Evaluation & Planning Workshop report

Kew's Great Green Wall cross-border project

Burkina Faso - Mali - Niger

Agadir – Morocco

27th – 31st March 2017

Compiled by Stéphane Rivière, Bokary Kelly, Sidi Sanogo, Palo Ceci, Beth Ambrose & Tiziana Ulian

Figure 1 - The 15 participants of the workshop

Royal Botanic Gardens, Kew
Richmond,
Surrey TW9 3AB

Table of contents

List of acronyms

AAD	Action Against Desertification
ANR	Assisted Natural Regeneration
CBD	Convention of Biological Diversity
CNSF	Centre National de Semences Forestières
GCF	Green Climate Fund
GDT	“Gestion Durable des Terres” (Sustainable Land Management)
GGW	Great Green Wall
GGWSSII	Great Green Wall for the Sahara and the Sahel Initiative
IER	Institut d'Economie Rurale
FAO	Food and Agriculture Organization of the United Nations
FLEUVE	Front Local Environnemental pour une Union VertE
KEFRI	Kenya Forestry Research Institute
M&E	Monitoring and Evaluation
MED	“Mise En Défens“ (fenced plot)
MSBP	Millennium Seed Bank Partnership
MoU	Memorandum of Understanding
NRM	Natural Resources Management
NTFP	Non-Timber Forest Product
OECD	Organisation for Economic Co-operation and Development
RBGK	Royal Botanic Gardens Kew
SSF	Sahara Sahel Foods
SWOT	Strengths, Weaknesses, Opportunities & Threats
UNFCC	United Nations Framework Convention on Climate Change
UPP	Useful Plants Project

Executive summary

The African Great Green Wall (GGW) Initiative has been proposed as a solution to the increasing desertification and land degradation of Africa's drylands which affects some of the world's poorest people who depend on rain-fed agriculture to sustain their livelihoods. This pan-African land restoration initiative launched in 2007 by the African Union consists of a mosaic of sustainable land management approaches involving more than 20 countries of the Sahara and the Sahel. The FAO is playing a lead technical role on restoration across many of these countries and hence is also coordinating the work in partnership with the African Union and the PanAfrican Agency of the Great Green Wall.

As part of this initiative, Kew's Great Green Wall cross-border project (2013-2017), funded by the Theresa Sackler and Dr Mortimer Foundation, was designed under Kew's Millennium Seed Bank Partnership (MSBP) in collaboration with the FAO and country partners to develop a model for restoration across Burkina Faso, Mali and Niger, within the Sahel region. The project model engages a wide range of in-country collaborators and local communities to generate environmental and socio-economic data which could help the design and implementation of other similar projects in the Sahara and the Sahel. Attention has been paid to selecting and using native useful plant species important for local communities and testing different techniques to improve and accelerate restoration activities (e.g., plantations, fencing, Assisted Natural Regeneration). In parallel, surveys were designed and are being carried out to understand the socio-economic status of participating communities and to monitor relevant outcomes.

During the third evaluation and planning workshop of Kew's Great Green Wall cross-border project, held from 27th to 31st March 2017 near Agadir (Morocco), RBG Kew, FAO and in country project partners met (i) to review the achievements to date of the pilot project's implementation ; (ii) to finalize and prioritise 2017 project activities; (iii) to identify strengths, weaknesses, opportunities and threats related to the project activities; (iv) to identity solutions in synergy with other restoration initiatives; and (v) to review the monitoring and evaluation system of the activities for measuring both environmental and socio-economic impacts.

As described in this report, the main outcomes of the workshop highlighted the need a) to increase communication between all stakeholders involved in GGW projects within each of the three countries where Kew's cross-border pilot operates (Burkina Faso, Mali and Niger); b) to create synergy between these projects, especially by involving the National Focal Points who coordinate the activities under the GGW flagship programme; c) to ensure that project indicators are informative and can easily be integrated and captured in a standardised database; and d) to improve the way data are collected from the different GGW projects (Kew's GGW cross-border pilot, AAD, FLEUVE) into a central database in each country so that each National Focal Point is aware of the GGW outcomes in their respective countries.

This report first summarises the presentations which took place over the first two days of the workshop (28th and 29th March 2017), and the subsequent discussions. The report goes on to provide the results of a SWOT[1] Analysis on each country, presented on the third day (30th March 2017), as well as the subsequent recommendations suggested by the three country teams and the management team.

[1] SWOT stands for 'Strengths, Weaknesses, Opportunities & Threats'

Summaries of the presentations

1. Day 1 (28th March 2017)

1.1 First session Day 1

After traditional welcome statements and introductions (Annexe 1), the first presentations of the GGW National Focal Points (Miss Nisama Haoua Coulibaly in Mali; Mr Adama Doulkoum in Burkina Faso and Mr Abdou Maisharou in Niger) described the current situation of the GGW projects in their countries.

Following this, Dr Tiziana Ulian (Project Leader/Principal Investigator, RBG Kew) provided an overview of Kew's Great Green Wall Cross-Border Pilot project in Burkina Faso, Mali and Niger (background, purpose, outputs and approach), then Mr Stéphane Rivière (Africa Project Coordinator, RBG Kew) provided a summary of the achievements for each output so far.

The session closed with a presentation by Mr Marc Parfondry (Forestry Policy and Resources Division, FAO) which provided an overview of the Action Against Desertification (AAD) project and the linkages with the Kew's Great Green Wall Cross-Border Pilot project in Burkina Faso, Mali and Niger.

Detail on each presentation is provided in the three sections below:

1.1.1 Activities of GGW National Focal Points of the GGW projects in each country (Annexes 2-4)

The three presentations from GGW National Focal Points highlighted the vision, the approach, the achievements, the partnerships and the challenges of the GGW initiative in each country. Presentations raised some key points that were discussed during the Q&A session.

Key points discussed:

- Land and vegetation restoration: Varies according to countries
- Monitoring and evaluation (M&E)*:* The necessity of harmonization was raised but realities on-the-ground do require each country to retain a slightly different approach on specific points. A common M&E basis was recommended.

- Challenges: These are very similar for the three countries in several aspects. Concerns were raised regarding the mobilisation of internal funds and other sources of funding by decision-makers, i.e. a need to diversify the sources. Issues were also raised about capacity building, the necessity of creating synergy between actors and to increase communication and visibility of achievements etc. Regarding the mobilization of funds, information was given about the Green Climate Fund (GCF) which was initiated during the COP22 at Marrakesh to cover ten African countries.

- Land ownership: It was recognized that this is a crucial point of tension and it should be overcome by getting rural populations more involved in the GGW activities and linking interventions to the system of land use.

- Species: Several species (native and exotic) have been used for various purposes which can be questionable. Some of the properties of these species are still not well known. It was suggested and agreed to undertake research activities on species like the native *Moringa sp.* in Niger.

1.1.2 Overview of the Kew GGW cross-border pilot project in Burkina Faso-Mali-Niger: background and progress (Dr. Tiziana Ulian and Mr. Stéphane Rivière, RBG Kew, UK) (Annexe 5)

With support from Theresa Sackler and Dr Mortimer Foundation, the project aims to combat desertification and improve habitats, with a focus on food security and nutrition improvement for local communities. RBGK focuses on seed collection and research, providing scientific evidence to advise partners working at a larger geographical scale. Following the recent restructuring of RBGK, strategic priorities were set for the six scientific departments. One of the important new focus areas is that of plant diversity to support local livelihoods, including through reforestation projects. The newly-established Diversity & Livelihoods Team manages 12 active projects in Latin America and Africa, including the GGW cross-border pilot project and the Useful Plants Project (UPP). The former is laid out to support the African Union's programme from 2013 to 2017.

RBGK's approach is able to generate biotic and socio-economic data through research and the close involvement of communities. RBGK focuses on transferring best practice and developing capacities, from seed collection to seedling production, soil preparation, tree planting and plant survival/growth monitoring. By engaging local communities throughout the project, Kew works on the most useful species selected by smallholders and documents associated techniques and traditional land management practices. Monitoring plant survival and growth rates as well as socio-economic outcomes, allows Kew to understand what species perform better under specific conditions and the potential they offer for household income increase. The project is structured around six outputs, the first one concerns coordination with partner institutions, GGW national focal points, NGOs, local governments and forestry departments. The second output deals with the ex-situ conservation of useful plants and required us to collect, test and store 72 woody and 12 herbaceous species. To achieve the third output "propagation and conservation of useful species in communities", 30 woody and six useful herbaceous species were propagated in communities and technical training was delivered. The fourth output is to support useful plants' in-situ conservation and sustainable use. In this regard, water harvesting half-moons were dug in Niger, consultations with local stakeholders were undertaken in Mali, around 1,000,000 seedlings of woody species were planted in the three countries, around one ton of herbaceous species was sowed in Burkina, and 20 hectares of land were put under ANR in Mali, where 180 bare-root *Adansonia digitata* plants were also distributed. Lack of water points and fences against livestock encroachment were the main problems encountered. Survival and growth rates in each treated parcel are regularly monitored. The fifth output is to support income generating activities, e.g. extraction of *gum arabic*, through training. Under the sixth output of "dissemination of information", several knowledge sharing workshops were attended, with participation from the FAO, and joint RBGK /FAO communications were produced.

1.1.3 Action Against Desertification (ADD) project (Mr Marc Parfondry, FAO) (Annexe 6)

Mr. Marc Parfondry provided an overview of the Action Against Desertification[2] (AAD) project and the linkages with the Kew's GGW cross-border pilot project. AAD started in 2014 in support of the African Union's GGW for the Sahara and the Sahel Initiative. AAD has three

[2] http://www.fao.org/in-action/action-against-desertification/en/

overall objectives: to eradicate hunger, to reduce poverty and to improve resilience. Its purpose is to improve the living conditions of the people and the productive ecosystems they depend on. AAD covers eight countries in the Africa, Caribbean and Pacific (ACP) region, among which six African countries (The Gambia, Senegal, Burkina Faso, Niger, Nigeria and Ethiopia) where it supports the implementation of GGW National Action Plans.

