	26
5.3 International Treaty on Plant Genetic Resources for Food and Agriculture	27
5.4 International Plant Protection Convention	28
5.5 International Seed Testing Association	29
5.6 OECD seed scheme	30
6 International projects and initiatives	33
6.1 PVP Toolbox	33
6.2 National Integrated Seed Sector Development Projects	34
6.3 ISSD Africa Community of Practice	34
6.4 IFC-WBG projects on regulatory reform and capacity building	35
6.5 Seeds2B	36
6.6 FAO Seeds Toolkit	37
6.7 Initiatives of the International Seed Federation	38
6.8 Enabling the Business of Agriculture	38
6.9 Access to Seeds Index	39
6.10 TASAI Index	40
7 Potential arrangements and modalities	43
7.1 Guiding principles	43
7.2 Potential modules	43
7.2.1 Laws and regulations	44
7.2.2 Institutional reform	45
7.2.3 Variety release	45
7.2.4 Quality assurance	46
7.2.5 Seed business licensing	46

	7.2.6 Seed trade	46
	7.2.7 Phytosanitary services	47
7.3	Management of the Seed Laws Toolbox	47
7.4	Next steps	48
Appendix 1	Meeting report	49
Appendix 2	Country list	53

List of abbreviations and acronyms

ABS	Access and Benefit Sharing
ACP	African, Caribbean and Pacific
ACSI	Access to Seeds Index
AFSTA	African Seed Trade Association
APSA	Asia and Pacific Seed Association
ASEAN	Association of South East Asian Nations
ASLN	Authorized Service Laboratories Naktuinbouw
BTSF	Better Training for Safer Food
CBD	Convention on Biological Diversity
CGN	Centre for Genetic Resources, the Netherlands
CGRFA	Commission of Genetic Resources for Food and Agriculture
CNA	Competent National Authority
COMESA	Common Market for Eastern and Southern Africa
CPVO	Community Plant Variety Office
DGGF	Dutch Good Growth Fund
DSI	Digital Sequence Information
DUS	Distinct, Uniform and Stable
EAC	East African Community
EBA	Enabling the Business of Agriculture
ECOWAS	Economic Community Of West African States
EU	European Union
FAO	Food and Agricultural Organization
G2G	Government to Government
ICT	Information and Communication Technology
IFC-WBG	International Finance Corporation – World Bank Group
IPPC	International Plant Protection Convention
IPPO	International Plant Protection Organization
IPR	Intellectual Property Rights
ISF	International Seed Federation
ISPM	International Standard for Phytosanitary Measures
ISSD	Integrated Seed Sector Development
ISTA	International Seed Testing Association
IT-PGRFA	International Treaty on Plant Genetic Resources for Food and Agriculture
KIT	Royal Tropical Institute
LAN	Dutch Agricultural Counsellor Network
MAT	Mutually Agreed Terms
MinBZ	Ministry of Foreign Affairs
MinLNV	Ministry of Agriculture, Nature and Food Quality
MLS	Multilateral System
NAK	Netherlands Agricultural Inspection Service
NAL	Naktuinbouw Authorized Laboratories
NGO	Non Governmental Organization
NML	New Markets Lab
NPPO	National Plant Protection Organization
NSC	National Seed Committee
NVWA	Netherlands Food and Consumer Product Safety Authority
OAPI	African Intellectual Property Organization
OECD	Organisation for Economic Cooperation and Development
PBR	Plant Breeders' Rights
PIC	Prior Informed Consent
PSSD	Private Seed Sector Development

PVP	Plant Variety Protection
QDS	Quality Declared Seed
R&D	Research and Development
REC	Regional Economic Community
SADEC	Southern African Development Community
SD=SH	Sowing Diversity = Harvesting Security
SFSA	Syngenta Foundation for Sustainable Agriculture
SMTA	Standard Material Transfer Agreement
SPS	Sanitary and Phytosanitary
TASAI	The African Seed Access Index
ToT	Training of Trainers
TSC	Technical Seed Committee
UPOV	International Union for the Protection of New Varieties of Plants
VCU	Value for Cultivation and Use
WBG	World Bank Group
WCDI	Wageningen Centre for Development Innovation, Wageningen University & Research
WSF	World Seed Partnership
WUR	Wageningen University & Research

Executive summary

Seed regulatory framework and seed sector performance

A conducive seed regulatory framework is key for the development of a vibrant seed sector. Yet, it is still one of the key bottlenecks hampering the development of the sector in developing countries and upcoming markets. The SeedNL partnership sees improving the enabling environment for seed business as one of the key areas where support is needed. A transparent and enabling business environment will benefit all seed sector stakeholders and improve farmers' access to quality seed of a diverse portfolio of improved and adapted varieties.

Objectives of the current study

Based on the positive experiences with the Plant Variety Protection toolbox, the aim of the current study was to explore and assess the possibility, relevance and arrangements of a Seed Laws Toolbox, providing regulatory support in areas beyond PVP. The objectives were to: (i) determine its focus and scope in relation to topics and countries; (ii) assess how Dutch expertise may support its operation; (iii) provide an overview of international standards that may guide seed regulatory support; (iv) and draw lessons from selected 'success stories' on improving the seed enabling environment. Information was obtained through desk study, interviews, surveys and workshops.

Determining seed regulatory focus areas

Dutch seed companies face various regulatory hurdles in doing business in developing countries and upcoming markets. Variety release procedures are often lengthy and cumbersome. The compulsory seed certification system is often hampered by infrastructure and human capacity, and alternatives are not available. Getting seed business licences and permits for seed import is often challenging. In many countries, import regulations do not comply with international standards. A sound and efficient phytosanitary system is often absent, so too a functional PVP system. Besides the regulations themselves, implementation is often a problem, with bureaucratic, lengthy, inefficient and sometimes inconsistent procedures. Next to seed laws and regulations in general, we suggest that the Seed Laws Toolbox focusses on the topics of: (i) variety release; (ii) seed quality assurance; (iii) seed business licencing; and (iv) seed import and export.

Selecting countries

With a Seed Laws Toolbox or seed regulatory facility, it will be possible to contribute with limited resources to ongoing investments and initiatives of the private sector and government, for the implementation of a specific modality solving a regulatory bottleneck or building upon an explicit opportunity in a selected country. Like the PVP toolbox the Seed Laws Toolbox may operate in all countries eligible for Dutch funding instruments.

Making use of Dutch expertise

The Netherlands has a strong private sector with global leadership of Plantum and the Dutch seed companies. It has effective regulatory implementation systems in place with recognized institutes like Naktuinbouw, NAK and NVWA, which work in collaboration with the Ministry of Agriculture, Nature and Food Quality. Furthermore, seed sector expertise is available through knowledge institutes, NGOs and consultancies like Wageningen University & Research, Resilience, Royal Tropical Institute and Oxfam-Novib. Organizations differ in regulatory expertise and support services, which we describe in the report. Support services include assessments and studies, advisory services, training and education, organization of exposure visits, facilitation of regulatory reform processes, and convening and brokering.

Aligning with international standards

International standards are a prerequisite for international seed business and seed trade. Even if developing countries and emerging economies may have a long way to go in adopting them, they may provide a good basis for developing national legislation and regulation. Important standards are UPOV

for Plant Variety Protection; the Convention on Biological Diversity/Nagoya protocol and the International Treaty on Plant Genetic Resources for Food and Agriculture for access and benefit sharing; the International Plant Protection Convention for phytosanitary measures; ISTA for seed testing; and OECD for its variety registration and certification schemes.

Drawing lessons from success stories

We describe a selection of international projects and initiatives that have been successful in promoting seed regulatory reform and/or supporting the implementation of seed regulations, including international programmes, national projects, toolkits and international indices. The descriptions focus on success factors and drawing lessons for the structure and operation of the Seed Laws Toolbox. Lessons relate to: (i) transparency; (ii) demand orientation; (iii) stakeholder involvement; (iv) complementarity with other initiatives; (v) neutral facilitation; (vi) combining process and content expertise; (vii) combining international and local expertise; (viii) benchmarking with international standards and indices; (ix) tailoring prescribed modules; and (x) sharing results and learning lessons.

Potential modalities and arrangements

Based on experiences in other countries, we formulated several modules for support to seed regulatory reform and implementation. These are just examples that shall be tailored to the local context; additional modalities may be designed. We also provide suggestions for the management of the Seed Laws Toolbox. Finally, we indicate the next steps towards operationalizing a seed regulatory facility.

1 Introduction

A conducive seed regulatory framework is key for the development of a vibrant seed¹ sector. Yet, it is still one of the key bottlenecks hampering the development of the sector in developing countries and upcoming markets. Issues around variety release, seed business licensing, intellectual property rights and phytosanitary issues persist to a point where companies are dissuaded to do business in a country. Seed related policies, laws and regulations may be outdated and not fit the local seed market context any more. Regulations may not be transparent and division of responsibilities in implementation may not be clear. At the same time many countries face a lack of knowledge, skills and capacity in this area; especially in enforcement often only a very limited number of trained people are available. The SeedNL partnership² sees improving the enabling environment for seed business as one of the key areas where support is needed. A transparent and enabling business environment will benefit all seed sector stakeholders, including not only local seed businesses, domestic seed enterprises and international seed companies, but also the farmer seed users in improved access to quality seed of a diverse portfolio of improved and adapted varieties.

The Plant Variety Protection (PVP) toolbox, an instrument supported by the Dutch government and managed by Naktuinbouw, provides tailored support to countries on the development and implementation of PVP. The positive experiences with and high appreciation of the PVP toolbox, and the intention of SeedNL to support a more coordinated approach for improving the enabling environment of the seed sector in developing countries and emerging economies, led to the request to explore possibilities for a seed regulatory support facility beyond PVP, i.e. the Seed Laws Toolbox. The aim of the current scoping study, commissioned by the Dutch Ministry of Agriculture, Nature and Food Quality (MinLNV), is therefore to explore and assess the possibility, relevance and arrangements of a Seed Laws Toolbox.

The Netherlands has a strong private sector with global leadership of Dutch seed companies and a strong Dutch seed trade association, Plantum. It has effective regulatory implementation systems in place with recognized institutes like Naktuinbouw, NAK and NVWA. Furthermore, seed sector expertise is available at its knowledge institutes like WUR and the Royal Tropical Institute (KIT), and NGOs like Oxfam-Novib. Moreover, the Dutch government supports seed sector development internationally through a range of trade and aid instruments. This places the Netherlands in a unique position to provide seed regulatory support³. In many countries, the Netherlands is seen as preferred partner for institutional support on seed sector development, appreciated for its comprehensive but also balanced approach and advice.

The specific objectives of the scoping study are to:

- Assess the challenges which Dutch companies experience related to four key regulatory areas: (i) variety release, (ii) quality assurance, (iii) business licensing and (iv) seed import and export; and identify countries that need support in solving these challenges.
- Assess in which areas Dutch institutions can play a pivotal role to improve the regulations and implementation practices of developing countries and emerging economies; and indicate the type of support they may provide.

¹ Please note that when we mention seed this includes vegetative plant propagation materials like roots and tubers, including Irish potato, but also small plantlets.

² SeedNL is a partnership of the Dutch Ministry of Agriculture, Nature and Food Quality (MinLNV); the Ministry of Foreign Affairs (MinBZ); and Plantum, aiming to increase the availability, access and use of quality seed of improved varieties by strengthening seed markets in developing countries and emerging economies in Africa and Asia. The SeedNL partnership is mentioned in a recent letter to the parliament, in which the Minister of LNV and the Minister of BZ indicate the priorities for Dutch support to food security in the context of trade and development cooperation: <https://www.rijksoverheid.nl/documenten/kamerstukken/2019/06/06/op-weg-naar-een-wereld-zonder-honger-in-2030-de-nederlandse-inzet>

³ SeedNL informal working group, 2017. SeedNL – Dutch solutions to global challenges. Strategic choices for seed sector investments.

-
- Provide an overview of international agreements and standards that may guide support in the four key regulatory areas studied.
 - Describe several 'success stories' or 'shining examples' of projects in which Dutch expertise was instrumental in improving the seed enabling environment.

2 Methodology

The study consists of five parts:

1. Focus and scope

From the demand side the study explored the priorities of the Dutch private sector. This was done through interviews with Dutch seed companies, a half-day meeting with the international committee of Plantum, as well as a survey with Agricultural Counsellors at Dutch Embassies in Africa and Asia. Through the discussions and survey, we aimed to get insight into topics that need attention as well as identify priority countries which may be supported through the Seed Laws Toolbox. These are presented in chapter 3.

2. Knowledge and services of the Netherlands

Chapter 4 analyses what the Netherlands has to offer, i.e. the supply side, in terms of knowledge and services. Information was obtained through literature and discussions with representatives of MinLNV, Naktuinbouw, Plantum, WUR and others. In this chapter we also look at complementarity with other organizations like the European Union Commission (for phytosanitary support).

3. International agreements and standards

In the context of best practices, chapter 5 focuses on the international commitments and standards that have been agreed upon in relation to intellectual property (UPOV), access to genetic resources (CBD, Nagoya protocol, International Treaty), phytosanitary issues (IPPC) and seed quality assurance (ISTA, OECD seed scheme).

4. International projects and initiatives

In the context of successful approaches, chapter 6 provides a description of (global) successful approaches/best-fit practices of projects and activities that worked on seed enabling environment issues, including the work done by Naktuinbouw, WUR-Resilience-KIT, WBG-IFC, Syngenta Foundation, and organisations supporting different indices. Information is based on literature study and interviews. This informs which implementation arrangements and activities are most effective in addressing regulatory bottlenecks.

5. Potential modalities and implementation arrangements

The findings from the above-mentioned chapters lead to a number of recommendations on potential modalities and implementation arrangements for a Seed Laws Toolbox/seed regulatory support facility; these are presented in chapter 7.

3 Focus and scope

In this chapter we elaborate the findings of several consultations with seed companies and Agricultural Counsellors at Netherlands Embassies in selected countries in Africa and Asia. The consultations provided clarity on the challenges and focus for the seed regulatory topics as well as potential modalities to facilitate improvements. In addition, priority countries in which seed regulatory support modalities may be initiated first were discussed.

3.1 Key topics

Consultation of CEOs on SeedNL

In September-October 2018 ten CEOs and senior managers of Netherlands-based private seed companies were consulted on the priority areas that SeedNL should address. These companies were: Agrico, Bakker Brothers, BASF Vegetable Seeds, Bayer Vegetable Seeds, Bejo, Enza, HZPC, RijkZwaan, Solynta and Syngenta. Improving the enabling environment for seed business was indicated as priority number one. Other topics indicated include support in variety testing, variety demonstrations, and training of farmers on good agricultural practices to show the value of quality seed.

