

## Preparatory action on EU plant and animal genetic resources

# NordGen - Nordic Genetic Resource Center

## Overview

### 1. Objectives

NordGen is an example of regional cooperation in the field of PGR conservation. The objective of this case study is to explore this type of cooperation; what can Europe learn from NordGen?

### 2. Description of the case

NordGen – the Nordic Genetic Resource Center – is a Nordic organisation dedicated to the safeguard and sustainable use of plants, farm animals and forests.

The collaboration between the Nordic countries (Sweden, Denmark, Finland, Norway and Iceland, but also Faroe Islands, Greenland and the Åland Islands) via the Nordic council of Ministers started in 1952. The Nordic cooperation is, according to the Director of NordGen, large and complicated. There are 10 groups on the ministerial level. NordGen falls under the group of 'Fishery Agriculture Food and Forest' (FGLS). The budget of this group is 40 million DKK, NordGen receives half of this budget, i.e, 20 mio DKK per year (c. 2.7 million EUR / year).

The collaboration on PGR conservation, the Nordic Gene Bank, is more than 30 years old and was merged in 2008 with the Nordic Gene Bank Farm Animals and the Nordic Council for Forest Reproductive Material, creating the current NordGen. The PGR activities are located in Alnarp, Sweden, whereas the AnGR and FGR activities are located in Ås, Norway.

The PGR activities encompassed around twelve positions and is much larger than the AnGR and FGR activities with resp. three positions and a half position.

NordGen has a flat organisation, with a director (currently Árni Bragason) and staff of the Head Office in Alnarp with the PGR activities, and the three sectorial groups on PGR, AnGR and FGR each with someone in charge. Within the PGR group, everyone directly reports to the Director, who is also in charge of the PGR group. The positions of chair and rapporteur of the bi-weekly staff meetings circulates amongst the participants of the meeting.

A major constraint of the organisation is the Nordic rule that any position can be filled by any given person for only four years with one possible extension of another four years. (The Director is not allowed to work in any other organisation of the Nordic Council afterwards) This maximum term of eight years has some advantages but mainly disadvantages; it stimulates the inflow of new expertise but at the same time dismantles every eight years the capital of a research organisation, its knowledge and experience.

The Director reports to the Nordic Council of Ministers via a Secretary located in Copenhagen. The Board of NordGen meets 3 times per year and is appointed by the Nordic Countries, plus an observer from the Faroe Islands and an observer from the environmental sector. Since 1<sup>st</sup> January 2015 the Board has an advisory role, before that time it was much more involved in the executive management.

The PGR activities encompass the regular *ex situ* conservation activities of a genebank, including seed storage, regeneration and distribution. It maintains about 32,000 accessions of seed crops, distributes annually about 9000 seed samples answering 750 requests from breeders, scientists and the general public. The clonally propagated crops, such as fruit trees, are maintained by the individual countries in their National Programmes. The PGR group also supports the Svalbard Global seed Vault, mainly in terms of logistics and documentation. The maintenance of the facilities in the permafrost is in the hands of the Norwegian government.

The animal programme, coordinated by Peer Berg, does not include any collections – those are maintained by national authorities. The programme concentrates on advisory work to breeding organisations to avoid inbreeding (including fish). It is also involved in projects dealing with issues such as milk quality, dog breeding and the conservation of indigenous horses in the Faroe Islands.

The forestry programme is very small and is mainly a meeting place for actors involved in forest conservation. It organises one conference and two thematic meetings per year. The national programmes maintain the collections (there is also Nordic Forest research cooperation).

Regarding interaction with the stakeholders, NordGen has about 85 external advisors. There are five Working Groups on crop groups with two persons from each Nordic country. Then there is one group of ten people who act as an Advisory Board for the animal sector, and two groups with five and ten people resp. advising on forest genetics and organising the thematic days. Additionally, there is an Advisory Committee for the Svalbard genebank with seven people. All advisors are people from the sectors involved, including private and public breeders, scientists, national programmes, etc.

NordGen is an active collaborator in regional networks such as ECPGR, EUFORGEN and EFRP. It participates where possible in collaborative EU projects, but does not coordinate these projects due to the workload involved.

## Analysis

### 3. Funding and support

Funding and policy support are a continuous issue. After a crisis in 2009/2010 based on strong disagreement between the Board and the Director, the budget of NordGen was reduced by 2.4 million DKK (c. 322,000 EUR, i.e. 12% of the annual budget), resulting in a large discontinuity of the activities. The budget was recovered afterwards, even allowing a

reserve for four months of operation; however it showed the vulnerability of GR conservation programmes.

Since NordGen is a product of the political collaboration of five countries, the challenge of 'walking the political tightrope' is even larger than compared to that of national genebanks.