AAD is divided into three components: capacity development, field activities and communication/visibility. Among the results already achieved in the two countries where Kew is also working (Burkina Faso and Niger), several capacity development workshops and a series of biophysical, ethno-botanical and socio-economic surveys have been organised, and training in restoration and market development provided. Regarding field activities, restoration activities took place in 2016 in around 3,000 hectares of degraded land in Burkina Faso and preparations for the use of a mechanized system for land reclamation are ongoing in Niger. Finally regarding communication/visibility, a communication plan was developed and implemented in Burkina Faso along with an information platform.

A MoU between Kew and the FAO was signed in 2013 and will run until 2018. It describes technical areas of collaboration and the opportunity to cooperate in the context of the GGW. A number of meetings and workshops have been organized and attended by the staff of the two initiatives in 2015 and 2016. The AAD project values this MoU, especially for the support in the mobilisation of quality seeds of native species, and the development of capacity in seed and data collection, and expressed its willingness to continue collaborating in this direction.

Responding to a question regarding climate funding opportunities for the GGW, Mr. Parfondry also informed the attendees that last year FAO was accredited as one of the implementing agencies of the Green Climate Fund (GCF) (a financial mechanism to support the UNFCCC) giving an opportunity for FAO to upscale its support to the GGW countries.

The key point of this presentation and discussion was the partnership between the AAD project led by the FAO and Kew's cross-border pilot project. The need for clarification of this partnership was raised. It was agreed that it is necessary to better define the level of overlap and differences between the two projects and how this is translated on the ground when implementing and funding field activities. In terms of coordination with AAD activities at an operational level, Mr Parfondry informed that the persons to refer to are the AAD national project coordinators in Burkina Faso and Niger, respectively Mr Damas Poda in the FAO office in Ouagadougou and Mr Issoufou Wata in the FAO office in Niamey.

1.2 Second session Day 1

The second session of the workshop consisted of a review of the recommendations produced during the workshops "*Atelier technique sur le Projet Modèle Transfrontalier de la Grande Muraille Verte*" in Sikasso (Mali) in 2013 and in Niamey (Niger) in 2015. This session was led by Dr Sidi Sanogo. Following this, a review of various case studies on forestry and plantation techniques, the use of herbaceous species and the production of NTFPs in the three countries was led by Dr Sidi Sanogo and Dr Bokary Kelly (IER Mali), Dr Lassina Sanou (CNSF-Burkina Faso) and Mr Maman Adda (CNSF-Niger).

1.2.1 Review of recommendations produced by the workshops in Sikasso (Mali) in 2013 and Niamey (Niger) in 2015 – Dr Sidi Sanogo (IER Mali) (Annexe 7)

Previous recommendations issued at the 2013 and 2015 workshops were reviewed.

2013 Sikasso workshop, 5 main recommendations:

1. *Adopt a common canvas and format for reporting activities, by creating coordination unit in each country for global coordination and leverage of findings*.
   This recommendation was reported to be fully implemented during the workshop and fully taken into account when the template for reporting was approved.
2. *Map interventions and activities in the three countries in order to coordinate all the activities of projects/programs/NGOs acting in GGW intervention zones for leverage of the efforts of all actors*.
   This recommendation was reported to be fully implemented in the three countries. The standardisation of data (including geo-referenced data) was agreed for the three countries involved in the project and the process of sharing data with the data manager was defined and adopted. As a result the data will be stored in the database.
3. *Organize technical exchange workshops on some good practices and successes in land restoration using local adapted species, in a rotation amongst the countries*
   A workshop was carried out in Niger in 2015, involving a review of successful cases of restoration.
4. *Define strategies for mobilizing funds for GGW in the three countries.*

On-going recommendation as the low level of funds remains a problem. The example of lack of water in Mali was highlighted with the need to set up water points, but adequate funding has not been achieved.

5. *Organize laureate system rewarding the best farmers in restoration and management activities for motivating communities and maintaining their commitment*.

   This recommendation has not been implemented at the same level by all countries. Mali has not organised such an event yet. In Niger, this activity was coupled with the organisation of the Independence Day (3rd August) where best practices are promoted at a local and national level. In Burkina Faso, this activity was carried out but was not directly linked to the Kew GGW cross-border pilot project.

2015 Niamey workshop, 6 main recommendations:

In total 6 main recommendations were produced, including 2 repeated from the 2013 workshop, leaving 4 main new recommendations:

1. *Harmonize approaches in executing activities*

   Harmonisation of techniques across the three countries proved difficult to achieve. Many had to adapt to existing situations rather than choosing their own way of working (for example, spacing between the trees in plantations). The need to take into account the period of planting which coincides with the rainy season (e.g. early July in Mali) also contributed to impeding harmonisation.

2. *Mobilize of financial resources by different partners in harmony with the planning of the activities*

   Instead of seeking further funds, coordination was established to share the work-load and integrate activities (e.g. one stakeholder deals with the seed supply, another with plantations etc.)

3. *Focus on leverage*

   Information exchange between Partners has been reinforced through a training on the Collect Earth tool (in collaboration with AAD, not promoted by Kew cross-border project).

4. *Improve and/or reinforce information-exchange among field teams and national coordinators*

   In Mali, reports have been handed to the Director of IER and the National Focal Point.

In Niger, field trip reports have been shared by CNSF among the different structures. Project teams also perform joint field trips in collaboration with e.g. “Eaux et Forêts” Department.

In Burkina Faso, meetings were organised by CNSF in 2016-17 in order to report on the activities carried out for the project. However, so far CNSF has been unable to provide the national coordinators with the data generated by the project.

1.2.2 Mali case study: Assisted Natural Regeneration (ANR) (Annexe 8)

This presentation by Dr Sidi Sanogo and Dr Bokary Kelly (IER Mali) highlighted the approach of a forestry technique – Assisted Natural Regeneration (ANR) – which has been implemented in different Sahelian countries as a means to restore land. Overall it requires less labour than tree planting and there are no tree nursery costs. It can therefore be a low-cost way to restore forest ecosystems. This technique was adopted in Bankass. Full methodology and detailed results are available in the presentations section at the end of this report.

Key points discussed:

- Community use of experimental plots: In Mali, both experimental-plots and community-plots have been set up. It is important to note that local communities can use the natural resources of experimental-plots, although this right is restricted to a certain area of the plot.
- Use of natural resources: In order to avoid conflict in the use of natural resources, it becomes essential to apply the “Forest codes” and voting laws, apply them and deliver permits.
- Cattle encroachment: In Burkina Faso, there have been problems of encroachment from cattle which can graze on such plots leading to discouragement of the communities who find it hard to stay involved in the restoration process. In Niger, fines can be imposed in such situations.
- Solution: The proposed solution is to engage with forest officers from the beginning of the process so that they are aware of what belongs to whom, to avoid conflict when harvesting the resources.

1.2.3 Mali case study: plantation techniques involving bare roots (*Adansonia digitata*) (Annexe 9)

This presentation by Dr Sidi Sanogo and Dr Bokary Kelly (IER Mali) reviewed the planting of bare roots of *A. digitata* in farmers' fields, which was tested at Bankass in the region of Mopti. Preliminary results are promising, although a few challenges need to be addressed, including damage due to animals, damage due to humans and droughts.

Full methodology and detailed results of this technique are available in the presentations section at the end of this report.

In conclusion, only the initial results of plantation activities including that of tall bare roots of *A. digitata* are available (regarding time-frame and areas). Despite the challenges encountered, plantations involving tall *A. digitata* plants are promising based on the observed resumption rates and the high motivation of farmers to support this very important species in that zone.

1.2.4 Burkina Faso case study: Herbaceous species, techniques and results (Annexe 10)

This presentation by Dr Lassina Sanou (CNSF Burkina Faso) focused on the herbaceous species planting techniques carried out in the areas of Seno (Dori) and Soum (Djibo) in Burkina Faso. Species were chosen based on their socio-economic interest, their use by local communities, their adaptation to environmental conditions, and ability to strengthen structures developed for "Gestion Durable des Terres" (GDT), e.g. half-moons techniques. Three species have been selected through this process: *Adropogon gayanus, Cymbopogon schoenanthus* and *Pennisetum pedicellatum*. Seeds of these species were harvested, germination tests carried out and seeds sown either to reinforce a structure like half-moons or in line. Results show that germination rates are above 90% and the role for strengthening structures are encouraging. Such species also provide fodder, hay, material for mats (seccos) and roofs.

It is recommended that this technique is further promoted.

1.2.5 Niger case study: Building Non Wood Forest Products businesses that are inclusive to rural women – Mr Maman Adda CNSF Niger (Annexe 11)

This presentation by Mr Maman Adda (CNSF Niger) highlighted the activities and results of an initiative led by the company Sahara Sahel Foods (SSF). This company is not a partner of the

Kew GGW cross-border pilot project but its activities in Niger demonstrate an interesting approach to the sustainable extraction of dryland species - which the Kew GGW cross-border pilot project has focused on – and the production of derived products by women (farmers' wives, pastoralists, refugees from Boko Haram and beggars). SSF processes their produce through debittering, oil expelling, flour and couscous milling, packaging etc. SSF sells the finished products in various urban stores. The women engage in the direct seeding of new trees in order to restore their land. In order to avoid depletion of natural resources, quotas are imposed for suppliers and no new supplier networks may join. Interestingly, activities can be carried out nearly all year round due to the different times of use of the species.

As a result, activities of SSF combat desertification, reduce biodiversity loss, malnutrition and diet-related diseases, poverty and terrorism.

A video produced by SSF was then shown to participants.

Products of SSF were also shown.