Survey for Agricultural Counsellors

In December 2018-January 2019 we also consulted a number of Agricultural Counsellors at Netherlands Embassies in Africa and Asia. Main questions related to the type of challenges on which Dutch companies active in their countries approached them, but also to the key seed sector priorities of the governments of their host countries. We received information from the Embassies in Ethiopia, Ghana and Nigeria, Kenya and Tanzania, and Myanmar. The results show that many vegetable seed and seed potato companies are active in the mentioned countries. Whereas Tanzania is an important hub for breeding and seed production for several vegetable seed companies; Kenya is a hub for the production and sales of seed potatoes. Not all companies approach Dutch Embassies for information and support on their business ventures.

Topics and challenges from studies

The above-mentioned consultations highlighted a number of challenges in different areas. They are elaborated below.

Variety release

Variety registration procedures are often lengthy and cumbersome. Vegetables are mostly on the list of priority crops meaning that they must go through the complete procedure for variety release, including field testing. Harmonization of national performance trials' results across countries within the same regional economic community (ASEAN, COMESA, ECOWAS) is generally absent.

Seed quality assurance

Often the official government supported seed certification system is hampered by a lack of infrastructure and human capacity. Alternatives for the government seed certification system are not in place and a system for accredited company laboratories for seed quality testing is absent. There is lack of compliance with international standards for seed quality like ISTA. In some countries application of different standards for international and domestic companies was observed (more strictly for international companies). Fake and adulterated seed in the market is a huge problem which undermines farmers' trust in seed produced by the private sector.

Seed business licensing

Getting permits for seed production and seed imports is challenging. In some countries 100% foreign company ownership is impossible. Another problem mentioned is the unpredictability of the

regulations with frequent policy changes, and enforcement that attracts charges, fines and fees with no prior notice or grace period; changes are implemented immediately.

Seed import and export

Companies face complicated procedures related to seed trade, with different permits, taxes and codes to be used during importations. It is often difficult to get the right declarations on the phytosanitary certificate for exports. Import and export of breeding materials, parental seed and commercial seed is a frequent problem. In many countries the strict import regulations and inefficient import systems do not comply with international standards. Also, the implementation of the Nagoya protocol and export of genetic resources is a challenge.

Phytosanitary issues

The implementation of a sound and efficient phytosanitary system often seems problematic. However, support to phytosanitary issues, both for import and export, is already addressed through other more permanent funding structures, and therefore does not need to be addressed through the Seed Laws Toolbox. An exception may be made for capacity development of government staff, for example on disease surveillance and pest risk analyses, which was indicated as a challenge.

Plant Variety Protection

A functional system for protecting Plant Breeders' Rights (PBR) is a prerequisite for investment for many international companies. In quite some countries in Africa and Asia such a system is not operational yet. Challenges in relation to PVP may be addressed upon demand basis through the PVP toolbox.

Implementation of seed regulations

Many challenges relate to the implementation of seed regulations. Fragmentation of government services and poor implementation of seed regulations are key problems. Procedures in relation to the above-mentioned areas are often bureaucratic, lengthy, inefficient, and sometimes inconsistent. Occasionally they change without prior notice. Procedures often are not digitized and still require a lot of paperwork. In specific cases, procedures are also not transparent. Government bodies often lack capacity but also a more pragmatic attitude in implementation. Collaboration with neighbouring countries on harmonization of seed regulations is often absent. The challenge of implementation of seed regulations and the fragmentation of government services is overriding all other challenges. One key recommendation during the consultations was to have one national office responsible for all seed related regulatory services.

Meeting of Plantum's International Policy Committee

14 February 2019 we organized a meeting with Plantum's International Policy Committee to discuss, consolidate and prioritize the aforementioned challenges; find the meeting report attached in Appendix 1. In general, the issues mentioned above were confirmed by the companies present in the meeting. Bottlenecks in relation to variety registration, i.e. the procedures as well as requests for parent materials for registration/testing, ranked highest. This was followed by problems with seed import (shipments of samples/small seed lots for testing; import during registration/certification); illegal propagation (practices not clearly defined; penalties insufficient); and sense of urgency given to the implementation of seed regulatory procedures. The latter results in time consuming procedures with a lot of uncertainty; this is sometimes related to lack of capacity, knowledge and skills and experience in the local system. Illegal propagation also links to lack of PVP, which was also indicated as a priority. Also mentioned was the fact that rules and demands (quality, phytosanitary, labelling) are not in line with the objective of seed import.

Other challenges that were mentioned are: acquisition of business licences; implementation of biodiversity regulations; no pre-marketing of vegetables allowed; JOC recognition; country of origin; seed law not suitable for vegetable seed; no procedure for variety identification; lack of transparency in implementation; and use of wrong statistics hampering seed trade. Companies remarked that the regulations may be clear, but that often the implementation practice is not according to the regulations. Next to seed regulations other topics in the enabling environment with regards to market development and implementation may need attention.

Conclusion

The consultations confirm that the Seed Laws Toolbox needs to address the topics of variety release, seed quality assurance, seed business licensing, and seed import and export. Phytosanitary issues and PVP are already dealt with through other instruments. Next to minor or major reforms, also implementation of the existing regulations must be addressed.

It is important that both international and domestic/local seed businesses benefit from seed regulatory reform and implementation, and that interventions strengthen domestic seed markets and improve farmers' access to and use quality seed of improved and adapted varieties.

3.2 Priority countries

Based on the interests of the Dutch seed industry, MinBZ, MinLNV as well as other implementing partners few countries will be selected for seed regulatory reform and implementation support. Whereas for the seed companies the business case is leading, countries also need to be eligible for Dutch funding support to trade and development cooperation (see Appendix 2). Specific focus regions for Dutch government support are West Africa/Sahel, Horn of Africa, Northern Africa and the Middle East.⁴ Also opportunities to build upon ongoing seed sector development initiatives will be taken into consideration, as well as openness of government and local partners to collaborate on seed regulatory issues.

Based on an informal consultation process, the initial focus is on West Africa and more specifically on Nigeria; Nigeria has been identified by Dutch companies as a priority country for which investment opportunities have to be explored. In the Horn of Africa Ethiopia has been identified. A number of companies are already active in Ethiopia, and they experience quite a number of challenges in the seed enabling environment that require attention. Recent SeedNL missions to Ethiopia and Nigeria identified entry points for strengthening the seed sector and creating opportunities for Dutch investment, including the need for seed regulatory support. For both countries seed sector development projects are foreseen that pay ample attention to strengthening the seed enabling environment.

The meeting with Plantum's international policy committee was also used to prioritize countries for seed regulatory support (see Appendix 1). Next to Ethiopia (mentioned 4 times) and Nigeria (mentioned 2 times) countries listed during the meeting were (between brackets number of times mentioned): India (6), Indonesia (4), China (3), Iran (1), Kenya (1), Korea (1), Pakistan (1) and Tanzania (1). Plantum will initiate a more thorough assessment to determine which countries its members prioritize for improving the enabling environment for seed business.

With the Seed Laws Toolbox it is possible to contribute with limited resources to ongoing investments and initiatives of the private sector and government, for the implementation of a specific modality solving a particular bottleneck or building upon an explicit opportunity in a selected country. Similar to the PVP toolbox the Seed Laws Toolbox may operate beyond the key focus countries.

⁴ Ministerie van Buitenlandse Zaken, 2018. Investeren in perspectief. Goed voor de wereld, goed voor Nederland. See: <https://www.rijksoverheid.nl/documenten/beleidsnota-s/2018/05/18/pdf-beleidsnota-investeren-in-perspectie>

4 Knowledge and services of the Netherlands

In the 2017 Enabling Business for Agriculture report, the Netherlands ranks no. 1 for 'Seeds'; based on both the quality of its laws and regulations as well as its implementation capacity.⁵ This applies to both the variety registration services and quality assurance systems, which are supported by organizations like Naktuinbouw, NAK and NVWA in collaboration with MinLNV. Also, different units within WUR, as well as Resilience, KIT and Oxfam-Novib, are recognized for their international work on seed sector development, including improvement of the enabling environment. Plantum and its member companies are an important source of key information on seed regulatory issues internationally. This chapter describes the unique knowledge and capacity of these Dutch organisations and the services they may provide in the context of the Seed Laws Toolbox. The chapter provides a brief description of each organization and the potential services it may offer in the context of the Seed Laws Toolbox. Find a summary in Table 1 below. Please note that in addition to these organizations there is a group of individual Dutch consultants specialized in specific regulatory areas; these consultants are not mentioned in this overview.

Table 1 Overview of Dutch knowledge and service providers per topic

Topic	Knowledge and service providers	Assessments and studies	Advisory services	Training and education	Exposure visits	Facilitation of reform processes	Convening and brokering
Variety release	Naktuinbouw		X	X	X		
	NAK		X	X	X		
	Plantum		X	X	X		X
	WCDI, Resilience, KIT	X				X	X
	Oxfam-Novib	X	X		X	X	X
Seed quality assurance	Naktuinbouw		X	X	X		
	NAK		X	X	X		
	WCDI, Resilience, KIT	X				X	X
	Oxfam-Novib	X					
Seed business licencing	Plantum		X		X		X
	WCDI, Resilience, KIT	X	X				X
Seed import and export	Plantum		X		X		X
	CGN	X	X	X			
	WCDI, Resilience, KIT	X	X				X
Phytosanitary issues	NVWA	X	X	X	X	X	X
	Plantum		X		X		X
Plant Variety Protection	Naktuinbouw, Board for Plant Varieties	X	X	X	X	X	X
	Plantum		X	X	X		X
	WCDI			X			
	Oxfam-Novib	X	X	X			X
Access & Benefit Sharing	Plantum		X	X	X		X
	CGN	X	X	X	X	X	X
	Oxfam-Novib	X		X			X
Seed laws and regulations in general	WCDI, Resilience, KIT	X	X		X	X	X
	Oxfam-Novib	X	X	X	X	X	X
	Plantum		X		X		X

⁵ Find the details on the Netherlands in the WBG-EBA report at: <http://eba.worldbank.org/en/data/exploreconomies/netherlands/2017>

4.1 Naktuinbouw and the Board of Plant Varieties

Naktuinbouw

Naktuinbouw is a foundation and independent administrative body supervised by MinLNV.⁶ Naktuinbouw monitors and promotes the quality of products, processes and chains in horticulture, with focus on seeds. Naktuinbouw has three departments for carrying out its work: Inspections, Laboratories and Variety Testing. Services are provided to clients based on a cost-recovery basis and there is no government subsidy to conduct the above indicated activities.

Seed quality assurance

MinLNV has delegated the seed certification task for horticultural crops to Naktuinbouw as one of the Agriculture Inspection Agencies. Naktuinbouw assesses the identity, quality and health (under the supervision of NVWA) of plant propagation materials with inspections and tests according to the Netherlands Seeds and Planting Materials Act 2005, the Plant Disease Act, and European legislation. Naktuinbouw's seed quality assurance services include seed inspection and seed testing. Naktuinbouw organizes several trainings in this area.

Seed inspection is done both on obligatory and voluntary basis. Obligatory inspections are legal requirements resulting in issuing EU quality certificates and an EU Plant Passport. Voluntary inspections are done to issue Naktuinbouw certificates (Elite, Select Plant). Laboratories support activities for inspections and provide services to the seed companies. Laboratory activities include seed health tests, seed quality tests, diagnostics, and research and development. The Naktuinbouw laboratories are accredited by ISTA.

In addition, Naktuinbouw provides seed quality assurance through an accreditation system. Naktuinbouw Authorized Laboratories (NAL) is a system that authorizes business laboratories for seed quality research. Authorized Service Laboratories Naktuinbouw (ASLN) is an authorization system focused on laboratory tests on soil, plant material and/or seeds. Naktuinbouw has expertise in all parts of the authorization system and does monitoring through annual audits.

Variety testing and Plant Breeders Rights

Naktuinbouw performs variety testing for DUS (Distinct, Uniform and Stable) for variety/cultivar listing and testing for Plant Breeder's Rights for new varieties of agricultural, ornamental and vegetable crops at the request of the Board for Plant Varieties of the Netherlands, and the Community Plant Variety Office (CPVO) of the EU. DUS testing reports are provided to the Board for Plant Varieties and the CPVO office. Naktuinbouw supervises VCU (Value for Cultivation and Use) trials of others like farmers and WUR.

Naktuinbouw is also involved in the implementation of EU directives in new EU member states. It provides assistance in development of policy and upgrading of the PVP law to the UPOV '91 convention. The organization aids in the implementation of PVP in various countries through the PVP Toolbox (see chapter 6) and organizes an annual international training course on PBR together with Wageningen Centre for Development Innovation (WCIDI) in the Netherlands.

Board for Plant Varieties

The Board for Plant Varieties⁷ is an Autonomous Public Authority established by the 'Seeds and Planting Materials Act 2005', and the only authority in the Netherlands responsible for Plant Breeders' Rights and registration of plant varieties and forest stands in the National Plant Variety Register. The board is supported by the Plant Variety Office, which is part of Naktuinbouw.

Conclusions

In the context of the Seed Laws Toolbox, Naktuinbouw can play an important role in providing advisory services for establishing more independent variety testing services for horticultural crops, development of third party accreditation systems for seed quality assurance, conducting

⁶ Find more information on Naktuinbouw at its website: <https://www.naktuinbouw.com/>

⁷ Find more information on the Board for Plant Varieties at: <https://www.raadvoorplantenrassen.nl/en/homepage/>

assessments/studies and provide inputs during the reform of national seed laws/legislation to create harmony with the PVP legislation, conducting training and capacity building, and organising exposure visits for policy makers and researchers on the above indicated topics. In relation to PVP the Board for Plant Varieties may provide additional support.

4.2 NAK

Organisation

NAK is the Dutch General Inspection Service for seeds and seedlings of agricultural crops.⁸ This legal task is performed by order and under the supervision of MinLNV. NAK tests seed potatoes and seed from cereals and grasses from all over the world. NAK offers the following services: field trials, laboratory tests, and training/courses. Services are provided to clients based on cost-recovery basis and there is no government subsidy to conduct above indicated activities.

Seed quality assurance

MinLNV has delegated the seed certification task for field crops to NAK as one of the Agriculture Inspection Agencies. NAK provides laboratory tests services including analysis of seed health, seed quality and soil samples. The seed laboratory of NAK is accredited by ISTA.