Regarding EU funding, participation in EU projects is limited since there are not many opportunities in the field of GR. NordGen never coordinates EU proposals because of the administrative workload involved.

In terms of administration, the reporting lines to the Nordic Council, are clear and efficient. The flat organisation keeps the internal bureaucracy small.

#### **4. Positioning at local or regional level**

Thanks to the 85 external advisors, NordGen feels that it is well anchored in both the scientific and industrial environment. Its position in the supply chain is rather clear as supplier of PGR to science, industry and the general public. The AnGR and FGR activities are much smaller and encompass a supporting role to the true GR actors.

NordGen has been coordinating, since 2011, four Public Private Partnership (PPP) projects (8 million DDK/year, i.e. 1 million EUR/year) involving twelve breeding entities (companies and universities). They are half funded by the ministries and half by the breeding entities (largely contributions in kind). The projects, such as "PPP for pre-breeding in perennial ryegrass", all concern pre-competitive research and pre-breeding activities. According to the participants and an external review, this is a successful activity that could be up-scaled in the coming years.

Since nearly half of the distributed samples go to hobby growers, its anchoring in the local communities is also clear. To reduce this demand from the hobby sector, NordGen creates 'Hobby Collections' that can be ordered during two months of the year; this year they were 'sold out' within three weeks. (Genebank requests of amateur-users is an issue in many genebanks). Most genebanks have to make their material freely accessible, the seeds are available to any user without costs. However, the costs of maintaining and regenerating the material are considerable. If the use is 'only for fun' this might be seen as an abuse of the valuable resources, commercial seed trade would be a more appropriate seed source for this use. Therefore, various genebanks have sought different solutions, including the exclusion of hobby growers, availability of a limited selection of material or a limited timeframe for hobby requests.

#### **5. Partnerships and networking**

As mentioned above, NordGen participates actively in the European GR networks ECPGR, EUFORGEN and EFRP. This collaboration is constructive but has little output nor impact on NordGen's operations; the organisations mainly provide a platform for communication. Since the networks function on the basis of consensus between members (the countries) necessary difficult decisions cannot be taken. Furthermore, the lack of budget limits the possibility to develop activities.

Within its region, NordGen has actively supported the Baltic countries in setting up their National GR Programmes, and still supports these in methodological areas and in the field of

documentation (the Baltic countries use the NordGen documentation system Sesto). Such partnerships are very valuable, experienced partners supporting less experienced ones. In the Nordic region this was relatively easy to establish based on historical ties between the countries in this region.

Furthermore, in the past, NordGen has actively supported the creation of regional cooperation in the field of PGR conservation in the Balkan (SEEDNet) and in Southern Africa (SADC Plant Genetic Resources Centre). Due to lack of (continuity of) funding, these activities have stopped, and the regional cooperation has only to a small extent continued. However the past activities have boosted capacity and awareness in the field of PGR conservation, and thus have had lasting impact.

Finally there has been a long lasting collaboration with the Russian genebank maintained by the N.I. Vavilov Research Institute for plant industry (VIR) in St. Petersburg, Russia. This collaboration is based on the similar northern location of the countries. During the past few years, this collaboration has not seen many activities, apart from the repatriation of Nordic material from the Russian collection.

## **6. Communication**

In regards to communication, NordGen uses the regular channels including the website, regular publications in scientific and popular press and its own publications, such as annual reports, etc. There is no indication that communication is failing to reach the audiences that need to be reached: professional users from industry and science in the Nordic region all know NordGen and its services as do the policy makers in the Nordic Council and in the participating countries. The staff of NordGen frequently lectures in Nordic universities and at invitation in NGOs and other organisations.

When it comes to the general public, there have been TV appearances and publications in the press. The involvement in the Svalbard Global Seed Vault has attracted very much attention; NordGen together with the Global Crop Diversity Trust organises the publicity for this initiative.

## **7. Outputs and added value**

This case study showed that NordGen works well. Its outputs can be considered to be proportional to its budget and it is, in the field of PGR, one of the more reliable and transparent genebanks in Europe.

The quality of the products was difficult to determine in the context of this case study. NordGen is known as a good genebank with reliable services and properly maintained material. It does not have a quality management system (they are taking steps towards some QMS), so there is no way of directly assessing the quality of the procedures and the satisfaction of the users.

The added value of combining the national genebanks of several countries would seem large, as not every country needs to equip and manage its own genebank. However, every country that is part of NordGen still has its national PGR programme, its own clonal collections, etc. This is partly for practical reasons, e.g. fruit tree collections are not that easily relocated to one location, but also political reasons. Furthermore, the political setting of a regional genebank is more complex than a national one. This is especially clear in

regards to the limited lengths of appointments (maximum eight years) as a result of a Nordic rule.