Figure 2 - Demonstration of NTFPs produced by SSF

2. Day 2 (29th March 2017)

2.1 First Session Day 2

The first session of the second day consisted of four presentations on project data management by Mr Regis Oubida (CNSF Burkina Faso), as well as an example of how the project can analyse its data to understand progress towards international biodiversity conservation targets such as the CBD - Global Strategy for Plant Conservation target 9 by Mr Stéphane Rivière (RBG Kew). Genetics aspects in forest restoration were also presented by Dr Barbara Vinceti (Bioversity International).

2.1.1 Data management/Database of the Kew GGW cross-border pilot project Burkina Faso-Mali- Niger (Mr Regis Oudiba CNSF – Burkina Faso) (Annexe 12A)

The first presentation was related to the database and concerned its objectives, data structure, data collecting, constraints in data management (mainly related to the various systems of monitoring in place, missing data/information due to lack of harmonisation) and perspectives in terms of completing data collection and use of data for publication.

Key points discussed:

- Harmonisation in data collection: A question was raised regarding the state of harmonisation of data collection and storage system. It turned out that such systems are not totally harmonised but monitoring forms are being designed for all necessary data and will be discussed with the National GGW Focal Points. Using these forms in the field should minimise the problems that have been met with regarding the lack of harmonisation of data at the national GGW level.

  It was also suggested that project leads should collaborate with the people in charge of data management in the respective countries as National GGW Focal Points could sometimes be busy or absent.

- Role of Partners: It was stated that clarifying the role of each Partner would improve both the data collection and M&E. Participants pointed out that this aspect is rather related to activity planning and budgeting which has to come from the management

level of the Kew GGW cross-border pilot project and its interaction with other GGW projects such as AAD.

- Living fences: It was noted that data monitoring forms do not include the case of living fences. It turned out that living fences have been included in activities but no data have been specifically collected yet. The recommendation was to add relevant indicators in the monitoring form for collecting such data.

  It was also suggested that the management should think about global structure for data collection which may be useful for the GGW project at a national level. The resulting structure must fit all data coming from the different projects independently (Kew GGW cross-border pilot, AAD, FLEUVE) and ways to manage similarities and differences in the data collection process must be addressed.

2.1.2 The use of Collect-Earth for the GGW Kew cross-border project (Mr Regis Oudiba CNSF – Burkina Faso) (Annexe 12B)

Collect Earth[3] is a tool meant to address biophysical monitoring and the presentation went through the methodology for using the tool, expected outputs and constraints (mainly focused on internet connection problems, not well designed forms, errors in GPS coordinates and the lack of sufficient satellite images - old and recent ones).

Key points discussed:

- Collaboration with AGRHYMET: Although collaboration should solve the problem of access to images, it was agreed that in Burkina Faso, Mali and Niger there is a real lack of images and that such collaboration would not overcome all difficulties in this domain. In the case of this collaboration with AGRHYMET[44] an agreement was reached for training technicians on the Collect-Earth tool. It was also emphasised that Collect-Earth is rather more appropriate *for large scale* uses in environmental impact assessment and not for the assessment of activities. Adapting this tool to a small scale,

[3] http://www.openforis.org/tools/collect-earth.html
[4] http://www.agrhymet.ne/eng/presentation.html

as for the Kew GGW cross-border pilot project, may be useful but the reliability of generated outputs may be low.

- Different number of plots analysed: Participants pointed out that a fair comparison across countries may not be possible as the number of plots analysed was not the same for all countries.

- Ownership of plot used for testing the tool: It was asked if all plots belong to the Kew GGW cross-border pilot project activities. The answer was positive but some activities may have been undertaken on plots already targeted by other projects and NGOs such as Tiipaalga.

2.1.3 2020 GSPC targets 8 & 9 (Stéphane Rivière – RBG Kew, UK) (Annexe 13)

This presentation showed a case study where the database system of an EU-funded project for European-native seed conservation (ENSCONET) has managed to assess progress against international biodiversity conservation targets such as GSPC targets 8 and 9.

In conclusion, it was asked how the Kew GGW cross-border pilot project could focus on a target, e.g. Aichi Target 15 i.e. "*By 2020, ecosystem resilience and the contribution of biodiversity to carbon stocks has been enhanced, through conservation and restoration, including restoration of at least 15 per cent of degraded ecosystems, thereby contributing to climate change mitigation and adaptation and to combating desertification*."
If the Kew GGW cross-border pilot project was to tackle such a target, the project would first need to define:

1 – How to qualify degraded ecosystems?
2 – How to qualify restored ecosystems?
3 – How to quantify restored ecosystems?

Key points discussed:

- Link with international commitments regarding project targets: It was a national issue in the case of the European project

- How this experience can help the pilot project in data handling and valuing, and in establishing targets: Regarding this point, the suggestion was to refer to existing data from previous projects like UPP but reliable data are important and necessary.

2.1.4 Genetics of reforestation: research and case studies (Dr Barbara Vicenti, Bioversity International) (Annexe 14)

This presentation focused on the genetic aspects in forest restoration and highlighted their relevance with regard to seed collection practices, in particular the identification of seed sources and their quality.

Participants were informed of a new tool (Restoration-Decision Support tool or "RESTOOL") being developed by Bioversity International to guide the selection of species and seed sources for the restoration of tropical forests, including consideration about future climatic conditions (designed for restoration initiatives in Colombia).

Participants were also informed of a new project in Burkina Faso (ADA-Restore) on nutrition-sensitive forest restoration to enhance the capacity of rural communities to adapt to climate change.

A paper on the nutrient composition of selected indigenous fruits from sub-Saharan Africa and a study on the genetic diversity of *Parkia biglobosa* across its range were also presented.

Key points discussed:

- New tool for identifying seed sources adapted to future climatic conditions: RESTOOL at the moment includes only those species for which propagation protocols exist; the tool is quite data-intensive, it requires considerable efforts to compile the information necessary to characterize each species in order to run the tool and extract the information about species and seed sources adapted to future site conditions, meeting the restoration objectives specified.

- Use of climatic models to anticipate future climatic change: this area could be improved, e.g. though the use of refined dataset with climatic data. At the moment

the only available global dataset is WORDCLIM but it is based on extrapolations from weather stations located very far apart in some regions of the world.

- Link with previous studies like Genetic Diversity of *Parkia biglobosa* studied by Dr A.S Ouedraogo: genetic diversity in *Parkia biglobosa* has been studied since the mid-90s initially by Dr A.S Ouedraogo; in the meantime the quality of genetic markers has improved so past results were are valuable though more recently they have been coupled with studies based on more advanced genetic tools.

2.2 Second Session Day 2

The second session consisted firstly of a presentation of landscape restoration programmes in Kenya, as well as the OECD Forest Seed and Plant Scheme by Dr William Omondi (KEFRI - OECD). Following this a presentation was led by Dr Paolo Ceci (RBGK's socio-economic consultant) on the update on socio-economic and ethno-botanic data analysis of the project as well as an on-the-ground stakeholder case study in Mali.

2.2.1 Useful Plants Project in Kenya (UPP and Sainsbury) William Omondi (Annexe 15)

Three quarters of Kenya consists of arid tropical areas and the project aims to address forest degradation and habitat destruction within these areas.

The objectives of the project are to:

- Transfer technical knowledge to communities
- Achieve forest diversity that enhances ecosystem services
- Tackle economic and environmental challenges

It is a participatory project where the prioritization of the species to be propagated is done with the producers. Capacity building includes training in species propagation, seed handling, quality control, harvesting, etc., and provision of equipment to communities through the project. Reforestation is carried out using seedlings from seed collected from several trees of local species. The participants shared with each other the seeds they have collected.

Research has been carried out on:

- Manipulation and dissemination of *Garcinia buchenanii* for which the germination rate is low.
- Provenance trials with *Melia sp.* (native species) and *Eucalyptus sp.* Results show that *Melia* is resistant to termites and drought and more advantageous than *Eucalyptus*. As a consequence, *Melia* seedlings have been planted by farmers. Study tours have also been conducted for producers who have visited other regions.

The significant results achieved by the project are:

- Capacity building for producers
- 150,000 planted seedlings
- Increased incomes through the sale of seeds

- Exploitation of NTFPs
- Research/monitoring results focusing on *Melia* growth vs. *Eucalyptus* growth

In conclusion:

- Increased plant cover and biodiversity
- Strengthened capacities of producers in propagating and using plants
- Development of guidelines for the establishment of stands and seed orchards

The main problems encountered during the implementation of the project were:

- The devastation of plantations by termites
- The use of plant extracts by populations
- Frequent droughts
- Availability of water in nurseries, creating a limitation in the installation of nurseries
- Insufficient financial resources

2.2.2 OECD Forest Seed and Plant Scheme: Challenges and Opportunities (Dr William Omondi KEFRI-OECD) (Annexe 16)

This presentation by Dr William Omondi showed that there has been low participation of African countries in the OECD system, probably because participants have to pay for their participation. To address this, meetings have been scheduled in Africa. It is also important to note that international trade in tree seeds and shrub seeds is low compared to cultivated species.

The OECD therefore encourages the production and use of seeds of forest species in a legal manner. To this end, OECD countries use the same protocol for inspection, production, sampling and testing of seeds. A certificate then guarantees the traceability of the material. The use of DNA testing is seen to be a solution to determine the origin of seed which can improve seed exchange and limit wrong information being shared. It is also possible to use digital codes that can be verified by SMS. Each country must have its certificate accompanying the seed lots exchanged. The process goes through an electronic certification system that facilitates sales and reduces errors. Data on stands of certified species can then be transferred to Google Earth. The link between OECD and GGW is that GGW should use these procedures for the exchange and use of seeds of the species thus encouraging GGW countries to participate in the OECD system.

Recently Burkina Faso has listed five species in the OECD system.

In conclusion, it is important to use seeds of good quality for successful implementation of the GGW, so joining the OECD would be the right move.