NAK provides export certification on behalf of the Ministry of Economic Affairs. NAK carries out the export and import inspections of seed potatoes, ware potatoes and agricultural seeds. For agricultural seeds on request also OECD certificates can be issued; NAK is the National Designated Authority for the OECD Seeds Scheme. The inspectors who perform these inspections have been appointed as officials of NVWA. NAK also takes care of the authentication of phytosanitary documents.

NAK provides recognition (accreditation) to seed companies, allowing them under certain conditions to carry out quality assessments themselves. A company can be recognized for field inspection, seed sampling and analysis, and seed certification. NAK does monitoring of recognised seed companies through audits and controls.

NAK does pre and post control testing of seed of registered and listed varieties to confirm the identity and quality. A pre-check is done to determine the maximum generation to be awarded at the field level and confirming if the variety is true-to type. Post control inspections are done for all batches of pre-basic and basic seed and certified seed (C1) produced in the Netherlands.

NAK also provides training and courses on field and lot inspection of seeds and seed potatoes and laboratory methods.

Variety registration

NAK does field trials for VCU. This is required for variety registration and national listing. It is obligatory to conduct VCU testing for two seasons for agricultural crops in the Netherlands; whereas vegetables and ornamental crops are exempted from VCU testing. NAK authorises varieties under investigation and provides orange labels; test material with an orange label can freely move within the EU.

Conclusions

In the context of the Seed Laws Tool box, NAK can play an important role in providing advisory services to establish more independent variety testing services for field crops, development of a third-party accreditation system for seed quality assurance, conducting training and capacity building activities on variety testing and seed certification, and organising exposure visits for policy makers and researchers on the above indicated topics.

⁸ Find more information on NAK at its website: <https://www.nak.nl/>

4.3 NVWA and MinLNV

Organisations

MinLNV has assigned the Netherlands Food and Consumer Product Safety Authority (NVWA) to oversee the inspections on animal health, plant health, food safety and product safety. The actual inspections are being implemented by several inspection services like Naktuinbouw, NAK and KCB (the Quality Control Bureau responsible for phytosanitary services of fresh products). The NVWA is the competent authority for the IPPC, the International Plant Protection Convention and as such functions as the NPPO, the National Plant Protection Organization. The specific phytosanitary rules and inspection procedures are laid down in EU directives and regulations.⁹

Phytosanitary services

To deal with bilateral and multilateral plant health issues relating to countries outside the EU, a market access team has been appointed, led by the Chief Phytosanitary Officer, which aims to develop good plant health relations with countries outside the EU. This team works closely together with the Dutch Network of Agricultural Counsellors (LAN) that is active at Netherlands Embassies worldwide. The Agricultural Counsellor operates as the first contact point for countries for plant health and agriculture related inquiries concerning the Netherlands. In addition, there is financial support from MinLNV to undertake support activities in developing countries and emerging economies. Often these activities are requested by the Agricultural Counsellors. Typical support activities include a needs assessment and follow-up training on IPPC procedures. Often the support is directed at the entire phytosanitary system with specific focus on the imports and exports of fresh agriculture products (e.g. flowers, fruits and vegetables).

In addition, MinLNV supports the digitization of phytosanitary certificates in developing countries. Several projects have been implemented in the last decade to support governments to establish an e-certification system (Client Export) for digitized phytosanitary inspections and issuing the phyto certificates.

Limited attention is paid to the export of seeds. For seeds the most important issues are that third countries pose unrealistic requirements for the imports of seeds, examples are:

- Additional declarations are requested on the phytosanitary certificate for diseases that cannot be transmitted by seed;
- Additional declarations are requested on the phytosanitary certificate for diseases that are not seedborne; and
- The specific crop is not a host plant ('waardplant') for a specific pest or disease.

The NVWA, through its communication with the National Plant Protection Organizations of third countries, tries to explain the above redundancies and simplify the conditions as much as possible; ensuring that phytosanitary certificates only reflect relevant phytosanitary risks to the crops.

The NVWA indicated that for training of field inspectors on seed phytosanitary issues, the (Dutch) seed companies are probably best positioned. The companies themselves often know best which specific diseases (and related additional declarations) are relevant for the crop. Also, within the NVWA they rely on experts from e.g. WUR and the seed companies to identify specific diseases at seed production fields.

With respect to the broader phytosanitary capacity building support, the European Commission has a relatively large support programme called Better Training for Safer Food (BTSF). The BTSF is a training initiative that amongst others covers plant health rules. Courses are delivered in EU and non-EU countries and typically follow a 'training of trainers' (ToT) principle with support of e-learning modules.

In addition, the European Commission organized two Pesticide Inspection Programmes (phase 1 between 2001 and 2009; and phase 2 between 2009 and 2015) with a budget of respectively EUR 30

⁹ Find more information on the NVWA at its website: <https://www.nvwa.nl/>

and EUR 34 million, both focusing on phytosanitary services. The project was implemented by COLEACP and was open to 35 African, Caribbean and Pacific (ACP) countries. Phase 2 specifically focussed on the sustainable development of the ACP fruit and vegetable sector; and included support to governments and exporters for strengthening their phytosanitary systems.

Conclusions

Though much general support is provided by the European Commission with respect to establishing a strong phytosanitary system, specific support for 'seed phyto' (especially for seed production activities) is limited. This concerns the support for phytosanitary inspectors to be able to detect specific phytosanitary risks for specific (vegetable) crops, and to provide the relevant additional declarations on the phytosanitary certificate (based on actual field observations) of seed production fields. Training on these aspects could be organized jointly in a public-private partnership between NVWA and members of Plantum (active in the selected third country).

For all the other phytosanitary services it seems sufficient capacity building activities are in place, either through the European Commission or MinLNV.

4.4 WUR-WCDI, Resilience and KIT

Organisations

Wageningen Centre for Development Innovation (WCDI) is the international expertise and capacity building business unit of Wageningen University & Research (WUR), aiming to support value creation by strengthening capacities for sustainable development.¹⁰ WCDI hosts a team of experts working on seed sector development in Asia and Africa. It works closely together with Resilience BV, a consultancy specialized in water and agribusiness solutions.¹¹ Additionally, the two organizations collaborate in a number of projects with Royal Tropical Institute (KIT)¹², which also hosts a seed team.

Assessments and support to seed regulatory reform processes

WCDI, Resilience and KIT have been collaborating for over ten years in seed sector development, i.e. in coordinating projects, coaching local staff, training project partners, facilitating policy dialogues, and developing partnerships working on institutional reform. These seed projects generally take a holistic approach towards seed sector development and focus on (i) increasing the capacity of quality seed production with a specific focus on strengthening seed business management; (ii) improving the performance of seed value-chains, including services like seed quality assurance and access to finance; and (iii) enhancing the seed enabling environment through facilitating the development of conducive seed related policies, laws and regulations, as well as providing implementation support. Projects often focus on a mix of crops, including field crops like cereals, legumes and oilseeds, as well as hybrid maize and vegetables. WCDI, Resilience and KIT have been coordinating and implementing seed programmes in Ethiopia (2012 – 2020), Uganda (2012 – 2020), Ghana (2013 – 2018), Burundi (2014 – 2022) and Myanmar (2017 – 2020). Note that in the projects in Ghana and Burundi IFDC was/is in the lead.

The following projects implemented by the partners are examples that show their knowledge and experience in the context of the Seed Laws Toolbox:

- Co-organization of annual international trainings in the Netherlands on PVP (together with Naktuinbouw) and on plant genetic resources and seed related policies (together with WUR-CGN and Bioversity International)
- Coordination and implementation of seed sector assessments and scoping studies in Burundi, Ethiopia, Ghana, Mali, Malawi, Mozambique, Rwanda, South Sudan, Uganda, Zambia and Myanmar (between 2011 and 2015, funded by MinLNV and MinBZ)

¹⁰ Find more information on WCDI at: <https://www.wur.nl/en/Research-Results/Research-Institutes/centre-for-development-innovation.htm>

¹¹ Find more information on Resilience BV at: <http://www.resiliencebv.com/>

¹² Find more information about KIT at: <https://www.kit.nl/>

- Studies on seed laws and regulations through the policy working group of ISSD Africa (2014 – 2017, funded by the Bill & Melinda Gates Foundation and MinLNV) (see also chapter 6)
- Facilitation of the development of a new seed policy in Ghana (2013, funded by MinLNV) and Uganda (2018-2019, funded by MinBZ)
- Support to the development of a national seed plan in Ghana (2014-2015, funded by MinLNV and USAID Feed the Future Agriculture Technology Transfer Ghana) and a seed sector road map and action plan in Myanmar (2016-2017, funded by MinLNV and MinBZ)
- Support to the development of seed regulation amendments and new directives in Ethiopia (2012 – 2019, ISSD Ethiopia, funded by MinBZ) and Uganda (2012 – 2019, ISSD Uganda, funded by MinBZ; see also chapter 6)
- Facilitation of a comprehensive seed regulatory reform process in Myanmar (2017 – 2019; funded by WBG-IFC and MinBZ; see also chapter 6)
- Reform of the seed sector regulations and their implementation in Burundi to promote private seed entrepreneurship (ISSD Burundi, funded by MinBZ, 2013-2017)
- Support the Burundi Seed Trade Association (COPROSEBU) in developing their advocacy strategy to review regulation to further the liberalisation of the seed sector (PSSD Burundi, MinBZ funded, 2019-present).

Conclusions

WCDI, Resilience and KIT combine process and content expertise in seed sector development. In the context of the Seed Laws Toolbox the organizations can implement seed sector scoping studies, convene workshops, platforms and fora, and guide multi-stakeholder processes for seed regulatory reform. In addition, they can design and deliver training courses on different topics in the Netherlands and as well as in-country.

4.5 Centre for Genetic Resources, the Netherlands

Organisation

The Centre for Genetic Resources, the Netherlands (CGN) is part of WUR. CGN's activities aim at ex situ conservation, support to in situ conservation, and promotion of the use of genetic propagation material in support of breeding and research. The centre works mainly on vegetable crops and forest species as well as domestic animals.¹³

Genetic resources management

CGN maintains the Dutch national genebank for plant genetic resources for food and agriculture. Collection, documentation, regeneration, evaluation, pre-breeding and seed storage are the important tasks. CGN acts under a mandate of the Dutch government and collaborates closely with breeding companies and an international network of genebanks. In addition, CGN works in close collaboration with the Global Crop Diversity Trust in so-called 'Peer Reviews' of gene banks, to improve the quality of management of genetic materials, as a contribution to food and nutrition security.

National Focal Point of ABS

CGN is the Dutch National Focal Point for the Nagoya Protocol on Access and Benefit Sharing (ABS). As the ABS Focal Point of the Netherlands, CGN provides guidance for seeking access to resources from the Netherlands and abroad, gives background information on international rules and Dutch policy, and explains terms that are often used. This information is relevant to all individuals, organisations (such as universities and other research organisations) and companies using genetic resources. CGN manages a specific ABS focal point website.¹⁴

¹³ Find more information on CGN at: <https://www.wur.nl/en/Research-Results/Statutory-research-tasks/Centre-for-Genetic-Resources-the-Netherlands-1.htm>

¹⁴ The website provides more information on ABS focal point activities: <https://www.absfocalpoint.nl/en/absfocalpoint.htm>

Policy advice

At the request of MinLNV CGN has facilitated national stakeholder consultations throughout 2018 to form a national position around Digital Sequence Information (DSI)¹⁵. This is a topic currently addressed in relevant negotiation processes under the CBD, IT-PGRFA, CGRFA, WHO PIP-Framework and UNCLOS BBNJ. DSI will form an important part of the negotiations at the CBD CoP 15 in China in 2020, when dealing with the development of Post-2020 biodiversity goals. CGN has been nominated by MinLNV to represent the Netherlands in the Ad-Hoc Technical Expert Group on Digital Sequence Information on Genetic Resources.

Research and training

CGN is leading and participating in several research projects within the EU and developing countries that focus on: ex situ and in situ management of genetic resources, including crop wild relatives, and climate change. It provides advisory services and training on genetic resources management and related policies. CGN together with WCDI organises an annual international training course on genetic resources conservation and use. CGN also provides training on the ABS policy regime of the IT-PGRFA and the Nagoya Protocol.

Conclusions

In the context of the Seed Laws Toolbox, CGN can play an important role in conducting studies/assessments on the implications of biodiversity related policies such as the Nagoya Protocol and IT-PGRFA and provide advisory services on how such policies can be implemented to be supportive to seed sector development. Training and education on the above-mentioned policies in the context of seed sector development may be another service.

4.6 Oxfam-Novib

Organisation

Oxfam-Novib is part of Oxfam International, an international NGO working on poverty reduction in 93 countries. From the Netherlands the organization coordinates the Sowing Diversity = Harvesting Security (SD=HS) project¹⁶. Starting from the position that food security starts with crop diversity, the project helps to empower indigenous peoples and smallholder farmers to reclaim their roles in contributing to food security, and to strengthen their adaptive capacities. SD=HS works with farmers, local communities, scientists and policy makers towards securing a sustainable and gender-just food production system that serves everyone. The project has activities in Zimbabwe, Zambia, Uganda, Guatemala, Peru, Lao PDR, Nepal and China. The four project components are: (i) Farmers' crop diversity management; (ii) farmers seed enterprises; (iii) local food plants and nutrition; and (iv) enabling policy environment for farmers' seed systems.

Farmer-managed seed systems and seed related policies

In the enabling policy component Oxfam-Novib and partners aim to support the development of seed policies that are conducive for farmer managed seed systems. Policies are targeted at global, national and local levels. Creating awareness and building capacity of farmer communities, and linking them to government policy makers, the project aims to empower farmers to influence policies in relation to food security, agricultural development and climate change. Examples of publications of seed related policy research include:

- Can the exchange or sale of self-produced seed be allowed under UPOV 1991?¹⁷ Report of the project on options to interpret the notion of private and non-commercial use as included in Article 15.1.i of the UPOV 1991 Convention
- The status of patenting plants in the global south¹⁸ – this study aims to inform societal discussions and decision-making, and informed Oxfam's position on this topic

¹⁵ Hiemstra, S.J., M. Brink and T. van Hintum, 2019. Digital Sequence Information: Options and impact of regulating access and benefit sharing - stakeholder perspectives. CGN Report 42. Centre for Genetic Resources, the Netherlands (CGN), Wageningen University & Research. Available at: <http://edepot.wur.nl/470286>

¹⁶ Find more information on Oxfam's Sowing Diversity=Harvesting Security project at: <https://www.sdhsprogram.org/>

¹⁷ Oxfam et al., 2019: <https://oxfam.app.box.com/s/eo9d3cvaeffbtwdaqcvbvm1udyq4ynq5>

¹⁸ Oxfam, 2018: <https://www.sdhsprogram.org/publications/statusofpatentingplantsintheglobalsouth/>

-
- The power to exercise choice: implementing farmers' rights to eradicate poverty and adapt to climate change¹⁹ - tools and achievements in realizing Farmers' Rights to empower smallholder farmers and strengthen their adaptive capacities with tools like farmer field schools, community seed banks and participatory plant breeding
 - The impact of national seed laws on the functioning of small-scale seed systems²⁰ – Country case studies to inform recommendations to ensure these laws better support the functioning of farmers' seed systems.