## **8. Sustainability**

The Nordic collaboration is supporting NordGen at an appropriate level, although not at a high level and more funds would allow for an even better level of service and more innovation.

Due to lack of capacity in previous years, a backlog in terms of regenerations has built up, and also the service level of some components of the programme (such as documentation) has lagged behind. Currently, NordGen is very active in recovering these backlogs and bringing the services at an appropriate level.

As the budget is determined in Danish crowns, fluctuations in exchange rates can also affect the continuity. Additionally, the recent severe budget cuts have shown that the continuity is very much dependent on the whims of politicians – an unacceptable situation if it concerns tasks that need continuity.

NordGen is managed professionally, and there will be no threat to the organisation from within. Furthermore, the governance structures are professional and stable. If there are threats to the continuity they are at a political level, as at this level the funding of NordGen has to be approved.

## **9. Upscaling and out-scaling**

Depending on political will, NordGen could easily scale up. Parts of the National programmes could be centralised and organised by NordGen, new services could be supplied in the field of teaching, development of educational material, policy development, legal support to PGR users, research, etc. However, it currently is a proper genebank that could make use of more facilities and space, but functions well.

The PPP activities in the field of pre-competitive research and pre-breeding are successful and are likely to be up-scaled in the coming years.

Regarding out-scaling, applying the ideas and experience of NordGen in other regions, success would not be guaranteed. Experiences in the SADC and Balkan regions have proved that countries do not easily collaborate when it comes to the physical GR, each country apparently wants to have full control over its genetic resources. The fact that the Baltic countries, despite constructive collaboration with NordGen, all have their own genebanks illustrates this phenomenon. This could be due to the expected value of the resources ('green gold') and the lack of trust amongst the countries in the region, although this was not explicitly mentioned. The Nordic region can, in this respect be considered an exception. However, further clarity about ownership of the GR, and quality of the management thereof, could improve this situation and allow NordGen-like collaboration between other countries in other regions.

## Conclusions

<b>STRENGTHS</b>	<b>WEAKNESSES</b>
<p>The flat organisation is effective (in the Nordic setting);            Strong collaboration, networking, etc. in the region;            Good collections of certain crops / interesting material;            The 'eight year rule' causes a staff replacement and inflow of new expertise;            Good facilities;            PPPs for pre-breeding are very stimulating.</p>	<p>The regional basis of NordGen requires a high amount of politics;            The documentation system is not user-friendly and the data are incomplete;            The 'eight year rule' causes discontinuity and loss of expertise;            Considerable backlogs in terms of regeneration and data entry;            Resources are limited and as a result it takes very long to get rid of backlogs.</p>
<b>OPPORTUNITIES</b>	<b>THREATS</b>
<p>Public awareness could be increased;            IT infrastructure and application could be improved to better serve the users;            Gaining knowledge of the resources (e.g. CWR) will increase the value;            Further networking / collaborative projects will allow more impact;            General service level could be improved.</p>	<p>Lack of political support would threaten continuity;            Backlogs in terms of regeneration and data entry cause 'working in the past';            Technical failures could cause loss of germplasm or data (backup not optimal).</p>

In conclusion, NordGen functions well, but the lack of continuity is a threat due to its dependence on Nordic funding and thus politics. It is a reliable genebank with good collections, and has a number of very successful initiatives, such as the Global Seed Vault and the PPPs. However there are also still backlogs in terms of regeneration and (legacy) data entry, and the 'eight year rule' for appointments hinders the functioning considerably.

NordGen is a positive initiative with dedicated staff and funding well-spent, however applying the concept of a regional genebank elsewhere should be done with caution.

## Annex 1 – List of interviewees

- Árni Bragason, Director Nordgen
- Jan Svensson, Curator Cereal crops
- Jonas Nordling, Documentation & IT Manager
- Kjell-Åke Lundblad, IT System Developer

## Annex 2 – List of references

### Websites of mentioned organisations

European Regional Focal Point for Animal Genetic Resources (ERFP)

<http://www.rfp-europe.org/>

European Cooperative Programme for Plant Genetic Resources (ECPGR)

<http://www.ecpgr.cgiar.org/>

European Forest Genetic Resources Programme (EUFORGEN)

<http://www.euforgen.org/>

Global Crop Diversity Trust

<https://www.croptrust.org/>

Nordic Council (Norden) the official interparliamentary body)

<http://www.norden.org/>

Nordic Genetic Resource Center (NordGen)

<http://www.nordgen.org/>

SADC Plant Genetic Resources Network

<http://www.spgrc.org.zm/>

### Documents consulted

Anon (2013) NordGen Annual Review 2012. NordGen, Alnarp, Sweden. 26p.

Anon (2014) NordGen Annual Review 2013. NordGen, Alnarp, Sweden. 30p.