2.2.3 Update on socio-economic and ethno-botanic data analysis (Annexe 17)

Dr Paolo Ceci explained that Mali was chosen to develop a representative project case study as this country holds the most complete set of data.

Ideally a M&E plan should be in place at the beginning of each project but this is often complicated as at that moment the activities may not be well mastered yet. Besides, there may be a difference between reality and practice on the ground hence the importance of putting in place a good follow-up plan to achieve results.

Two main types of changes can be monitored: results (outputs) and longer-term changes (outcomes). Measurements and observations can be made through quantitative and qualitative methodologies. Regarding a species performance indicator: two assessments are made at the beginning and after the planting season.

The project was based initially on an ethno-botanical study with a non-random sampling of 161 respondents. 71 species have been selected. The data have been partially explored but further analysis is being carried out.

For socio-economic surveys, to have a margin of error of 8% and a confidence interval of 95%, 150 respondents were required, but only 130 people were surveyed (same respondents as for the ethno-botanical survey). 20 more people will be surveyed to reach this number.

A semi-structured interview was conducted with focus groups to understand socio-economic impacts and constraints on the ground.

Kew plantations are young and do not yet produce so their potential for production can only be indirectly estimated. This assessment shows an economic potential for the production of juice of *Balanites aegytiaca*, *Sclerocarya* and *Tamarindus indica*.

The nurserymen were technically assisted by Kew and sold their products to Kew and other customers, increasing their annual income by 20%.

In Dimbal, the Kew GGW cross-border pilot project supports female vegetable producers and the sale of fruits and vegetables may significantly increase their income.

2.3.4 Socioeconomic impacts of fenced plots ("mise en défens (MED)" in Burkina Faso - Serge Zoubga, Tiipaalga (Annexe 18)

The objectives of the Tiipaalga NGO were to:

- Promote soil restoration techniques
- Value trees through NTFPs
- Mitigate the effects of climate change

Procedures and workflows for the implementation of fenced plots were presented, as well as the outcomes in the increase of forest cover. Results show that:

- 177 woodlots were protected and secured in 55 villages and 7 communes on 500 ha reached survival rates close to 100%.
- Behaviour change of the producers who adopt such techniques outside MED plots

Since 2012, a booklet has been made available to the owner of a MED, which records the income generated by each MED. In total 161 beneficiaries were included in this evaluation and products such as forage, wood, seeds, fruits, leaves, honey and medicinal plants were assessed.

Other benefits include:

- The fence being respected within the community
- The community benefitting from fodder
- Access to medicinal species on demand
- Reappearance of wildlife on sites

Incomes are used to: make any kind of expenditure (92%), reinvested in the MED (4%) and even saved (4%).

Key topics discussed:

- Cost: Cost of installation of a MED which is around 3 CFA million for 3ha (all inclusive)

- Data transfer: The data produced are transferred to the GGW national coordination

- Sale of seeds: The seeds produced in the MEDs are sold to Tiipaalga (CFA 5,000 / kg for herbaceous plants and CFA 2,500 / kg for woody plants)

- Support for MEDs: Tiipaalga sets up about 15 community MEDs annually but also helps individuals to install their own MEDs

- Livestock fencing: Can production in MEDs stabilize livestock? Producers are advised to fence animals in to collect their manure for the compost pits

SWOT analysis

3. Day 3 (30th March 2017)

A SWOT analysis was run for each country to help evaluate the project's strengths, weaknesses, opportunities and threats.

3.1 Burkina Faso

Strengths	**Weaknesses**
• Good level of communication about planned activities and results achieved between the three countries • Relying on different actors for land restoration • Capacity building for CNSF staff for production of seeds • Involvement of local communities for production of seeds and propagation • Local technicians trained • Implementation of a monitoring and evaluation system	• Gaps in M&E system • Insufficient collaboration with NGOs • Misinformation provided to some of the actors in the field and at national coordination level (objectives, expected results) • Lack of clarity of synergy with other partners (AAD) • Kew's involvement has slowed down end of 2015/beginning of 2016 following departure of Kew's project leader, Dr Moctar Sacandé. • Restoration techniques have not been participative enough • Lack of protection of plantations (fencing)
Opportunities	**Threats**
• Possible synergy with other projects involved in the area of land restoration (EU-ACP-FAO Action Against Desertification (AAD) project and EU-GM-UNCCD FLEUVE project) • Insertion of action plan of GGWSSII through national coordination • Project activities to be inserted into Community Development Plans • Associations and NGOs very active in the intervention area • Partnership with local radio: annual lump sum for a number of broadcasts (450,000 CFA /year). Possibility to translate into different local languages too.	• Insecurity in the area of Djibo due to terrorist activities in the region • Pressure from cattle grazing in plantations

3.2 Niger

Strengths	Weaknesses
• Framework and technical structures • Targets to restore land defined at a political level • Availability of areas for seed collecting • Existence of infrastructures for conserving seeds	• Lack of harvest tool • Lack of incentives for collectors • Weak communication between partners • Wandering animals • Low awareness of environmental factors and advantages, and socio-economic factors
Opportunities • No accessibility to certain zones during dry season	**Threats** • Insecurity/Safety issues

3.3 Mali

Strengths	Weaknesses
• In line with politics for GDT ("Gestion Durable des Terres") • Local structure presence in NRM • Nursery growers involved with high plant production capacity • Support from NGOs and "Eaux et Forêts", Sahel Eco and territorial collectives) • Motivation of community • Link with different partners • Belonging to international network: Kew, Seed centres, FAO, Bioversity International • Diversity of data generation: social and technical • Collaboration to reinforce capacity	• Difficult to plan the production of plants • Lack of communication between all the stakeholders involved in NRM (e.g. NGOs pay nursery growers at a higher price than RBGK) • Lack of formal agreements or framework of collaboration with other local partners (e.g. no formal convention with Sahel Sahara Eco) • Late transfer of funds • Lack of visibility and communication on the activities of the project (would like to engage more with local radios!). The project needs to be more visible through the National Focal Point.
Opportunities • Favourable context to carry out activities • Willingness from stakeholders to restore land • Strong political will for the management of natural resources • Presence of NGOs to support the management of natural resources	**Threats** • Insecurity/Safety issues • Distance of intervention sites • Problem of water availability due to low rainfall and deep water table • Animal encroachment • Land tenure problems

Recommendations proposed by workshop participants

4. Country-level Recommendations

4.1 Burkina Faso

4.1.1 Implementation of protection for plantations

Action Point:

- National Focal Points to initiate the organisation of a meeting and suggest dates to develop further site fencing.

Comment: A budget for the protection of plantations has already been included in the 2017 budget. Part of the budget for 50,000 seedlings can be used for fencing the sites (maintenance or improvement if needed)

4.1.2 Develop a strategy to establish synergy with other projects which are involved within the GGWSSII (national coordination to decide on prioritisation of activities).

Action Point:

- National Focal Points to initiate the organisation of a meeting and suggest dates to develop further synergy.

Comments: Establish mechanisms of collaboration with national coordination to check the action points and annual reports. Plan regular meetings. Synergy with AAD: national coordinators of FAO to be contacted. At international level: meeting between Kew and FAO-AAD (either face to face or by conference call by end of April 2017, between 19th and 24th, date to be confirmed). At national level: planning, monitoring and evaluation to be harmonised between the three Kew GGW cross-border pilot project Coordinators as well as the three National Focal Points + Kew management team + AAD-FAO management team + FLEUVE management team by end of 2017.

4.1.3 Strengthen the M&E system and capitalization

Action Points:

- The M&E system has to be strengthened and carried out across the three countries.
- The socio-economic consultant to the project is to revise the data produced in Mali, perform a quality check and identify weaknesses, and establish what the situation is.

- M&E data are to be sent to Regis Oubida and to be inserted into the database (RO to email focal points and cc Kew for data collection) *twice*, i.e. at the end of the rainy season (November 2017) and the dry season (June 2017). The external socio-economic consultant to the project must be cc-ed.

  Comments: M&E already budgeted for in the 2017 budget sent to Partners.

4.1.4 New proposal for a possible Kew GGW project

Action point:

- Produce a short concept note for each of the following ideas:

Sacred forests and other protected/fenced sites: surveying plant diversity and reinforcement through conservation and propagation and/or protection	Lassina Sanou
Genetic and nutritional diversity of selected species and provenances	Stéphane Rivière Barbara Vinceti
Oil nutrient content and chemical compounds quality checks. Stéphane Rivière to investigate feasibility; case studies on electrical material used in Sub-Saharan countries	Stéphane Rivière Paolo Ceci
Land restoration through herbaceous species including fonio	To be produced by Paolo Ceci, Sidi Sanogo and Bokary Kelly. To be reviewed by Lassina Sanou and Maman Adda

4.2 Niger

4.2.1 Joint seed collecting shared between CNSF and local populations for 1-2 weeks

Action Point: Maman Adda to adapt CNSF budget to involve and financially compensate local staff (see IER example).

4.2.2 Share reports with all stakeholders

Action Point: MA to share reports amongst stakeholders to maintain good project communication.

4.2.3 Motorbikes

No Action Point

Comment: Two motorbikes (125 Yamaha) have already been purchased by Kew for CNSF Niger in 2016.

4.2.4 Site protection (cf. Tiipaalga)

Action Point: Create committees where cattle herders would be involved in order to assess the possible implementation of fenced areas.

Comment: It may be too late to achieve it in 2017 (Maman Adda to confirm); if still possible, it should use funds for Output 6 for year 2017 (£924).

4.2.5 Study tours and experience exchanges in other Niger areas (example of SOS Sahel with population and groups of people, traditional therapists, blacksmiths etc).

Action Point: Selection of 6x2 (12) persons.

Comment: Same recommendation as in bullet point 4.2.4.

4.2.6 Awareness raising for beneficiaries on benefits of plantations in terms of NTFPs harvest

Action Point: Same recommendation as in bullet point 4.2.4.