Conclusions

Oxfam-Novib has the capacity to implement a wide range of activities, ranging from assessments and studies, to training, exposure visits and facilitating reform processes, in a variety of seed regulatory issues. All topics are approached from a perspective of increasing farmers' access to genetic resources, supporting farmer managed seed systems, and facilitating farmers' participation in decision making in policy processes and claiming their rights.

4.7 Plantum and seed companies

Plantum and knowledge and experience on seed regulations

Plantum is the Dutch association for the plant reproduction materials sector, including seeds, bulbs, tubers, cuttings and young plants.²¹ Plantum's members include companies active in variety development, seed multiplication, the development of young plants and the trade of seeds and/or young plants. Plantum's main task is to represent and promote the interests of its members and consolidate the position of the seed sector in the Netherlands as well as internationally. Plantum is widely recognized as an authority and expert in the seed sector, especially with regards to the enabling environment. Plantum has a broad network internationally and through close contact with its members has ample knowledge on key seed regulatory challenges that its members face on the ground. At the same time Plantum is a key organisation in identifying good practices for solving seed regulatory bottlenecks. Plantum also has ample knowledge on the international context in relation to seed regulations, PVP legislation, ABS legislation, phytosanitary matters, crop protection and several other dossiers. Services that Plantum may provide in the context of the Seed Laws Toolbox relate to: advisory services, training and education, facilitation of exposure visits, and convening and brokering.

Seed companies and knowledge and experience on seed regulations

The purpose of the Seed Laws Toolbox is to solve seed regulatory bottlenecks in developing countries and upcoming markets to facilitate seed business investment. Based on their experience on the ground, Dutch seed companies will be crucial in the prioritization and identification of activities and countries. Next to challenges that seed companies face in one country, they may also share good practices they encounter in another country. Moreover, through participation in exchange visits of government officials, they will allow exposure of these officials to good practices. Seed companies may also be involved in specific trainings.

¹⁹ Oxfam et al., 2017: <https://oxfam.app.box.com/s/0tabhkocxzb07kcs80d1458yowuv27>

²⁰ Visser, 2017: <https://www.sdhsprogram.org/publications/the-impact-of-national-seed-laws-on-the-functioning-of-small-scale-seed-systems-a-country-case-study/>

²¹ Find more information on Plantum at: <https://www.plantum.nl/basis-for-the-green-economy>

5 International agreements and standards

In this chapter we highlight international agreements, conventions and frameworks, which promote international standards in relation to PVP, access to genetic resources, phytosanitary measures and seed quality assurance. Coherence of national regulations with international standards makes countries more reliable partners in seed business and trade and is often necessary to attract foreign private sector investment. It also facilitates collaboration in seed sector development between countries. Whereas international standards are a prerequisite for international seed trade, they may provide a good basis for developing national legislation and regulation. However, often developing countries and emerging economies still have a long way to go in adopting them and making them common practice. Especially for the least developed countries, alternative solutions that increase the availability of quality seed may need to be investigated; an example is the system of Quality Declared Seed (QDS) for local seed producers as promoted by the FAO.²²

5.1 International Union for the Protection of New Varieties of Plants

Plant Variety Protection

UPOV is an international Convention for the Protection of New Varieties of Plants.²³ The Convention was adopted in Paris in 1961 and it was revised in 1972, 1978 and 1991. The Netherlands is one of the founding fathers of the UPOV convention. UPOV's mission is to provide and promote an effective system of PVP, with the aim of encouraging the development of new varieties of plants, for the benefit of the society.

As per May 2019, 74 countries and the EU are members of UPOV. Most of the members are countries from the European Union and the Americas. While some African and Asian countries are also UPOV member, including Kenya, Tanzania, Jordan, China, Vietnam, other countries are initiating to become members. The Organisation Africaine de la Propriété Intellectuelle (OAPI) became member of UPOV in 2014; OAPI represents 17 Francophone countries in Africa.

The UPOV Convention provides the basis for UPOV members to encourage plant breeding by granting breeders of new plant varieties IPR through Plant Breeder's Rights (PBR). In order to obtain protection, the breeder needs to file individual applications with the authorities of UPOV members entrusted with the task of granting breeders' rights. Under the UPOV Convention, the PBR are only granted when the variety is (i) new, (ii) distinct, (iii) uniform, (iv) stable and has a suitable denomination. PBR does not extend to acts done (i) privately and for non-commercial purposes, (ii) for experimental purposes and (iii) for the purpose of breeding other varieties. UPOV promotes a high degree of harmony in national laws, thus facilitating cooperation between members in the implementation of the PVP system.

Currently, member countries follow the UPOV convention 1991 to develop their national PVP Law or Act and other secondary legislation such as PVP rules/guidelines. National PVP Law and Legislation provide the details on definition of new plant varieties, definition of breeders, rights of the breeders, conditions of breeders' rights and exemption, list of genera and species under the scope, duration of breeders' rights, cancellation, offense and penalties, national administrative structure such as PVP Board or Committee and other administrative functions for the implementation.

²² Find more information on QDS at: <http://www.fao.org/3/a0503e/a0503e00.htm>

²³ Find more information on UPOV and PVP at: <https://www.upov.int/about/en/>

UPOV through its secretariat in Geneva provides technical assistance in developing national PVP legislation for new members. Naktuinbouw is a global knowledge centre on PVP systems and an authorised institute for DUS testing. Naktuinbouw is implementing the PVP Toolbox project to help countries to develop their systems for PBR. WCDI and Naktuinbouw organise an annual two-weeks international training course on PBR in Wageningen.

Conclusions

For the Seed Laws Toolbox the following notions and findings apply:

- PVP systems are important regulatory frameworks of IPR supporting the development of the seed sector and creating incentives structures for both private and public seed stakeholders.
- Although many countries do have separate Seed Laws and PVP Laws, both legislations apply within the same national seed sector context. Issues are often interlinked when it comes to variety release, registration, seed business and seed trade.
- Reform of seed laws and regulations need to take also into account if the country has a PVP Law or if it is preparing to become UPOV member, to ensure that the conditions for both legislations are mutually supportive.
- There are important ongoing discussions on PVP Laws guided by the UPOV 1991 convention related to its effect on farmers' practices of seed saving, seed exchange and seed sales. In this context, multi-stakeholders dialogue is needed to better understand the issues and explore the suitable terms in national legislation as provided in the UPOV convention. In this regard, the PVP Tool Box and the Seed Laws Tool box need to work closely together to facilitate aligned national processes for the benefit of supporting national seed sector development.

5.2 Convention on Biological Diversity and Nagoya protocol

Access to genetic resources

The Nagoya Protocol (2010) is a legally binding regulatory framework under the CBD regulating access to genetic resources and the fair and equitable sharing of benefits arising from the utilization of genetic resources.²⁴ The Nagoya Protocol outlines how countries may regulate access to biological resources for biodiversity-based innovation and the sharing of resulting benefits, as well as how countries should support compliance with access and benefit sharing (ABS) requirements and contracts.

The Nagoya Protocol entered into force on 12 October 2014. Currently, 115 countries and the EU are parties to the Nagoya Protocol. The ABS Clearing-House is established as a key tool for facilitating the implementation of the Nagoya Protocol.²⁵ Countries must take decisions if, and if so, how they want to regulate ABS nationally. For example, several countries require users to obtain Prior Informed Consent (PIC) of indigenous peoples and local communities for access to genetic resources or associated traditional knowledge over which they have established rights, in case they want to access and use those. National laws or regulations may also define benefit sharing through Mutually Agreed Terms (MAT). The Nagoya Protocol leaves freedom to Parties to develop and implement ABS legislation. However, these regulations should not be retroactively, and should only be focused on genetic resources. Some national rules and regulations go beyond these elements. As a result, ABS requirements and procedures may differ from the Nagoya Protocol, as well as vary from country to country, depending on their approaches and aims.

It is important to note that a specialised ABS system exists in the International Treaty on Plant Genetic Resources for Food and Agriculture (IT-PGRFA). It establishes a multilateral system on ABS for 64 crops (i.e. Appendix 1 crops). However, the utilisation of these plant genetic resources for uses other than research and breeding for food and agriculture, as well as the utilisation of crops not included in this multilateral system (e.g. soy, coffee, etc) still falls within the scope of the Nagoya Protocol.

²⁴ Find more information on the Nagoya Protocol at the CBD website: <https://www.cbd.int/abs/>

²⁵ Find more information on the ABS Clearing House at: <https://absch.cbd.int>

EU Regulation 511/2014 on the implementation of the Nagoya Protocol came into force on 12 October 2014. It is applicable to genetic resources from the countries which have ratified the Nagoya Protocol and established the access measures. EU Regulation is not applicable to material in the Multilateral System (MLS) of IT-PGRFA. Two guidance documents are being worked on to further explain the EU regulation. In the Netherlands, the Nagoya Protocol Implementation Act came into force on 23 April 2016. The Ministry of Economic Affairs is the competent national authority while NVWA is the monitoring agency and CGN is the national focal point. Access is not regulated in the Netherlands and PIC and MAT are not needed (free access policy).

Conclusions

For Seed Laws Toolbox the following notions and findings apply:

- The Nagoya Protocol was primarily designed for biological resources but also affects seed sector development as it deals with access to and movement of genetic resources within and across national borders and organisations, and the utilisation of genetic resources for activities such as plant breeding.
- If seed companies perform research and/or development in the EU on genetic resources accessed from 12 October 2014 onwards, it is important to check first if the provider country is party to the Nagoya Protocol. Access rules of the provider country and information in 'ABS Clearing-House' of the Nagoya Protocol apply. Where required, seek permission from the Competent National Authority (CNA) of the provider country (PIC), negotiate conditions with the provider, and lay these down in a contract (MAT), use the genetic resources only in accordance with the conditions agreed with the provider country, carefully document the use, keep all documentation for 20 years, make 'due diligence declaration' in case of submitting proposals for grants and marketing of products, and pass on information on obligations to further users.
- However, there are concerns over ABS implementation and information in the 'ABS Clearing-House' as most of the information is general, response from the national focal point is slow or absent, and information is often in the national language, which makes it difficult to find quick answers.
- There is also inadequate understanding among the Nagoya Protocol authorities about the seed sector and how it operates. For example, often international companies do have an open global network of breeding programmes with an active exchange of breeding material between the programmes. Some of these programmes have now been isolated by domestic ABS regulations, because governments claim sovereign rights over material in seed companies' germplasm collections which considerably hampers a free exchange of these genetic resources between different countries. In some cases, domestic ABS regulations even paralyze the exchange of genetic resources that originated from non-domestic material.
- The Seed Laws Tool box can provide support and facilitate the organisation of dialogue between the Nagoya Protocol national authorities, seed policy bodies and other seed sector stakeholders in the selected countries to develop understanding on the nature of the seed sector, identify problems and develop a reform agenda and actions plan. Awareness raising, trainings, development of policy guidelines/directives and publication of policy briefs are important activities in this process.

5.3 International Treaty on Plant Genetic Resources for Food and Agriculture

Access to genetic resources

The IT-PGRFA (in short 'Treaty') is a legally binding agreement that came into force 29 June 2004.²⁶ Currently, 144 countries and the EU are contracting parties of the Treaty. The Treaty aims for the conservation of biological diversity, sustainable use of its components and a fair and equitable sharing of the benefits.

The Treaty has implemented a Multilateral System (MLS) of Access and Benefit Sharing (ABS) for a list of 64 of some of the most important food and forage crops essential for food security and interdependence. The genera and species are listed in Appendix 1 to the Treaty. Those who access the

²⁶ Find more information on the IT-PGRFA at: <http://www.fao.org/plant-treaty/en/>

materials from the MLS must be from the Treaty's ratifying nations and they must agree to use the materials totally for research, breeding and training for food and agriculture. Access to MLS material is done through a Standard Material Transfer Agreement (SMTA). Those who access genetic materials through the MLS agree to share any benefits from their use through benefit-sharing mechanisms established by the Treaty.

Currently MinLNV is co-chair of the ad-hoc working group for enhancing the functioning of the multilateral system for access and benefit sharing under the IT-PGRFA. A growth plan is being negotiated for amendment of expansion of the scope of Appendix 1, and ratification of a revised SMTA with user-based payments.

Farmers' Rights

The Treaty also recognizes Farmers' Rights (Article 9). It recognizes farmers' contributions to the ongoing development of the world's wealth of plant genetic resources. Farmers' Rights in the context of the Treaty include: the right on the protection of traditional knowledge; the right to equitably participate in sharing benefits arising from the utilization of plant genetic resources for food and agriculture; and the right to participate in making decisions, at the national level, on matters related to the conservation and sustainable use of plant genetic resources for food and agriculture. Moreover, it indicates that nothing in the article on Farmers' Rights shall be interpreted to limit any rights that farmers have to save, use, exchange and sell farm-saved seed/propagating material, subject to national law and as appropriate.

Currently work is elaborated within the Treaty context to assist countries to implement Farmers' Rights. It is important that this will be done in mutual supportiveness with other international agreements.

Conclusions

For Seed Laws Toolbox the following notions and findings apply:

- There is interrelation between different international policies viz. IT-PGRFA, Nagoya Protocol and UPOV when it comes to access to genetic resources and IP rights. All are impacting on the national seed sector.
- The Treaty's MLS system for Appendix 1 crops is helpful to access the genetic resources for research and plant breeding as long as it is not overruled at national level by the Nagoya Protocol.
- There are interrelations and conflicts between the Farmers Rights provision of the IT-PGRFA and the UPOV 1991 convention. These issues are widely discussed at national and international levels.
- The Seed Laws toolbox and the PVP Toolbox need to jointly work, if required, on multi-stakeholder dialogue to create awareness for better understanding of the issues, and explore the suitable terms and conditions in the national seed legislation as provided in the UPOV convention.

5.4 International Plant Protection Convention²⁷

Phytosanitary measures

Phytosanitary laws provide a basis for the control of pests and diseases that may threaten crops, particularly in the context of import and export although they may be part of a wider Plant Protection Law. Most countries have signed the IPPC and are members of the International Plant Protection Organization (IPPO) and its various regional organizations. These bodies have supported countries in the preparation of their national laws, because the movement of plants and plant products between countries generally requires a phytosanitary certificate, which has a standardized format. The main interaction with the seed law arises from the procedures and documentation relating to imports, and efforts should be made to have a unified system to minimize the work required for importation.

Relevant to mention in this context is the seed specific International Standard for Phytosanitary Measures, ISPM 38, which aims to assist national plant protection organizations in: (i) identifying, assessing and managing the pest risk associated with the international movement of seeds (as a

²⁷ Adapted from: FAO, Seeds Toolkit, No.4: Seed sector regulatory framework, FAO/AfricaSeeds.

commodity class); (ii) establishing phytosanitary import requirements; (ii) setting procedures for inspection, sampling and testing of seeds, and phytosanitary certification for export and re-export.

Conclusions

It should be emphasized that phytosanitary controls apply to all plant materials, including fruits and vegetables for consumption and cut flowers for decoration. Seeds and planting materials are only a part of that work, but of course they present a much greater threat if the subsequent crop provides a vehicle for spreading a new pest or pathogen in a country.

5.5 International Seed Testing Association

Seed quality assurance

ISTA is an independent organisation that brings together seed scientists and analysts from all around the world. The Association develops internationally agreed standard procedures for sampling and testing of seeds. The Association has more than 228 seed testing laboratory members from 83 countries, out of which 138 laboratories have been accredited²⁸. Through its system of proficiency tests and auditing protocols ISTA can accredit member laboratories. The accreditation can take place per seed testing activity process and per crop. So far ISTA has 98 laboratory members in Europe, 67 in Asia and the Pacific, 20 in Africa, 20 in USA/Canada, 13 in South America and 10 in Australia.

Accreditation of seed laboratories follows a number of steps:

- Proficiency tests (based on testing of samples sent to the laboratories by ISTA); there are three types of proficiency tests: (i) the standard proficiency test with a focus on purity, other seed determination, moisture, germination, viability and vigour; (ii) the GMO proficiency test; and (iii) the seed health proficiency test.
- Quality management system; ISTA recommends quality management processes for the testing laboratories, following a standard flow of: plan (defining targets and procedures), do (implement procedures); check (evaluate procedures) and act (prioritise opportunities).
- Final ISTA accreditation audit; after a pre-audit, based on documentation, the actual audit takes place in which two auditors check the following aspects of the seed lab: the sampling, testing, quality management system, laboratory staff competence, laboratory premises and facilities.

Once laboratories are ISTA accredited they can issue ISTA certificates which are 'visas for seed trading'. Accredited laboratories can issue an orange international 'seed lot' certificate which is the most important certificate that can be issued by an ISTA accredited laboratory where the quality of the whole 'lot' is assured. There is another 'Blue Certificate', which only assures the quality of the 'sample': but not the whole 'lot'. ISTA certificates are accepted by many authorities and are mentioned in seed laws of many countries (as compulsory for seed trade). ISTA claims that 200,000 certificates are being issued each year. ISTA certificates are recommended by both the International Seed Federation (ISF) and under the OECD Seed Schemes.

ISTA accreditation not necessarily requires a lot of investments in equipment or buildings. Evidence from Kenya (KEPHIS) shows that with limited investments and systematic implementation of the ISTA standards a laboratory can become ISTA accredited. It's often a step-by-step process that requires leadership and perseverance from motivated staff. The quality management system (QMS) is of utmost importance along with the documentation of policies and procedures.

In the Netherlands, the Naktuinbouw laboratory is ISTA accredited. The other seed testing laboratories in the Netherlands follow the system of the Naktuinbouw Authorized Laboratories (NAL). Naktuinbouw has expertise on all aspects of the authorization system: setting up the system, training the analysts,

²⁸ Much of the information on the formal workings of ISTA in this chapter is derived from the presentation: "Seed quality assurance for better seeds through improved seed sampling and seed testing", as presented by Dr Florina Palada (Head of Accreditation and Technical Department at ISTA) at the 5th National Seed Sector Platform Meeting in Nay Pyi Taw, Myanmar, on 26 September 2018.

developing and approving the test methods and the corresponding proficiency tests²⁹. Naktuinbouw experts monitor registered laboratories via annual audits.

Conclusions

For the Seed Laws Toolbox, the following notions and findings apply:

- Having an ISTA accredited laboratory in countries selected for seed sector support will facilitate seed export. Most (national) laboratories in African and Asian countries already use ISTA standards, but are not ISTA accredited. Hence, applying the standards and introducing a quality management system, in-line with the ISTA rules, can get these labs accredited. Through dedicated project activities with motivated staff at least one laboratory per country can become ISTA accredited, and in turn can function as a reference lab for other (regional) labs in the country.
- Even with the appropriate infrastructure and protocols in place, the consistency in work and human resources are often a problem in terms of number of staff and their knowledge and skills.
- For capacity building activities on ISTA standards and procedures, both ISTA itself and a number of private (international) consultants are available. In this field Dutch institutions and companies are not per se the best equipped, as the Dutch labs mainly focus on horticultural crops and many of the labs in developing countries focus more on cereals and legumes.
- It is important to look at the different needs with regards to ISTA for field crops and vegetables. This needs to be taken into consideration while establishing laboratories and policies.

5.6 OECD seed scheme

Seed quality assurance

The Organization for Economic Co-operation and Development (OECD) has developed seed schemes that provide a mechanism for the varietal certification of seed lots moving in international trade. This includes definitions for the procedures for related activities, such as the isolation of seed crops, crop inspection procedures and labelling of containers.³⁰ The 61 participating countries include countries in Europe and Northern America, as well as India, Kenya, Tanzania, Zimbabwe, Zambia and Senegal. There are eight seed schemes: (i) grasses and legumes; (ii) crucifers and other oil or fibre species; (iii) cereals; (iv) fodder beet and sugar beet; (v) subterranean clover and similar Species; (vi) maize; (vii) sorghum; and (viii) vegetables³¹.

Main instruments of the schemes are:

- The OECD Seed Schemes Rules and Regulations (2018)
- The OECD List of Varieties
- Guidelines for control plot tests and field inspection of seed crops
- Guideline for authorization of certain activity

The two most important elements of the rules and regulations on varietal certification are:

- The registration of varieties eligible for certification (DUS & VCU). This is done through the varietal description, taking a reference sample and the performance testing (indicating an acceptable value for cultivation and use); and
- The rules on seed production and field inspections for both seed producing fields as well as post-control plots.

Note that the OECD scheme for vegetables is different. Here certification is not obliged, with possibility to use Standard Seeds. Moreover, VCU is not necessary.

²⁹ From Naktuinbouw website.

³⁰ Largely derived from FAO/AfricaSeeds, 2018, Seeds Toolkit: Module 4 - Seed Sector Regulatory Framework, FAO (p.25).

³¹ Much of this paragraph is derived from the presentation 'OECD Seed Schemes: An international seed varietal certification system', as given by Pier Giacomo Bianchi and Csaba Gaspar at the World Seed Partnership Meeting, 25 September 2018, Nay Pyi Taw, Myanmar.

Conclusions

For the Seed Laws Toolbox, the following notions and findings apply:

- OECD seed scheme procedures provide a good reference for national certification schemes. For many developing countries the requirements for becoming a full member are a bridge too far, examples of conditions that countries have difficulties with are:
 - Continuous training of field inspectors and control plot assessors
 - Quality control of field inspectors' activities
 - Having results from three years of post-control tests
 - Maintaining stock of variety samples
- It is important to use the OECD Seed Schemes Rules and Regulations as a reference, as well as applying the guidelines for control plots and authorization where appropriate. For now, we don't recommend a specific module of support activities to guide countries in becoming an OECD Seed Schemes member.

6 International projects and initiatives

This chapter elaborates selected international projects and initiatives that have been successful in promoting seed regulatory reform and/or supporting the implementation of seed regulations. These examples provide input for the design of the structure and modalities of the Seed Laws Toolbox. For each initiative we give a short description of the organization(s) involved and the focus; highlight the specific activities related to seed laws and regulations; and analyse the success factors. Finally, we indicate lessons learnt for the Seed Laws Toolbox.

6.1 PVP Toolbox

Organisations and focus

The PVP Toolbox is an instrument that aims to help countries to develop their systems for Plant Breeders' Rights. The Netherlands is one of the founding fathers of UPOV, and Naktuinbouw has an excellent system in place of managing PVP applications.

The PVP Toolbox is managed by Naktuinbouw and funded by MinLNV. Naktuinbouw is responsible for the coordination and to a large extent also the implementation of its activities. In implementation Naktuinbouw works together with MinLNV, the Board of Plant Varieties, and other Dutch and international seed sector experts and organisations, including the CPVO and UPOV.

Activities contributing to improving the seed regulatory environment

The toolbox has a range of different modalities for solving PVP related challenges. These include:

- Missions for policy - and decisionmakers on PVP to the Netherlands
- Awareness raising workshops for farmers and seed traders in country
- Studies on the impact of PVP implementation
- Support to the establishment of national PVP offices
- Facilitation of internships at Naktuinbouw
- Tailor-made training of experts in country on issues like DUS testing
- Fellowships for participation in the international PVP course in the Netherlands

Every year a total budget of a maximum of 230,000 Euro is available to fund projects supporting the implementation of a PBR system. Project opportunities are mostly identified through Agricultural Counsellors at Netherlands Embassies, but also other stakeholders like seed companies can propose projects. A clear process from problem identification to proposal design, proposal evaluation and project implementation is in place, involving Naktuinbouw, a steering committee and an advisory group.

Key to success

The most important criteria that make the PVP Toolbox successful relate to demand orientation. One requirement is that project activities should be initiated and/or explicitly supported by the local government, and preferably agreed on in writing. This is accompanied by a request to contribute financially or in kind. These criteria ensure commitment of local partners.

Implications for the Seed Laws Toolbox

PVP related issues will be handled by the existing PVP Toolbox and as such will not be part of the Seed Laws Toolbox. The set-up and management process of the PVP Toolbox serves as a good example for the design of the Seed Laws Toolbox. In the future a merger between the two Toolboxes may be considered.

6.2 National Integrated Seed Sector Development Projects

Organisations and focus

National programmes on Integrated Seed Sector Development (ISSD) aim to support the development of vibrant, pluralistic and market-oriented seed sectors that support and protect farmers and smallholder seed producers, while stimulating professionalization, dynamic competition and international seed business. ISSD is an approach that aims to complement private with public investments, balance commercial and developmental interests, promote innovation and create an enabling environment for seed business.³² WCDI coordinates national ISSD programmes in Ethiopia, Uganda and Myanmar; KIT supports a national programme in Burundi through IFDC. In all programmes improving the enabling environment is an important focus area.

Activities contribution to improving the seed regulatory environment

All ISSD programmes have structures in place that support dialogue, alignment and coordination of the seed sector at national and sub-national levels. These platforms and working groups discuss bottlenecks that hamper the development of the seed sector, including seed regulatory bottlenecks, and assign organisations to work on solutions to create a more enabling environment for seed business. Examples are the national seed sector platform in Myanmar and the Ethio-Netherlands Seed Committee chaired by the Minister of Agriculture in Ethiopia. ISSD programmes have worked on seed regulatory review but also on the facilitation of regulatory reform for variety release, seed quality assurance, seed trade and seed business licencing.

Key to success

To be successful in working on seed regulatory issues it is key to have a good working relationship with the government as well as other seed sector stakeholders in the country, and to be perceived as a neutral facilitator able to balance the interest of different stakeholders. Regulatory changes require a well-thought-through process for identifying constraints as well as solutions, involving the public sector, the private sector, as well as development partners. It is important not to be biased towards the interests of the Dutch private sector only. Time needs to be invested to build trust with the government.

Implications for the Seed Laws Toolbox

To be successful, regulatory reform processes need to be well designed through a step-wise approach, involving the right partners at the different steps. Regulatory reform needs time.

6.3 ISSD Africa Community of Practice

Organisations and focus

The ISSD Africa Community of Practice currently works to address eight key bottlenecks that prevent African seed sectors to reach their potential; 'Enabling Seed Policies' is one of the nine.³³ Seed sector practitioners are united around the common objective to improve seed sector interventions, policies and practices in Africa. Whereas every country in Africa is unique, they often face similar challenges in seed sector development. ISSD Africa aims to learn and communicate 'what works in seed sector development under what conditions'.

ISSD Africa is coordinated by WCDI in partnership with KIT, AfricaSeeds (the organization implementing the African Seed and Biotechnology Program of the African Union) and Tegemeo Institute of Agricultural Policy and Development, and collaborates with a large range of public sector, private sector, NGO and knowledge partners. The lead partner for the policy topic is IFPRI, the

³² Find more information at the ISSD website: <http://www.issdseed.org/>

³³ Information on ISSD Africa and its policy topic can be found at the website: <https://issdafrica.org/>

institute which also leads the CGIAR Policies, Institutions and Markets research programme³⁴, hosting researchers with ample experience in the area of seed policies and regulations.

Activities contribution to improving the seed regulatory environment

Under the policy topic of ISSD Africa a research team will work the coming three years on the following research questions: (i) How can national seed systems benefit from inclusive policy design processes; regional organisations, networks and initiatives; and global coordination efforts; (ii) How can countries mobilise the required financial resources and technical expertise to support the implementation of seed policies, regulations and guidelines; and (iii) What type of policy mechanisms can accelerate seed system innovation, balancing public and private sector interest to improve smallholder access to improved varieties and quality seed? These are all relevant questions in the context of the Seed Laws Toolbox.

Key to success

The international network of seed sector experts and their organisations, facilitates sharing and learning, enhances collaboration and promotes synergy among seed sector projects, programmes and stakeholders. It not only provides access to seed policy experts and policy expertise, but also allows sharing the latest insights on seed regulatory issues to governments, projects and programmes intervening to improve access to quality seed.

Implications for the Seed Laws Toolbox

In the context of the Seed Laws Toolbox ISSD Africa may act as a platform to get access to information and expertise, as well as to share experiences and studies.

6.4 IFC-WBG projects on regulatory reform and capacity building

Organisations and focus

Under its Trade and Competitiveness wing, the International Finance Corporation, IFC, part of the World Bank Group, WBG, coordinates projects on inputs regulatory reform and capacity building, including specific projects on seed sector reform. In this context IFC collaborated with WCDI and Resilience for the project 'Seed Regulatory Reform in Myanmar'. The project specifically aimed at reviewing Myanmar's regulatory framework with a focus on: variety release and registration; seed certification; seed business licensing; and reforming the institutional set-up of the seed regulatory functions. At the basis of the assignment lay the wish of the Myanmar government to attract more private sector into the seed sector, through simplifying the regulations and procedures in the three mentioned areas.