4.2.7 Second phase of the project - Extend the project in other areas of the GGW where SSF has been involved. For example include sacred-forests (experience of Kew with UPP project and traditional therapists, important to prevent sacred forests from losing biodiversity)

No Action Point

Comment: Kew management to report that there is an interest to scale up, Kew to transmit the request to FAO-AAD team. NB: new sites interested in NTFPs production.

4.3 Mali

4.3.1 Use of priority useful species highlighted by the project

Action Point: Sacred forests and other protected/fenced sites: surveying plant diversity and reinforcement through conservation and propagation and/or protection

4.3.2 The use of ANR and the use of tall bare-root plants to be highlighted where possible

Action Point: To be reported as one of the successes of Kew-GGW phase 1, to be consolidated in a possible proposal for Kew-GGW phase 2

4.3.3 Raising farmers' awareness of outputs delivered by the project

Action Point: To be carried out as budgeted for in output 6 for year 2017

4.3.4 Share experiences and practices with other partners of the project

Action Point: To be carried out as budgeted for in output 6 for year 2017

4.3.5 Engage discussion with different partners (technical services of collectives) to strengthen outputs

Action Point: To be carried out as budgeted for in output 6 for year 2017

4.3.6 Implement a system of prize-giving for best farmers

Action Point: To be carried out as budgeted for in output 6 for year 2017

4.3.7 Carry on the activities of the project (2nd phase)

Action Point: As above

4.3.8 Think about solutions to address water supply and animal encroachment

No Action Point

Comments: Need to think about possible solutions. For example, solar systems to draw up water from bore holes? (Note: expensive, around CFA 10-19 million).

4.4 Management Team

4.4.1 Maintain communication of each project team with the GGW National Focal points of each country (Haoua Coulibaly, Adama Doulkom & Abdou Maisharou)

4.4.2 Arrange regular management team catch up meetings on landline phone

4.4.3 Mali National Coordinator (Sidi Sanogo) to review activities in the two other countries

4.4.4. Ensure data are sent to database manager (Regis Oubida) to go into the database after each M&E mission (Regis Oubida to email focal points and cc Kew for data collection)

4.4.5 Add indicators into the monitoring form for collecting such data (Action Point Regis Oubida)

4.4.6 Team to think about a global structure for data collection which may be useful for the GGW project at a national level

Action Point: The three National Focal Points to ensure that the resulting data collection structure fits all data coming from the different projects independently (Kew GGW cross-border pilot, AAD, FLEUVE) and to address ways to manage similarities and differences in the data collection process.

Programme

Venue: **Atlas Kasbah Ecolodge conference room**

Monday 27th March

All day: **Arrival of participants**

Tuesday 28th March (Day 1)

09:00 – 09:15 **Welcome and Introductions**
Dr. Tiziana Ulian, Royal Botanic Gardens, Kew (RBG Kew), U.K.
15 mins

09:15 – 09:45 **Presentation of the GGW National project in Mali**
Mrs. Haoua Coulibaly (National Focal Point), Bamako, Mali
20 mins + 10 mins Q&A

09:45 – 10:15 **Presentation of the GGW National project in Burkina Faso**
Mr. Doulkoum Adama (National Focal Point), Ouagadougou, Burkina Faso
20 mins + 10 mins Q&A

10:15 – 10:45 **Presentation of the GGW National project in Niger**
Mr. Abdou Maisharou (National Focal Point), Niamey, Niger
20 mins + 10 mins Q&A

10:45 – 11:15 **Coffee/Tea Break**

11:15 – 11:45 **Overview of 'Action Against Desertification' project and links with GGW cross border pilot project Burkina-Mali-Niger**
Mr. Marc Parfondry, FAO, Rome, Italy
20 mins + 10 mins Q&A

11:45 – 12:15 **Overview of 'Great Green Wall' cross border pilot project Burkina Faso-Mali-Niger: background and progress**
Dr. Tiziana Ulian and Mr. Stéphane Rivière, RBG Kew, U.K.
20 mins + 10 mins Q&A

12:15 – 12:45 **Data management / Database of GGW cross border pilot project Burkina Faso-Mali-Niger, and monitoring of sites using CollectEarth software**
20 mins + 10 mins Q&A
Mr. Regis Oubida, CNSF, Ouagadougou, Burkina Faso

12:45 – 13:00 **Example of data analysis to inform progress towards international conservation targets: the European Native Seed Conservation Network (ENSCONET) database and its contribution towards the Global Strategy for Plant Conservation targets 8 & 9**
Mr. Stéphane Rivière, RBG Kew, U.K.
10 mins + 5 mins Q&A

13:00 – 14:30 **Lunch**

14:30 –14:45 **Review of recommendations produced by the workshops in Sikasso (Mali) in 2013 and Niamey (Niger) in 2015**
Dr. Sidi Sanogo, IER, Sikasso, Mali
15 mins

14:45 – 15:15 **Mali case study: Assisted Natural Regeneration (ANR) and plantation techniques involving bare roots (*Adansonia digitata)***
Dr. Sidi Sanogo and Dr. Bokary Kelly, IER, Mali
20 mins + 10 mins Q&A

15:15 – 15:45 **Burkina Faso case study: Herbaceous species, techniques and results**
Dr. Lassina Sanou, CNSF, Burkina Faso
20 mins + 10 mins Q&A

15:45 – 16:15 **Niger case study: capacity building and example of potential income generation activities (Sahel Sahara Foods)**
Mr. Maman Adda, CNSF-N, Niger
20 mins + 10 mins Q&A

16:15 **End of Day 1**

Wednesday 29th March (Day 2)

09:30 – 09:45 **Recap of 1st day, introduction of 2nd day**
Dr. Tiziana Ulian and Mr. Stéphane Rivière, RBG Kew, U.K.
15 mins

09:45 – 10:15 **Genetics of reforestation: research and case studies TBC**
Dr. Barbara Vinceti, Bioversity International, Italy
20 mins + 10 mins Q&A

10:15 – 10:45 **Useful Plants Project in Kenya (MGU and Sainsbury) TBC**
Mr. William Omondi, Science Leader / Advisor; Seeds, KEFRI, Kenya
20 mins + 10 mins Q&A

10:45 – 11:00 **The OECD Forest Seed and Plant Scheme: Challenges and Opportunities TBC**
Mr. William Omondi, Science Leader / Advisor; Seeds, KEFRI, Kenya
10 mins + 5 mins Q&A

11:00 – 11:30 **Coffee/Tea Break**

11:30 – 12:00 **Update on socio-economic and ethno-botanic data analysis**
Presentation of strategy adopted focusing on the Mali case study: matrix development, focus group discussions and quantitative analysis
Dr. Paolo Ceci
20 mins + 10 mins Q&A

12:00 – 12:30 **On-the-ground stakeholder case study in Burkina Faso**

Generation of economic benefits for local communities through project activities
Mr. Serge Zoubga, Tiipaalga Association, Burkina Faso
20 mins + 10 mins Q&A

12:30 – 14:00 **Lunch**

14:00 – 14:15 **Work plan, Niger (2017)**
Mr. Maman Adda, CNSF Niger
10 mins + 5 mins Q&A

14.15 – 14.30 **Work plan Burkina Faso (2017)**
Dr Lassina Sanou, CNSF, Burkina Faso
10 mins + 5 mins Q&A

14:30 – 14:45 **Work plan Mali (2017)**
Mr Kelly Bokary, IER, Mali
10 mins + 5 mins Q&A

14:45 – 15:30 **Discussion with all participants:** How to improve and maximise collaboration and synergies between projects to generate positive and long-lasting outcomes
45 mins

15:30 – 16:00 **Coffee/Tea Break**

16:00 – 17:00 **SWOT Analysis (Strengths, Weaknesses Opportunities, Threats)**
Breakout groups
1 hour

17:00 **End of Day 2**

Thursday 30th March (Day 3)

09:30 – 10:30 **Presentation of SWOT Analysis (All)**
1 hour

10:30 – 11:00 **Coffee/Tea Break**

11:00 – 12:00 **Recommendations to be proposed by the workshop (All)**
60 mins

12:00 – 13:00 **Lunch**

13:00 Visit to sustainable Argan oil production at Association Ibn Al Baytar
https://www.facebook.com/AssoIbnalbaytarMA

List of participants

Participant name	Position	Organisation
Mr Abdou Maisharou	GGW Focal point Niger	Coordinator Niger
Dr Adama Doulkom	GGW Focal point Burkina Faso	Coordinator Burkina Faso
Dr Barbara Vinceti	External	Bioversity International, Italy
Mrs Haoua Coulibaly	GGW Alternate Focal point Mali	Coordinator Mali
Dr Kelly Bokary	Kew's pilot project assistant Mali	Institut Economie Rurale-Mali
Dr Lassina Sanou	Kew's pilot project coordinator Burkina Faso	CNSF-Burkina Faso
Mr Maman Addatcho	Kew's pilot project coordinator Niger	CNSF-Niger
Mr Marc Parfondry	Forestry expert, AAD's project	FAO Italy
Dr Paolo Ceci	Socio-Economic consultant	Kew Royal Botanic Gardens UK
Mr Regis Oubida	Kew's pilot project data manager	CNSF-Burkina Faso
Mr Serge Zougba	Head of Tiipaalga	Tiipaalga Burkina Faso
Dr Sidi Sanogo	Kew's pilot project Mali coordinator and region coordinator	Institut Economie Rurale-Mali
Mr Stéphane Rivière	Kew's pilot project coordinator	Kew Royal Botanic Gardens UK
Dr Tiziana Ulian	Kew's pilot project manager	Kew Royal Botanic Gardens UK
Dr William Omondi	External	KEFRI Kenya