Activities contributing to improving the seed regulatory environment

The implementation of the project took place between July 2017 and December 2018 in which the following activities were implemented:

- A review of Myanmar's seed law and regulations with benchmarking of international best practices that included the Kenya, the Netherlands and Philippines. The report used the Enabling Business for Agriculture indicators and specific information from the three countries with respect to variety registration, seed certification, seed business licensing and the seed-related institutional framework.
- The results of the study were discussed in two regional and one national round table meeting, that brought together key seed sector stakeholders from public sector, private sector and development projects. The Round Tables came up with recommendations on how the regulations and their implementation can be improved.
- The combined outputs of the analysis and Round Table meetings resulted in a list of proposals that were further discussed in one of the National Seed Sector Platform meetings in the capital Nay Pyi Taw. After this the proposals were submitted and reviewed by the Technical and National Seed Committees (TSC and NSC). In the end the NSC approved 10 out of the 12 proposed regulatory

³⁴ Find more information on PIM at: <https://pim.cgiar.org/>

changes. Important decisions included: the establishment of a one-stop-shop for all seed-regulatory services (within a completely digitized environment); the introduction of only three seed business licenses (instead of a multitude); the removal of four 'priority crops' from the list of crops for compulsory VCU testing; and introducing a system of accreditation for seed production inspections of companies.

- In parallel to the above activities a study was undertaken for applying risk-based management for seed inspections (especially at seed shops and post-control) and a seed information portal (SIP) was developed that hosts all information on the seed regulatory framework and its procedures. All results were presented during a launching event in Nay Pyi Taw, as well as in the regions (Yangon and Mandalay); with much media coverage.

Key to success

In general, the project is seen as a success by both the Myanmar Ministry and the IFC-WBG. Main success factors included:

- Making use of 'international best practices' from other countries and using the EBA seed sector ranking as a point of reference.
- A comprehensive stakeholder process for the identification of bottlenecks and formulation of solutions.
- Frequent interactions with the Ministry's staff and hosting of embedded (project) staff at the Seed Division.
- Tangible outputs: (i) concrete proposals for the TSC and NSC; (ii) the seed information portal³⁵ and (ii) trainings for key seed staff.

Implications for the Seed Laws Toolbox

- A module can be developed (along the above lines) to review seed laws and regulations and develop proposals for change. The process can be adjusted to the specific situation of the country and its institutions, but would mostly likely include the following steps: (i) review of documents and benchmarking analysis; (ii) a number of round table meetings with seed sector stakeholders; including problem identification and formulation of solutions; (iii) discussing the proposals at the relevant decision-making bodies; (iv) communication of results; and (v) support for implementation of the approved regulatory changes.
- A second more 'light' assessment could be made as well, when governments already have defined a specific focus area (e.g. quality assurance, variety release, seed trade). In that case a more tailored process can be designed.
- Specific attention could be paid to 'risk-based management'; looking at how – from a risk perspective – the available limited government capacity can be employed in the best way (also looking at irregularities in the seed market, instead of largely focusing on seed production and variety registration). A module can be developed to do a risk-based analysis of the country's seed inspection system (along the seed chain) and provide recommendations on where to focus inspections on (e.g. crop and location specific; and at which part of the seed chain).

6.5 Seeds2B

Organisations and focus

The mission of the Syngenta Foundation for Sustainable Agriculture (SFSA) is to 'create value for resource-poor small farmers in developing countries through innovation in sustainable agriculture and the activation of value chains'.³⁶ Agri-services, risk management and financial inclusion, and access to seeds are three key themes addressed. R&D and Research & Policy analysis are cross cutting themes.

The Seeds2B programme supports farmers in the arid and semi-arid regions of Africa and Asia to access affordable quality seed of improved varieties. SFSA specifically focusses on increasing the choice of varieties, supporting the development of profitable business models for seed, and building

³⁵ Find the seed information portal at: <http://www.myanmarseedportal.gov.mm/en>

³⁶ See the Foundation's website: <https://www.syngentafoundation.org/>; this paragraph is based on information at the website as well as: Review 2016-2018, 2018. Syngenta Foundation for Sustainable Agriculture, Basel.

the capacity of small and medium-sized seed companies. The programme also has a policy component which focusses on regional harmonization of seed regulations. A key partner in policy analysis is the New Markets Lab (NML), which hosts an international team of lawyers specialized in areas important for economic development but also heavily regulated, such as trade, agricultural markets, services and standards.³⁷

Activities contributing to improving the seed regulatory environment

The policy work of SFSA and NML focusses on regional harmonization of seed regulations in Sub-Saharan Africa, assessing legal and regulatory systems to particularly improve cross-border access to varieties. Next to regional variety release procedures, also opportunities for simplifying regulations and increasing transparency of procedures for seed import and export licenses, certificates of origin, and phytosanitary controls are looked at. Interesting is the 'stress-test' system, which involves running test cases together with companies to identify the actual regulatory challenges faced through implementation in practice. An example is the testing of new soybean varieties in Mali, with the varieties already registered in Ghana, and the intention of registration of the varieties in the ECOWAS Seed Catalogue. SFSA and NML have published country studies as well as studies focussing on regional harmonization in the four African Regional Economic Communities (RECs), i.e. ECOWAS, COMESA, EAC and SADC.

Key to success

SFSA has in-depth knowledge on the regional seed harmonization processes in Sub-Saharan Africa and has developed a strong network in this area. The variety release test cases in different countries with membership to different RECs are very interesting, showing the actual problems in the implementation of seed regulations in practice. SFSA intends to continue this work at national and regional level and extend its activities to new countries, including Nigeria, also broadening the range of test cases.

Implications for the Seed Laws Toolbox

For issues related to variety release and regional seed harmonization the Seeds2B programme provides inspiring examples of work. The test case modality can be extended to other seed regulations as well, realizing that the actual implementation of existing regulation may be a bigger challenge than the regulation itself.

6.6 FAO Seeds Toolkit

Organisations and focus

FAO and AfricaSeeds in collaboration with different seed experts published a six-module Seeds Toolkit in 2018. The interrelated modules address: (i) development of small-scale seed enterprises, (ii) seed processing: principles, equipment and practice, (iii) seed quality assurance, (iv) seed sector regulatory framework, (v) seed marketing, and (vi) seed storage.³⁸

Activities contributing to improving the seed regulatory environment

The Seeds Toolkit has been developed to support practitioners along the entire seed value chain to acquire the knowledge and skills they need in order to deliver quality seeds and planting materials of well-adapted crop varieties to farmers. It is also useful for policymakers and other practitioners interested in better understanding how effective seed delivery systems work.

The fourth module of the toolkit, on the seed sector regulatory framework is particularly important in the context of the Seed Laws Toolbox. This module provides information on four important seed regulatory aspects viz. seed laws, seed regulations, harmonization of the seed regulatory framework and national seed policy. The module provides elaborated guidance on processes of formulation, indicating the major elements that should be part of it, as well as the role of different stakeholders in

³⁷ Find more information on NML at: <https://www.newmarketslab.org/>

³⁸ The six modules of the seed toolkit of FAO can be downloaded from the website: <http://www.fao.org/seeds/en/>

the formulation process. It also addresses the effect of international organizations and treaties on the seed regulatory environment.

Key to success

The Seeds Toolkit was published in 2018, so its impact cannot yet be evaluated. However, the different modules focus on the most important topics of seed sector development, with each topic elaborated in detail. The module on the seed regulatory framework will clearly benefit the target group.

Implications for the Seed Laws Toolbox

The different modules of the Seeds Toolkit, particularly module 4, can serve as reference documents during stakeholder dialogues, trainings and capacity building activities.

6.7 Initiatives of the International Seed Federation

Organisations and focus

The International Seed Federation (ISF) brings together 61 National Seed Associations from 75 countries which in turn represent more 7,500 member companies. ISF's mission is to "create the best environment for the global movement of seed, and promote plant breeding and innovation in seed"³⁹. ISF aims to facilitating growth of the local seed industry to ensure farmers' access to improved varieties and seeds.

Activities contributing to improving the seed regulatory environment

The federation represents its members at global fora related to seed, like vis-à-vis the World Bank, the World Intellectual Property Organization, the Crop Trust and the Convention on Biological Diversity. The federation also provides services to its members like conferences, trainings and training materials and visits/workshops. Countries that don't have a national seed association yet can request support for establishing an association.

ISF is also partner in the World Seed Partnership (WSP)⁴⁰, in which ISF unites with OECD, UPOV and ISTA, bringing together knowledge and expertise of the four partners to provide guidance on the development of an appropriate and effective seed regulatory framework in the areas of PVP and seed quality assurance.

Implications for the Seed Laws Toolbox

The establishment and strengthening of national seed associations is key to the development of a vibrant seed industry, however, the activities of ISF and regional associations like the African Seed Trade Association (AFSTA) and the Asia and Pacific Seed Association (APSA) lie slightly outside of the scope of the Seed Laws Toolbox.

6.8 Enabling the Business of Agriculture

Organisations and focus

Enabling the Business of Agriculture (EBA) is a World Bank Group project collecting unique data on the regulatory frameworks and institutions related to agriculture and agribusiness⁴¹. Since 2013, EBA has collected globally comparable data and indicators that can enable countries, policy makers and stakeholders to identify barriers that impede the growth of agriculture and agribusinesses.

³⁹ Largely derived from the Presentation: "The International Seed Federation", by Michael Keller, at the World Seed Partnership Meeting, 25 September 2018 in Nay Pyi Taw, Myanmar.

⁴⁰ Find more information on WSP at the website: <http://www.worldseedpartnership.org/>

⁴¹ Find more information on the website of the Enabling Business of Agriculture website <https://eba.worldbank.org/en/> as well as personal experience from the authors in providing answers to the EBA's two-yearly questionnaires on Seed.

The third report in the series, EBA 2017, presents data for 62 countries and across 12 topics: seed, fertilizer, machinery, finance, markets, transport, information and communication technology, water, livestock and land. The EBA report is issued every two years and the next one is upcoming for 2019. The EBA seed indicators aim to identify obstacles affecting variety release, PVP and seed certification, especially looking at the formal seed system. The information provided specifically focuses on whether certain procedures are in place, and the speed and cost for passing the procedures (e.g. in terms of getting a variety released).

Activities contributing to improving the seed regulatory environment

The EBA provides a good reference for countries, enabling them to assess how they compare vis-à-vis other countries. It also incentivizes countries to make changes in their seed regulations and procedures, so as to rank higher in the index.

Key to success

Currently data are collected through sending questionnaires to government staff, country experts, members of the private sector and specialists from academic or research institutions. To fill any data gaps, questionnaires are supplemented by desktop research that draws on studies, research papers and official sources (laws, regulations, policies and official statistics). It remains important to ensure that the data provided are accurate and up to date. International seed experts from Plantum, WUR and Naktuinbouw can assist in this (as they have also contributed in the past).

Implications for the Seed Laws Toolbox

EBA provides a good reference framework to assess how countries perform in the area of variety release, plant variety protection and seed certification. Information from EBA can be used in the inception or exploratory phases of a seed law review. The IFC-WBG Myanmar Inputs Reform Project that was implemented by WCDI also used EBA data to compare Myanmar with other countries like the Philippines, Kenya and the Netherlands. As such it showed in which areas Myanmar could improve in order to increase its ranking, and create a better business climate for seed companies and seed producers.

6.9 Access to Seeds Index

Organisations and focus

The Access to Seeds Index (ACSI) evaluates and compares seed companies according to their efforts to improve access to quality seeds of improved varieties for smallholder farmers⁴². The Index seeks primarily to identify good practices, providing an evidence base for the discussion on where and how the seed industry can step up its efforts. The index has a global focus as well as a regional focus. Specific regions with pronounced development needs have been identified such as: South and Southeast Asia, Eastern and Southern Africa, and Western and Central Africa.

The index assesses and ranks companies on their efforts to make quality seeds accessible to smallholder farmers. The index looks at areas such as breeding, distribution and adoption as well as how companies handle their intellectual property in emerging markets. The index methodology is based on inputs from farmers, companies and policymakers, and is being reviewed by a large number of experts from each region. The index mainly looks at those crops that multinational and regional seed companies are engaged in: (hybrid) maize and vegetables.

The index report provides more than company rankings and also presents a number of key findings. Five key findings selected from the latest report of 2019 are:

1. Global seed companies reach 10% of the world's small farms; and there is growing company presence in Western and Central Africa.

⁴² This paragraph largely draws from information as presented by the Access to Seeds Index on its website: <https://www.accesstoseeds.org/>

2. Ten countries benefit most from investments in local seed business activities; the ten countries with the most investments are: India, Thailand, Indonesia, The Philippines, Vietnam, South Africa, Tanzania, Kenya, Guatemala and Peru.
3. Hybrid seed dominates company portfolios, and especially maize, millets, rice, soybean, sunflower and vegetables.
4. Breeding for climate-resilient varieties is increasing, looking at increasing input-efficiency, pest and disease resistance, and heat and drought tolerance.
5. The seed industry is pushing for a workable way to improve access and benefit-sharing, e.g. one company to make a contribution to the Benefit-sharing Fund of the IT-PGRFA, and the industry developed a proposal for an additional 'subscription-only model'.

Activities contributing to improving the seed regulatory environment

Providing greater transparency on the activities of multinational and regional seed companies provides incentives to the companies to do better. There is limited attention in the index for the seed regulatory framework, though access and benefit sharing was highlighted in the latest report (see above). Also, intellectual property rights are addressed; assessing if companies provide access to their protected materials and technologies, e.g. to be used in collaborative projects that result in varieties benefiting smallholder farmers. As the index takes the seed company as point of departure, the legislations as such in the selected countries are not examined.

Key to success

The success of the index can largely be assessed by the changes companies make to increase access and use of their varieties, as well as their investments in new countries and regions. Given the widespread media attention for the outcomes of the index, seed companies probably take the results seriously and try to improve on their performance in the next index (planned for 2020).

Implications for the Seed Laws Toolbox

For the moment we do not foresee direct linkages with the Access to Seeds Index, though the list of ten countries where most investments take place could be used for prioritizing countries and interventions. Also, like in the case of the EBA, the index can help in the exploratory phase of a seed law review process.

6.10 TASAI Index

Organisations and focus

The African Seed Access Index (TASAI) has as the motto: "towards competitive seed systems serving smallholder farmers in Africa"⁴³. TASAI monitors indicators that are essential to seed sector development at national level. TASAI gives an annual scorecard on the vibrancy or competitiveness of the formal seed sector. The intended outcome of the index is improved access to locally adapted, affordable, and high-quality seed of improved varieties by smallholder farmers in Sub-Saharan Africa. TASAI has published seed sector assessments of 17 countries: Burkina Faso, DRC, Ethiopia, Ghana, Kenya, Madagascar, Mali, Malawi, Mozambique, Nigeria, Rwanda, Senegal, South Africa, Tanzania, Uganda, Zambia and Zimbabwe.

Activities contributing to improving the seed regulatory environment

TASAI develops country reports and provides a platform for discussion for participating countries to learn and improve on their seed sector performance. The index looks at five components: (i) research and development; (ii) industry competitiveness; (iii) seed policy and regulations; (iv) institutional support; and (v) service to smallholder farmers. Especially the third component is of interest to this scoping study. This component looks at the following aspects:

- Length of the variety release process
- Status of the seed policy framework
- Quality of the regulatory system
- Adequacy of seed inspectors

⁴³ This paragraph has been informed by information as presented on the website of TASAI: <https://tasai.org/>

-
- Efforts to stamp out fake seed
 - Use of smart subsidies

Implications for the Seed Laws Toolbox

Like in the case of the EBA and ATSI, the index can help in the exploratory phase of a seed law review process (if it takes place in one the TASAI countries). In addition, projects of the Seed Laws Toolbox may seek for collaboration with TASAI, especially where it concerns finding local experts for the implementation of Toolbox activities as well as providing technical support to the implementation of TASAI activities.

7 Potential arrangements and modalities

Based on the information of the previous chapters on focus and scope (chapter 3), knowledge and services the Netherlands has to offer (chapter 4), international agreements and standards (chapter 5), and lessons learnt from international projects and initiatives (chapter 6) we have elaborated potential arrangements and propose several modalities of the Seed Laws Toolbox/seed regulatory support facility. We start with a number of guiding principles on how and when seed related support activities can be organized. This is followed by a description of examples of modalities in the area of variety release, seed quality assurance, seed business licencing, seed trade, and phytosanitary services. In addition, modalities have been elaborated on seed laws and regulations in general, as well as on institutional reform. Note that modalities can be chosen based on the countries' specific demands and needs, but that they shall always be tailored to the specific local context.

7.1 Guiding principles

Find below proposed guiding principles; between brackets we indicate the projects/initiatives that have generated the principle:

- Define clear assessment criteria to assess project proposals, so as to manage expectations and create transparency. [PVP Toolbox]
- Demand shall be articulated by the receiving nation. It is important to get support at the highest level for regulatory reform and capacity building activities. [PVP Toolbox, IFC-WBG, ISSD Ethiopia]
- Involve many stakeholders, including government staff, seed companies and development partners in the formulation phase of the project and regulatory review process. [IFC-WBG, Ghana Policy Review]
- Avoid duplication and seek complementarity with other initiatives [ISSD Uganda, ISSD Myanmar, Ghana Policy Review]
- Facilitate the regulatory review process as a trusted and neutral broker, providing multiple options for regulatory challenges. [IFC-WBG, ISSD Ethiopia]
- Implement activities through a combination of independent seed experts (neutral facilitators) and staff of NAK, Naktuinbouw, NVWA and others, combining process expertise with content expertise.
- Work in teams of international experts and local experts. [ISSD Uganda, IFC-WBG]
- Develop linkages with international standards like those developed by the OECD and ISTA for international benchmarking. [WSP]
- Use the different seed indexes as a reference and for comparative analyses between countries in the early stages of project formulation. [ATSI, EBA, TASAI]
- Create a tailor-made package of modules (sort of an 'à la carte menu') on a case by case basis; with a rolling agenda that can be adjusted along the way. [PVP Toolbox]
- Publish, share and discuss project experiences for learning lessons. [ISSD Africa]

7.2 Potential modules

Based on the experience in countries like Ethiopia, Ghana, Myanmar and Uganda we have formulated several modules for support to seed regulatory reform and implementation; see Table 2. A short description of is given below. These are just examples; additional modalities may be designed.

Table 2 Examples of modules for the Seed Laws Toolbox

Topic	Modules
Laws and regulations	<ul style="list-style-type: none">• Comprehensive policy and regulatory review• International benchmarking and regional harmonization• Development of a seed portal
Institutional reform	<ul style="list-style-type: none">• Review of organizational functions and capacities• Development of a one-stop-shop for seed regulatory services• Redesign of organizational frameworks
Variety release	<ul style="list-style-type: none">• Simplification of release procedures• Fine tuning of VCU protocols• Exemption of vegetables from variety registration and VCU• Development of a variety catalogue
Quality assurance	<ul style="list-style-type: none">• Establishment of ISTA accredited laboratory• Accreditation of private seed laboratories• Capacity strengthening of seed labs and field inspectors• Risk-based management analysis for seed inspections
Seed business licencing	<ul style="list-style-type: none">• Introduction of one seed business licence
Seed trade	<ul style="list-style-type: none">• Simplification of seed import and export requirements
Phytosanitary services	<ul style="list-style-type: none">• Capacity building of seed phyto inspectors

7.2.1 Laws and regulations

Comprehensive policy and regulatory review

Whereas not necessary for all countries, for a number of countries that have recently opened up and that are trying to bring their laws and regulations in line with regional and global standards, a full seed policy and regulatory review may be necessary. This process can be implemented through several round table meetings both at national and subnational levels that bring together the main seed sector stakeholders, including government, research, seed companies, seed producers, NGOs and development partners. Often the challenge is to find a match between what is feasible on the ground (in terms of the implementation capacity, and seed production and marketing practices) and what international standards prescribe. A clear prioritization of activities can help in gradually improving the system.

International benchmarking and regional harmonization

For countries that already have a strong seed regulatory framework a lighter process can be designed, in which specific bottlenecks can be discussed while using a multi-stakeholder approach. Institutions like the National Seed Council or Committee can provide a platform for organizing these discussions. Specific emphasis can also be put on regional harmonization and international benchmarking (with ISTA and OECD) which will facilitate regional trade. Specific support can be provided both from a technical and a process point of view, i.e. facilitating the multi-stakeholder meetings and providing expert input at the same time.

Development of a seed portal

One very practical module can focus on the development of a seed information portal. Often seed related information, on regulations, procedures, standards and fees, is difficult to find. By organizing all information under a seed information portal, it becomes more transparent for the private sector what the needed steps are for issues like: variety registration, field inspections and seed testing, seed import and export, and seed business licensing. A good example of such a portal is the Myanmar Seed Information Portal.⁴⁴

⁴⁴ Find the Myanmar seed information portal at: <http://www.myanmarseedportal.gov.mm/>

7.2.2 Institutional reform

Review of organizational functions and capacities

In many countries the seed regulatory functions are implemented by a number of different institutions; e.g. variety release is often hosted by the public research system, while quality assurance sits with the Ministry of Agriculture and business licensing can be with the Ministry of Trade. Also, the staff capacity for the different functions and services is not evenly matched, and staff competences vary. As such it can be useful to undertake a review of the organizational functions and staff capacities (e.g. through a needs assessment). This can be a first step in designing a comprehensive capacity building project, outlining both the gaps and limitations in the structure and human capacity of the respective organizations.

Development of a one-stop-shop for seed regulatory services

Another route to increase the effectiveness of the seed regulatory services of a nation is the establishment of a one-stop-shop for all seed-related services. The advantage of a one-stop-shop is that only limited organizational reform is required, rather a single window front office can be developed that brings together the different organizations or divisions. This makes it easier for companies that then only have to deal with one office/desk for all regulatory issues. Preferably, the one-stop-shop goes together with a digitization process. As such it requires a strong ICT-backbone that brings together all seed related services in an online platform (e.g. applications for a business license, variety registration and seed certification).

Redesign of organizational frameworks

One step further would be to redesign the organizational framework focusing on greater effectiveness and efficiency of the seed regulatory services. Many countries provide evidence that a more autonomous and independent regulatory authority or agency can substantially increase the effectiveness of implementation and enforcement of the seed regulations (viz. KEPHIS in Kenya or Naktuinbouw and NAK in the Netherlands). In addition, it can help in generating revenue to cover for the operational costs of the organization. Support can be provided to countries that wish to embark on this type of reform process both in the design and implementation of a new entity.

7.2.3 Variety release

Simplification of release procedures

In many countries a compulsory system is in place for variety testing and release based on VCU. Often all crops need to pass through this process through multi-locational trials and sometimes for multiple seasons. The procedures for the trials and the decision-making process are often not clear. Many (vegetable) seed companies experience this as a barrier for entering the market with their full portfolio. Together with governments of the host nations a simplification of the procedures can be discussed also looking at benchmarks from other countries.

Fine tuning of VCU protocols

In addition, if varieties need to undergo testing, the crop management protocols for the tests can be improved. Exchange between countries can help in updating and amending the crop management protocols, as well as involving researchers and seed companies. Periodic review of crop management protocols is advisable.

Exemption of vegetables from variety registration and VCU

One step further would be to exempt all vegetable crops from compulsory variety testing. Exemption of vegetable crops for variety registration is already common practice in EU countries. Assistance can be provided through development of proposals for exemption of vegetables, sharing experiences/exchange visits to other countries and facilitating public-private sector dialogue.

Development of a variety catalogue

Countries can be supported in their efforts to provide clear and annually updated variety lists or variety catalogues (preferably also accessible online). The structure of the variety lists should include the name of the variety as well as the breeder's name (in some cases only the distributor of the

variety is mentioned). More advanced variety catalogues have been developed with photos and variety descriptions that can be used by agrodealers and farmers to assess the suitability for specific agro-ecological conditions.

7.2.4 Quality assurance

Establishment of ISTA laboratory

For most countries it is becoming a must to have at least one laboratory ISTA accredited. This lab can test seed that is produced in the country and intended for export, as well as serve as a reference lab for other (subnational) seed testing laboratories in the country. ISTA accreditation can be supported through trainings and coaching at the laboratories themselves, as well as through more centralized trainings as organized by ISTA. In principle hardware investments don't need to be high, as long as staff are dedicated and follow the standards and procedures systematically.

Accreditation of private laboratories

Several seed companies have started seed production activities in emerging economies like Kenya, Tanzania, India and Vietnam. Often, these companies own and operate high-quality seed testing laboratories. A system of government accreditation can be introduced to allow these companies to operate more independently from the public seed testing service. The toolbox can assist countries in developing regulations or directives as well as guidelines to allow for the accreditation of private seed labs.

Capacity strengthening of seed labs and field inspectors

Across the board countries can benefit from tailor-made capacity building activities for seed labs and field inspectors. A staff assessment can assist in deciding what capacity needs to be addressed. In some cases, new information materials can be developed like inspection guidelines and checklists.

Risk-based management analysis for seed inspections

In terms of the enforcement of seed regulations, often a gap is observed between what should be inspected and what can be inspected, e.g. in terms of field inspections or seed market inspections. In many developing countries a system of post-control testing is absent. Fully enforcing all seed related regulations is a daunting task for many governments and as such priorities need to be set. Risk analysis can assist in setting these priorities, specifically looking in which part of the seed chain or for which crops or locations risks are highest. The Seed Laws Toolbox can assist governments in making such an analysis and helping seed inspectors at subnational level to work more efficiently. For some countries a system of post-control testing can be introduced as well, again with clear priorities in terms of crops and seed source.

7.2.5 Seed business licensing

Introduction of one seed business licence

In some countries seed business licences for seed import and for domestic seed production are required per crop. The long administrative process and high fee structure put pressure on many seed companies, specifically those working on vegetables. The system can be reformed towards requiring only one seed business licence for all crops. Myanmar recently reduced the requirement of one seed business license per crop to one licence per crop group (i.e. field crops, horticulture crops and industrial crops). The seed laws toolbox can assist governments to simplify the seed business licence system.

7.2.6 Seed trade

Simplification of seed import and export requirements

Seed import and export often require submission of seed samples, description of varieties, a sales contract, a variety registration certificate, a phytosanitary certificate and other documents. The long list of required documentation plus other additional requirements creates a barrier for seed sector growth and limit business opportunities for the private seed sector. Simplification of the requirements

for seed import and export shall be one of the priorities of the Seed Laws Toolbox. After the regulatory reform process in Myanmar, a copy of the seed standard certificate, a phytosanitary certificate and a proof of payment are the only documents needed.

7.2.7 Phytosanitary services

Capacity building of seed phyto inspectors

Though much support is provided through other institutions like the EU, attention for 'seed phyto' in many countries is limited. Most attention often goes to the phytosanitary inspections for imports and exports of fresh products (e.g. fruits and vegetables). Increasingly though, actual public field inspections on seed production fields are required, and proof of this needs to be provided on the phytosanitary certificate. For larger seed production countries, support can be provided by the Netherlands' phytosanitary service as well as seed companies to train phytosanitary inspectors for which crop-specific diseases they need to pay attention.

7.3 Management of the Seed Laws Toolbox

Like with the PVP Toolbox, an organisation needs to be identified to manage the Seed Laws Toolbox/seed regulatory support facility. The facility may be managed by the SeedNL secretariat, a knowledge institute working on seed sector development (WUR, KIT), or one of the organizations working on specific seed regulations (Naktuinbouw, NAK, NVWA). The selected organization will lead the process from project identification to communication of project results. Clear processes for project identification and a structure for project proposal evaluation need to be elaborated. Like for the PVP Toolbox, it is proposed that an annual budget will be reserved for activities funded through the Seed Laws Toolbox.

Find in Table 3 below the proposed general process with steps for countries that want to review, in full or in part, their seed regulatory framework. We advise the full process, including a scoping study, for larger and more complicated reviews and projects, whereas a short-cut procedure, without scoping study, for smaller and straight forward projects will be sufficient.