Annexes: Presentations

Annexe 1

La réserve de biosphère de l'arganeraie (RBA) & le Tourisme

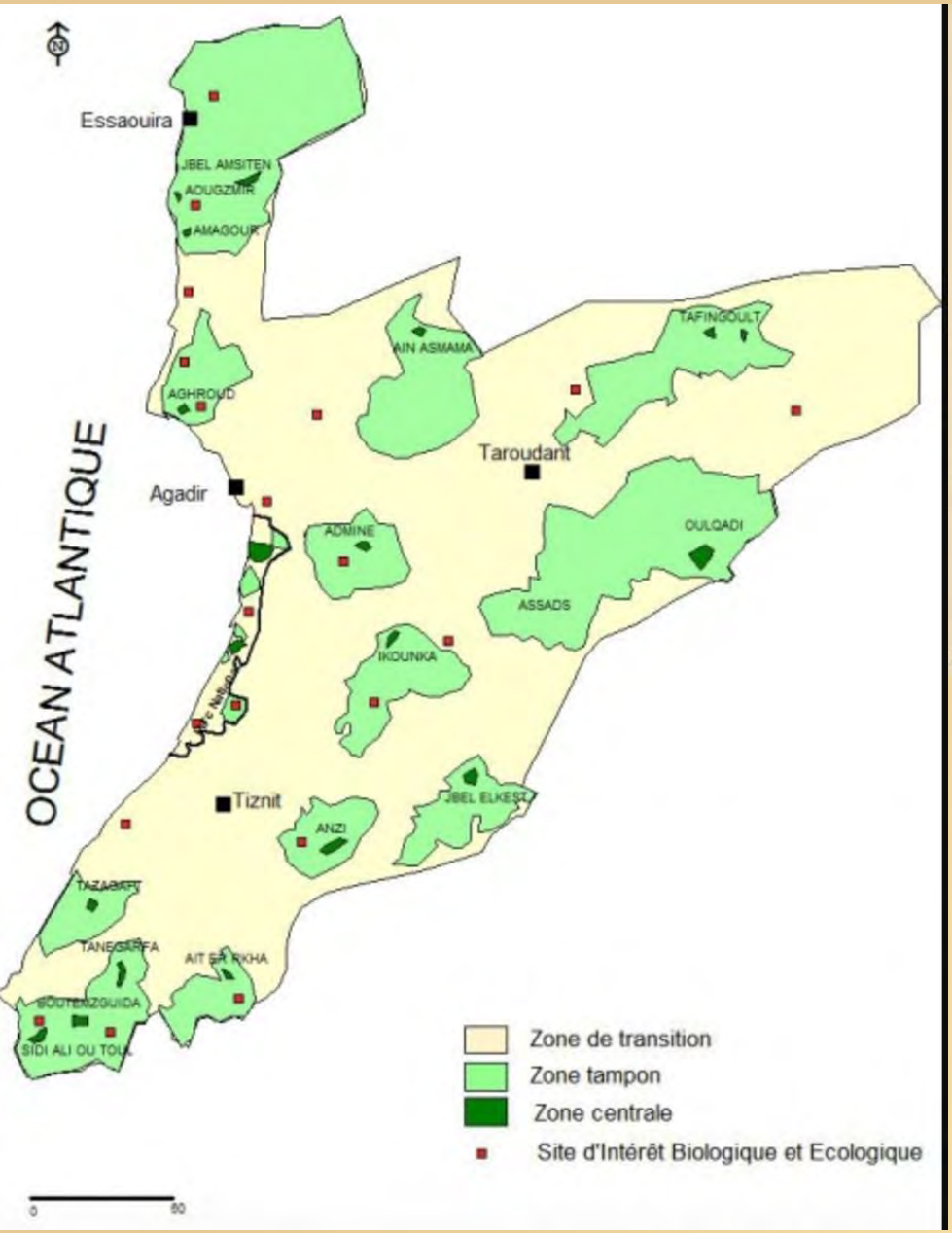
Présentée par M. Hassan ABOUTAYEB
•

Mardi 28 mars 2017

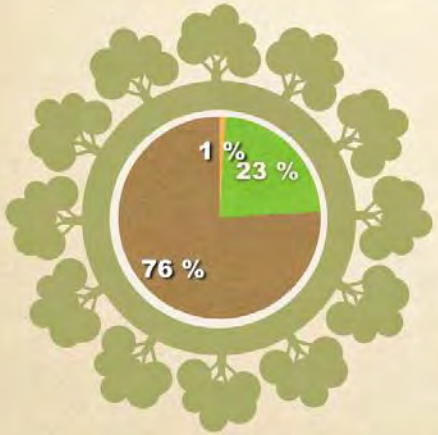
Sommaire

1. L’arganeraie comme un espace touristique
2. Analyse du tourisme rural dans l’arganeraie
3. Vers le développement d’un tourisme rural durable dans l’arganeraie

1. L'arganeraie comme un espace touristique: Etat des lieux



Distribution of 3 levels of protection

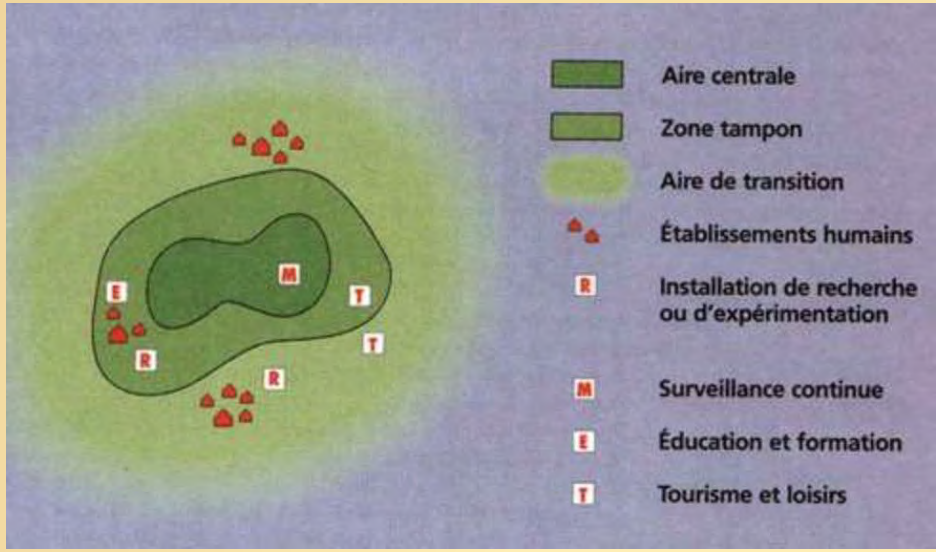


18 core areas :
+ 16.000 ha

13 buffers :
+ 580.000 ha

transitional areas (sustainable development) :
+ 1.900.000 ha

Percentage of the total area of the ABR



1.1 Ressources touristiques

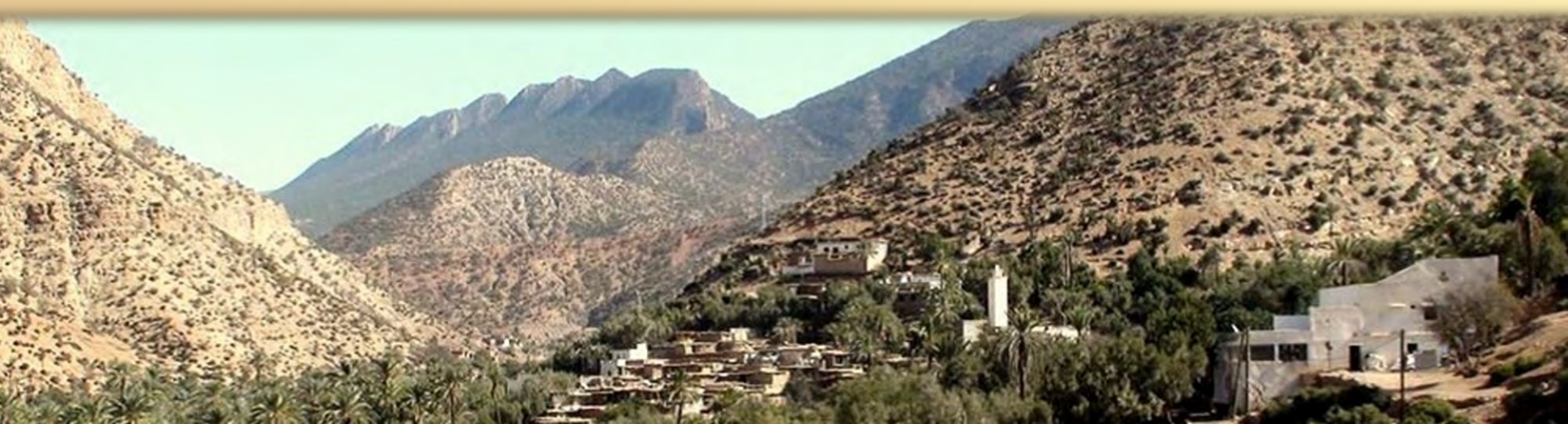
Potentialités naturelles

- Réserve de biosphère de l'arganeraie , PNSM et SIBE…
- Montagne du Haut Atlas et de l'Anti Atlas;
- Plaine riche de Souss Massa;
- Littoral atlantique;
- Oasis de montagne;
- Faune et flore diversifiées…

1.1 Ressources touristiques

Potentialités historiques et socio-culturelles

- Kasbah, Igoudars, villages fortifiés…
- Villes fortifiers (Taroudant, Tiznit…);
- Gastronomie locale, chants et danses;
- Souks et moussems;
- Histoires et légendes,



1.1 Ressources touristiques

Activités connexes

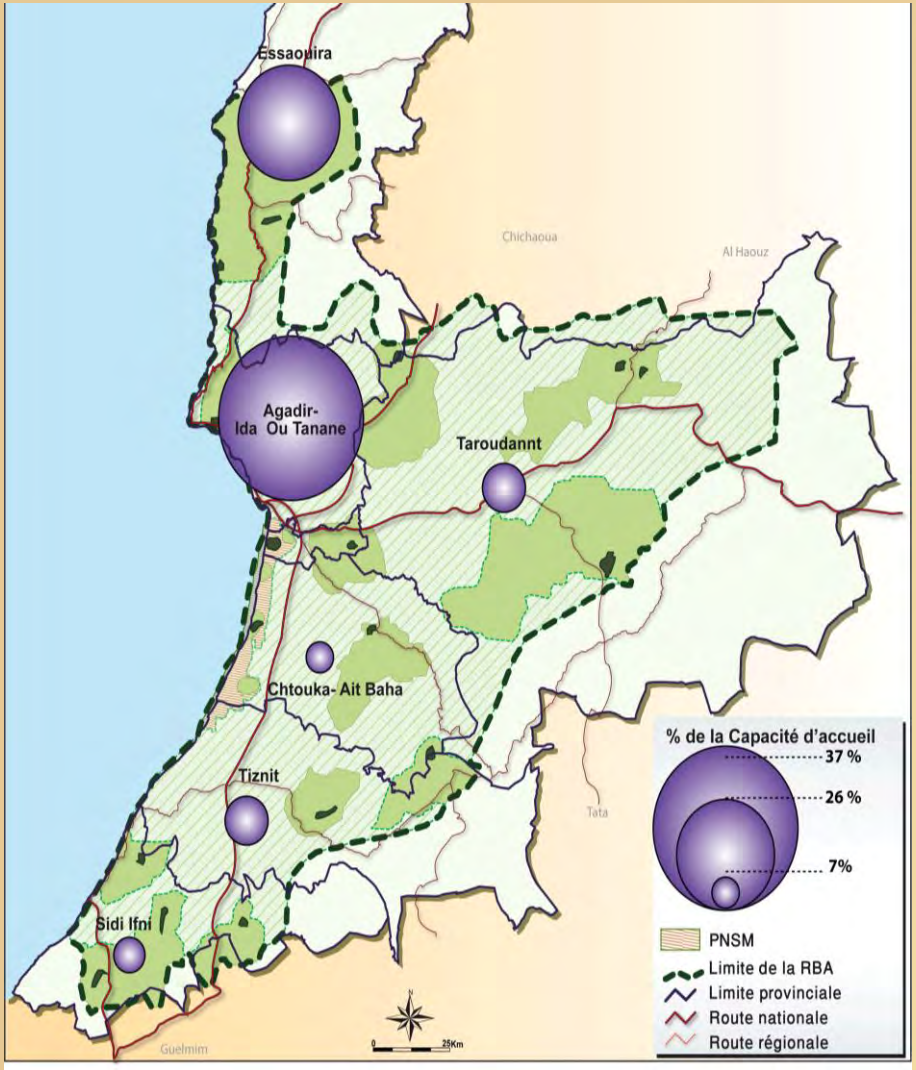
- L'artisanat : Costumes et bijoux , Tapis et couverture , Poterie..
- L'agriculture & L'élèvage;
- Les produits du terroir : huile d' Argan , Amlou,
  le miel aromatisé, le Safran de Taliouine, les figuier de barbarie..

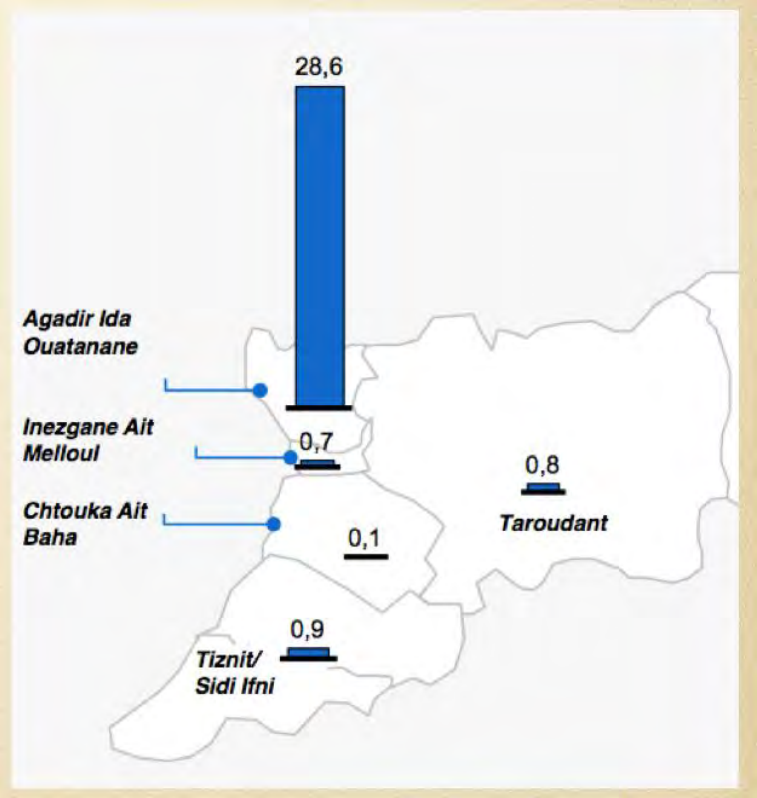




1.2 Offre touristique

Hébergement touristique

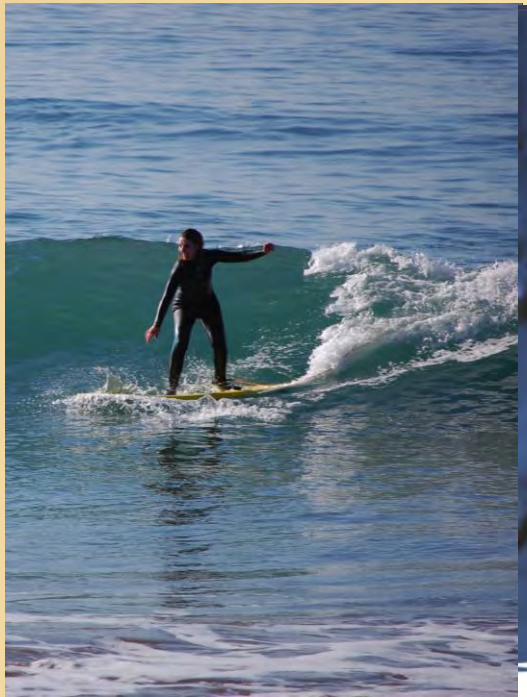




1.2 Offre touristique

Activités touristiques

- Les randonnées pédestres, équestres, muletières, chamelières ;
- Le VTT et des séjours sportifs de pêche, chasse ;
- Activités nautiques : le surf sur la partie littorale (Tamraght, Taghazout, Mirleft, …) ;
- D'autres activités : escalade à Tafraout et au Jbel Lkest et le parapente (Massa, Douira, Legzira, Aglou, Imssouane…).




SURF SPOTS
Imessouane
Tamri
Boilers
Killer Point
Mystery Point
Anchor Point
Hash Point
Panorama's
Devil's Rock
Banana Beach
Anza
Agadir
Tifnit
Sidi-Rbat
Mirleft
Sidi Ifni
Essaouira
Agadir

1.2 Offre touristique

Excursions et circuits touristiques

2. Analyse du tourisme rural dans l’arganeraie (Analyse SWOT)

2.1 Les Forces

- Climat doux et ensoleillé : Longue saison touristique
- Destination balnéaire par excellence (Plages, golf, bien-être)
- Territoire large et hétérogène (plages, montagnes, désert et Oasis …)
- Richesses artisanale et variétés des produits de terroir
- Réserve de biosphère de l'Arganeraie : environ 2,5 Millions Ha
- Aires protégées (Parc National Souss Massa, Parc National Toubkal, Sites d'Intérêts Biologique et Ecologique …)
- Proximité de la destination des principaux aéroports des pays émetteurs (environ 3 heures et demi).
- Arrière-pays riche en patrimoine naturel et socioculturel

2.2 Les faiblesses

- L’absence d’une marque de destination (USP)
- Carence des vols point à point à destination d’Agadir.
- Manque d’animation & lieux d’animation (Parc de jeux, aquaparc, Salle de cinéma, Théâtre,…etc.).
- Manque de centre de congrès.
- Le fléau des chantiers hôteliers inachevés depuis des années, hôtels fermés et celui des établissements hôteliers vétustes.
- Absence de centres d’information touristique
- Faible usage des TIC.

3.Vers le développement d'un tourisme durable dans l'arganeraie

- La forme de tourisme la mieux intégrée dans l'arganeraie est le tourisme rural durable :
  - ✓ Création de revenus pour la conservation et la valorisation des ressources,
  - ✓ Contribution au développement économique et social des populations locales).

Quelques axes pour une mise en tourisme rural durable dans l'arganeraie :

- **Coordination des acteurs locaux,**
- **Mise en place d'une démarche qualité/durabilité**
- **Aménagement du territoire :**
  - ✓ Planification et conception de l'infrastructure;
  - ✓ L'éco-conception des installations;
  - ✓ Gestion des déchets;
  - ✓ Conservation de l'eau et de l'énergie;
  - ✓ Capacité de charge.