Table 3 Steps for project identification, formulation and implementation through the Seed Laws Toolbox

Step	Activity	Description	Who	Full process	Simplified process
1	Description of the regulatory challenge	Gather information through desk review of strategic studies and information on on-going projects. A quick review of the country's seed regulatory framework (policy, laws and regulations) may also be part of this step.	Toolbox management through LAN, seed companies and other seed sector stakeholders	X	X
2	Development of ToR for scoping study	Develop a ToR for the scoping study process, methodology and tools, indicating also the stakeholders to be involved, timeline and budget. Outline the different expertise areas that are needed for the implementation of the study, as well selection criteria for the implementing partners.	Toolbox management and review panel	X	
3	Identification of implementing organization	Depending on the size of the budget, invite a lead partner or publish a request for scoping study proposals. The scoping study team will need to have the right mix of international and local expertise and experience, i.e. on seed sector development, private sector development and the respective regulatory topic.	Toolbox management	X	

Step	Activity	Description	Who	Full process	Simplified process
4	Approval of scoping study proposal	Based on a clear set of assessment criteria, evaluate the scoping study proposal(s); and contract the selected lead partner.	Toolbox management and review panel	X	
5	Implementation of scoping study	The study will generally involve an in-country visit engaging with different stakeholders including public organizations, private companies, NGOs, development partners and farmers. Interviews will engage high level government officials, managers and project leaders. Visits to farmer's fields, seed producers, and private sector and government facilities will show the practical situation on the ground. Study findings will need to be discussed in round-table meetings with key stakeholders to validate, consolidate and prioritize intervention areas.	Project partners	X	
6	Request for proposals	Based on either a description of the challenge (smaller projects; step 1) or a scoping study (larger projects; step 5) invite a party, or tender for the development of a detailed proposal for the implementation of one or more modalities of the Seed Laws Toolbox; see Table 2. See Table 1 for an overview of expertise from different Dutch organizations.	Toolbox management	X	X
7	Approval of proposal and contracting of lead party	Based on a clear set of assessment criteria, evaluate the proposal(s); and contract the lead partner of the selected proposal.	Toolbox management and review panel	X	X
8	Implementation of interventions	The lead partner and team of international and national experts will implement the activities according to the approved proposal. Depending on the duration of the project, progress will be assessed through bi-annual reports. Once the project is finalized, an end- project report will be submitted.	Project partners	X	X
9	Project evaluation and communication	Evaluate the project and communicate the project results through the appropriate channels. Publish project reports on a specific website/webpage	Toolbox management	X	X

7.4 Next steps

To operationalize the Seed Laws Toolbox/a seed regulatory support facility we foresee the following steps:

- Identify with MinLNV and MinBZ opportunities for annual budget reservations to support facilitation as well as implementation of projects
- Agree on the modalities and implementation arrangements of the facility
- Decide on the management structure
- Install the panel for proposal review
- Develop a brochure with the background and modules of the facility and inform the Netherlands Embassies about its existence
- Fast-track three proposals with Embassies in priority countries
- Start the first three projects

Appendix 1 Meeting report

Meeting of the 'Hoofdcommissie Internationaal Beleid' of Plantum and invited guests

Topic: 'Scoping Study Seed Laws Toolbox'

Date: 14 February 2019

Location: Plantum, Gouda

1. Participants

Representatives of: Bakker Brothers, BASF, Bejo Zaden, East West Seed, Limagrain Vegetable Seeds, NAO, Plantise, Syngenta, Plantum and the director SeedNL. The study team consists of staff of WUR-WCDI, Resilience and Naktuinbouw, with support from Plantum.

2. Programme

Time	Agenda
13.30	Welcome and introduction to the meeting – Anke van den Hurk, Plantum Introduction of participants
13.40	Introductions: <ul style="list-style-type: none">• Scoping Study Seed Laws Toolbox – Marja Thijssen, WUR-WCDI• Plant Variety Protection Toolbox – Raoul Haegens, Naktuinbouw• Setting the Scene: Seed Enabling Environment Issues in Africa & Asia – Joep van den Broek, Resilience
14.30	Discussions on seed regulatory challenges: <ul style="list-style-type: none">• Countries where companies are currently active• Identification of key bottlenecks• Elaboration of prioritized bottlenecks• Discussion on possible solutions
16.30	Case study: The Ethio-Dutch Seed Committee – Joep van den Broek
16.40	Case study: Seed Regulatory Reform in Myanmar – Abishkar Subedi, WUR-WCDI
16.50	Next steps – Marja Thijssen
17.00	Closing of the meeting – Anke van den Hurk

3. Context and purpose of the meeting

In the context of SeedNL, an initiative of the Ministry of Agriculture, the Ministry of Foreign Affairs and Plantum, to promote the impact of the Dutch seed sector in developing countries and emerging economies, we are exploring the establishment of a Seed Laws Toolbox.

In a recent consultation of CEOs of Dutch seed companies on SeedNL they indicated that the biggest challenge for investment in developing countries and upcoming markets is the current seed regulatory environment. It is against this background that we are exploring the establishment of the Seed Laws Toolbox, inspired by the well-appreciated PVP Toolbox. The anticipated Seed Laws Toolbox, broader in scope than PVP, could assist the Dutch Embassies and national governments of Sub-Saharan Africa and South/Southeast Asian countries, with advice, facilitation of regulatory reform, and capacity building/training on seed regulatory topics, ranging from seed trade (import/export) to field inspections (for seed production), and from variety registration to seed business licensing. The Seed Laws Toolbox may be used on demand basis to remove the biggest hurdles for private sector investment and create a more enabling business environment.

The purpose of the meeting was to determine based on experiences of companies in developing countries and emerging economies the focus and priorities of the Seed Laws Toolbox.

4. Introductory presentations

After a welcome and a round of introduction of participants, we introduced the SeedNL partnership, the Scoping Study Seed Laws Toolbox, the PVP Toolbox, the results of a previous discussion with CEOs of Dutch seed companies, and an assessment with agricultural counsellors at Netherlands Embassies on enabling environment issues in Africa and Asia (see attachments to this report).

The objective is to finalize the Scoping Study by the end of March so that the recommendations can be fit into the development and establishment of the SeedNL programme.

General remarks after the discussion were:

- The PVP Toolbox does not have a limit to the type or number of countries, but it has quite an open structure. This could be considered as well for the Seed Laws Toolbox.
- Critically assess if additional activities are necessary for seed phytosanitary issues (both import and export), as there are already other structures to address this topic, which have other funding streams; these are often permanent activities. Important to check with the G2G activities of the NVWA as well.

5. Quick assessment of priority countries

We asked participants to each indicate three priority countries where they face regulatory bottlenecks that they would like to see solved. The countries indicated were (between brackets number of times mentioned): India (6), Ethiopia (4), Indonesia (4), China (3), Nigeria (2), Iran (1), Kenya (1), Korea (1), Pakistan (1) and Tanzania (1). Whereas this quick assessment gives the study team an indication which countries to focus on, Plantum still aims to do a more thorough assessment to determine which countries SeedNL should target for improving the enabling environment for seed business. Participants indicated that they would have liked to put some more countries.

6. Brainstorm on key seed regulatory bottlenecks

The priority seed regulatory bottlenecks mentioned in the brainstorm were (between brackets number of times mentioned):

- Variety registration (7); this includes the variety registration procedures, local testing procedures, request for parent material provision for registration/testing.
- Import (3); this includes shipments of samples/small seed lots for research, and import during registration/certification.
- Urgency (3); local sense of urgency for implementation of seed regulatory procedures often seems to be lacking at different levels, which results in very time-consuming procedures with a lot of uncertainty. Sometimes it also relates to lack of capacity in the local system.
- Illegal propagation (3); illegal propagation practices are often not clearly defined, and penalties are insufficient.
- Plant Breeders' Rights (2); PBR is not well arranged, and in PVP boards the private sector is often not represented.
- Lack of transparency in seed laws implementation (who, what, when), with unclear procedures (1).
- Implementation of biodiversity regulations (1).
- Business licences (1).
- No pre-marketing for vegetables (1).
- JOC recognition (1).
- Country of Origin (1).
- Seed law not suitable for vegetable seed; e.g. labelling, VCU, seed treatment (1).
- No procedure for variety identification (accredited laboratory) (1).
- Wrong use of statistics (example of border closure in Indonesia once target for vegetable seed was reached) (1).

General remarks based on the brainstorm:

- Seed regulations may be clear, but this is paper. Implementation practice is often different.
- Next to seed regulations, other topics in the enabling environment with regards to market development and professionalization of the seed sector may need attention.

7. Discussion on bottlenecks and solutions for improving variety registration

After the general brainstorm we discussed two issues more in-depth, and tried to get more insight into the problem, as well as discuss already potential solutions. The first issue is variety registration.

Problems with variety registration:

- Often registration of varieties is by distributor/agent; sometimes the distributor must become the owner of the variety.
- Imports for testing material is a problem; the variety needs to be registered before it can be tested; however, you want to test the variety before registering it. In addition, you often cannot even bring in the samples as they are not registered yet.
- Companies are not allowed to visit the trials of their varieties; these trials are completely out of the companies' control.
- Some countries request provision of parent materials of hybrids (samples); this is illogical and undesired.
- The requirements for testing; for example, a variety needs to do well in all different testing environments in the country while it is not meant for all those environments.
- Companies are not involved in providing criteria for release; the variety may exhibit specific criteria which are demanded in the market but are not tested for.
- High costs for the testing and release process.

Potential solutions to the problems:

- Stress that legislation for vegetables need to be different.
- Remove/exemption for VCU for vegetables and ornamentals.
- Introduce/ allow for pre-marketing of varieties before the VCU testing.
- Have private sector involved in variety release committee.
- Strengthen seed associations in the countries.
- Establish linkage with other national and regional seed associations such as APSA and AFSTA.
- Or, facilitate other types of organizations; e.g. platform, forum, movement.
- Work together with local companies.
- Invest in longer-term trust with the host governments; and embed missions in a broader programme of activities.
- And provide the right examples and narratives to convince the government of the need for regulatory change. Look at neighbouring countries (and not necessarily the Netherlands) for good examples.

8. Discussion on bottlenecks and solutions related to implementation of seed regulations

Problems in implementation:

- The issues in implementation relate to lack of sense of urgency, slow speed and lack of transparency, but also to lack of government capacity.
- Different government organizations may have different interests; this may cause procedures to take a long time. VCU testing may take up to 4 – 5 years (Tanzania).
- NARO's test both publicly bred varieties and varieties of private companies; they are not impartial.
- Also, for some procedures it is not clear who is responsible for what (Ethiopia), which causes delays in decision making.
- In addition, for example for VCU tests, there are no clear time lines when tests need to be finalized and reports need to be submitted.
- In the case of local seed production, it was impossible for a company to make clear to the government that it is very important that the seed is physically inspected by phyto inspectors; there is lack of sense of urgency.
- Problems in implementation generally seem not necessarily to be related to unwillingness, but more to lack of capacity, knowledge and skills, and lack of experience. Often only a very limited number of trained people are available.
- Lack of government coordination and communication may result in failure of trials; this again causes delays.
- Countries generally have quite a number of phyto inspectors, but not many are specifically for seed.

Potential solutions to the problems:

- Ensure availability of clear guidelines including timeframes, with a maximum number of days indicated for a specific procedure.
- Make regulations available in English language at a website.
- Convince government of importance to push testing authorities to speed up.
- Show the examples of neighbouring countries which are close to their realities; or bring teams to the Netherlands and explain the reasons why we do things differently.
- Upfront, be clear about the purpose of exchange visits, and include key decision makers in those visits.
- Show the policy makers the value of new varieties and facilitate G2G collaboration.
- Support the translation of regional harmonization to national legislation; but make it clear that vegetable seeds are different from agricultural seeds.
- Ensure government commitment by making regulatory reform part of a long-term initiative project.
- Work with the right team/people/entry point at the government and invest in relationship building; work with solution-oriented policy makers.
- Involve local partners in agenda setting and invest at the beginning of each process.
- Use for each problem a case-by-case approach.
- Implement pilots and see where the problems are.

9. Case studies on support to seed regulatory reform

We concluded the meeting with a presentation of two successful case studies on how support to improving the enabling environment of seed business could look like. The first case showed the results of a 1.5-year seed regulatory reform process in Myanmar; the second case explained how the Ethio-Dutch Seed Committee works on regulatory bottlenecks in Ethiopia. Find the powerpoint presentations attached to this report.

10. Conclusions and next steps

Participants agreed that interventions in the seed enabling environment in developing countries and upcoming markets to solve key bottlenecks to private sector investment is needed. The Seed Laws Toolbox may be a good modality for solving these bottlenecks. The study team agreed to share the notes of the meeting and the powerpoint presentations with the participants and follow up with individuals on specific issues if necessary.

Appendix 2 Country list

Find below the countries which are eligible for different Dutch funding instruments like the SDG Partnerships facility of RVO.⁴⁵ Twenty key focus countries for trade and development cooperation are indicated in bold.

Letter	Country
A	Afghanistan, Algeria, Angola, Armenia
B	Bangladesh, Benin , Bhutan, Bolivia, Burkina Faso, Burundi
C	Cambodia, Cape Verde, Chad, Colombia, Côte d'Ivoire
D	Democratic Republic of Congo, Djibouti
E	Egypt, Ethiopia
G	Gambia, Georgia, Ghana , Guatemala, Guinea
H	Haiti
I	India, Indonesia, Iraq
J	Jordan
K	Kenya , Kosovo
L	Laos, Lebanon , Liberia, Libya
M	Madagascar, Malawi, Mali , Morocco, Moldavia, Mongolia, Mozambique , Myanmar
N	Nepal, Nicaragua, Niger, Nigeria
P	Pakistan, Palestinian Territories , Peru, Philippines
R	Rwanda
S	Sierra Leone, Sao Tome and Principe, Senegal , Somalia, South Africa, South Sudan , Sri Lanka, Sudan , Suriname
T	Tanzania, Togo, Tunisia
U	Uganda
V	Vietnam
Z	Zambia

⁴⁵ See Annex 2 of the SDG partnerships facility subsidy announcement: <https://zoek.officielebekendmakingen.nl/stcrt-2018-32302.html>

Wageningen Centre for Development
Innovation
Wageningen University & Research
P.O. Box 88
6700 AB Wageningen
The Netherlands
T +31 (0)317 48 68 00
www.wur.eu/cdi

Report WCDI-20-100

Wageningen Centre for Development Innovation supports value creation by strengthening capacities for sustainable development. As the international expertise and capacity building institute of Wageningen University & Research we bring knowledge into action, with the aim to explore the potential of nature to improve the quality of life. With approximately 30 locations, 5,000 members of staff and 12,000 students, Wageningen University & Research is a world leader in its domain. An integral way of working, and cooperation between the exact sciences and the technological and social disciplines are key to its approach.



To explore
the potential
of nature to
improve the
quality of life



Wageningen Centre for Development Innovation
Wageningen University & Research
P.O. Box 88
6700 AB Wageningen
The Netherlands
T +31 (0)317 48 68 00
www.wur.eu/cdi

Report WCDI-20-100

Wageningen Centre for Development Innovation supports value creation by strengthening capacities for sustainable development. As the international expertise and capacity building institute of Wageningen University & Research we bring knowledge into action, with the aim to explore the potential of nature to improve the quality of life. With approximately 30 locations, 5,000 members of staff and 12,000 students, Wageningen University & Research is a world leader in its domain. An integral way of working, and cooperation between the exact sciences and the technological and social disciplines are key to its approach.