Merci de votre attention

Annexe 2

RÉPUBLIQUE DU MALI

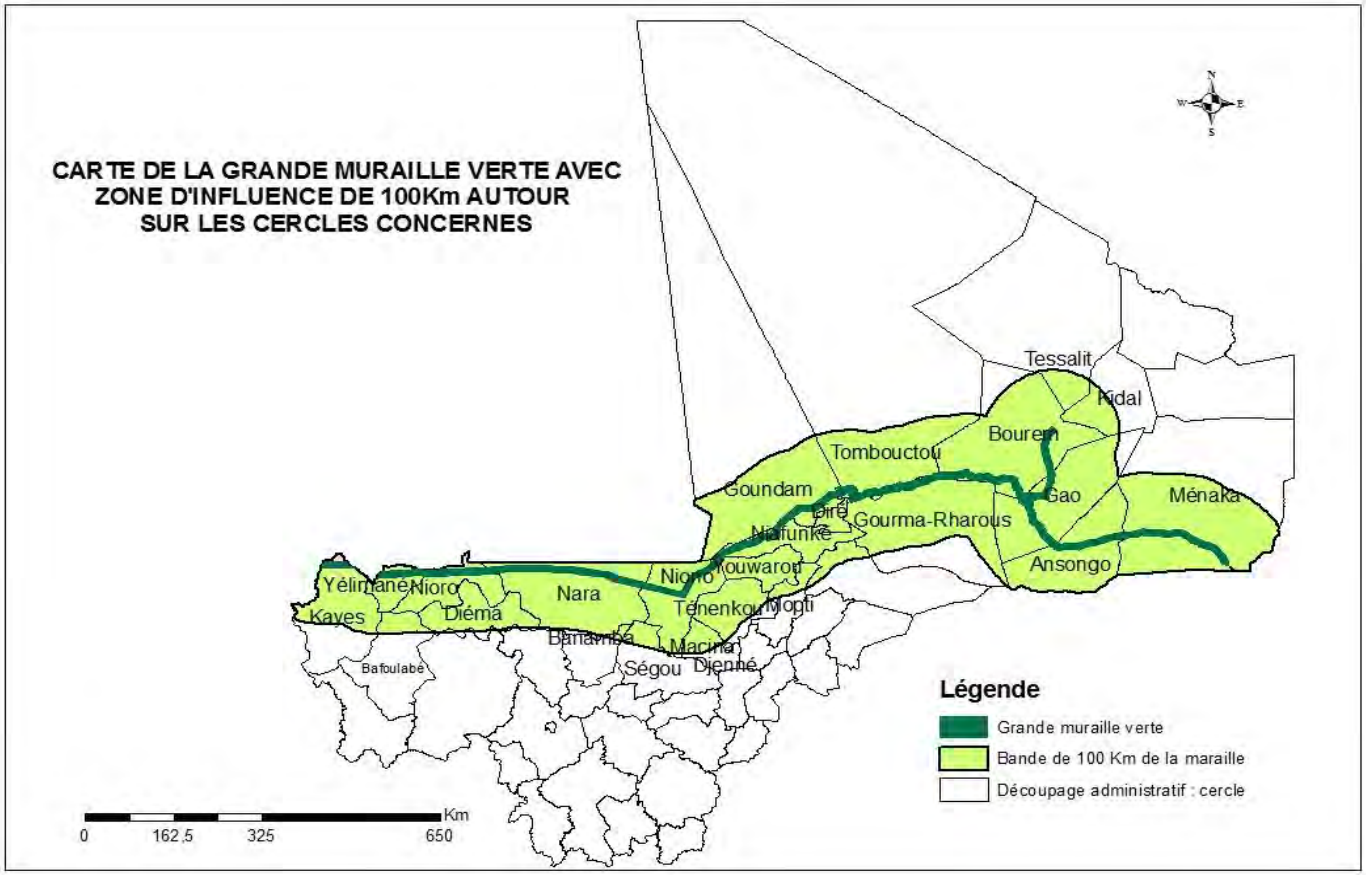
ÉTAT DE MISE EN ŒUVRE DE LA GRANDE MURAILLE VERTE

SOMMAIRE

I.Contexte pays :

- Superficie : 1 241 238 km^2 ;
- PIB : 11 milliards USD; 1 100 USD par habitant ;
- PIB agricole : 38,8% ;
- Indice de pauvreté : 60,2% ;
- Indice de développement humain: 0,407 (rang 176/188)
- Indice de performance environnementale: 39,4 (rang:157/164)
- PNB : 18.26 milliards USD ;
- Taux d'accroissement naturel : 3,23% ;
- Population : 17 963 218 habitants dont 50,4% de femmes ;
- Taux de croissance : 3,6 % par an ;
- 78-80% d'agriculteurs, éleveurs et artisans.

II. TRACE DE LA GMV



- Longueur : 2 066 km;
- Largeur initiale : 15 km élargie par endroit de 100 à 150 km;
- Emprise : Sept (07) régions administratives (Kayes, Koulikoro, Ségou, Mopti, Gao, Tombouctou et Ménaka) sur 10, 24 cercles/46, 204 communes rurales/703 et 2622 villages ;
- Taux de désertification : 58% et 30% du reste de la végétation fortement menacé;
- Taux de diminution de la pluviométrie : 20%;
- Coûts des dommages environnementaux : 21,3% du PIB soit 680 milliards de FCFA;
- Contexte éco-climatique : Sahélien à aride;
- Espèces végétales et biodiversité : steppe et savane arbustive à arborée composée de *Acacia sénégal, nilotica, Acacia tortilis, Acacia radiana, Bocia senegalensis, angustifolia, Acacia mellifera…).*
- Potentialités : Zone d'élevage par excellence avec 70 à 80 % de transhumance du cheptel national.

III. Dispositif Institutionnel

- **Signature Convention APGMV :** 17 Juin 2010 à N'Djamena ;
- **Ratification :** Décret N°2011-684/P-RM du 14 Octobre 2011 ;
- **Coordination et opération :**
- Ministère de l'Environnement et de l'Assainissement et du Développement Durable ;
- Unité de Gestion de la Grande Muraille (UGMV) créée le 17/03/2016;
- Alliance de la Grande Muraille Verte du Mali.
- **Autres :** Participation du Directeur de l' UGMV aux réunions sous régionales

VI.RÉALISATIONS ET CAPITALISATION

1.3.Activités opérationnelles réalisées

-plantation de 2,0 ha clôturés à Kaloumba (cercle de Nara, Région de Koulikoro , avec l' appui financier de « Rights Resources Initiatives » (RRI)/ Helvetas Swiss Inter coopération;

- Plantation de 2 ha/ région au niveau des 5 premières régions du Mali et dans le District de Bamako;
- Réalisation de 233,55 ha à Bankass dans le cadre du projet transfrontalier Burkina Faso, Mali-Niger (appui de l' ONG Kew Garden;
- L' étude de la situation de référence réalisée avec l' appui de « Rights Resources Initiatives » (RRI)/ Helvetas Swiss Inter coopération avec des cartes thématiques et outils de communication;
- Création de l' Alliance Nationale de la GMV avec la validation d'une charte;
- - organisation de 02 ateliers en vue de l' implication des collectivités territoriales et les communautés dans l' orientation et la planification des activités de la GMV;
- Mise en œuvre du projet TCP/ RAF/3302 de la FAO en appui à 5 pays dont le Mali:

➢ Elaboration de la Stratégie Nationale et son plan d' Actions en fin 2011-2015 ;

➢ Organisation de 3 ateliers régionaux groupés de consultation avec les parties prenantes;

➢ Elaboration du programme de la GMV du Mali

V. Développement communautaire et gouvernance locale

- Réalisation d’unjardin polyvalent de 0,25 ha clôturé pour l'association des femmes de Dimbal (Bankass);
- Elaboration et mise en œuvre d’une Convention Locale de Gestion des Ressources Naturelles dans la Commune rurale de Bellem (cercles de Niono /Ségou),
- Formation des acteurs du secteur public sur la préservation de la biodiversité ;
- Formation à l’endroit du Secteur Privé sur le respect des biens et services de la biodiversité (projet PGRNCC/SAWAP) ;
- - Formation des communautés en gestion intégrée des feux de brousse et
- Sur la production de plants adaptés ;

VI. Recherche d'accompagnement et développement

- Établissement en 2013 de la situation de référence et matérialisation du tracé de la GMV du Mali ;
- - Réalisation en 2014 des études d'inventaires forestiers dans les régions de Kayes, Koulikoro et Ségou sur financement AGCC/UE ;
- - Réalisation d'une étude sur les modes de production et de consommation traditionnelles durable (MPCD) dans les cercles de Nara et de Nioro;
- - Réalisation d'une étude sur les potentialités éco touristiques des cercles de Nara et de Nioro ;
- - Elaboration de Plans d'Aménagement et de Gestion de massifs forestiers villageois dans les communes de Guiré et Yéréré ;

- Réalisation d’une étude pour l’installation d’un jardin polyvalent de 5 hectares dans la commune de Diarrah(Cercle de Nioro région de Kayes) ;
- - l’élaboration de deux (2) projets actuellement en recherche de financement :
- Projet de renforcement des capacités productives et commerciales de la filière gomme arabique dans la région de Kayes au Mali » en appui à l’initiative de la Grande Muraille Verte au Mali
- programme d’aménagement concerté du bassin transfrontalier du Karakoro ou « Initiative Karakoro » : coopération transfrontalière Mali-Mauritanie

- l’organisation de deux (02) ateliers régionaux d’information et de mobilisation des collectivités Territoriales de Kayes et de Nara autour de la GMV d’une part, et leur implication, dans l’orientation et la planification des activités ;
- - Réalisation de deux études sur l’identification des actions prioritaires dans les 13 communes GMV de Kayes et dans les 06 communes GMV de Nara en vue de leur insertion dans les Plans de Développement des communes ;
- - Elaboration des plans d’aménagement et de gestion de deux (o2) gommeraies dans les communes GMV de Yéréré et Gadiaba-Kadiel (Cercle Nioro) ;

- Elaboration du « Projet de Développement d’un jardin maraîcher polyvalent et pisciculture sur 5 Hectares et une plantation de 10 hectares de gommiers au Profit de la Société Coopérative Simplifiée « Lafia » dans la commune de Nara » (projet FACI) ;
- - Identification 41 espèces utiles aux communautés et enquêtes socio-économiques sur les ménages dans la Commune de Koussané;
- - Identification de 5 pépiniéristes pour la production de plants dans la commune de Koussané ;

- Réalisation de l’inventaire forestier des forêts de Ouagadou, Lorack-Bane et Gadiaba-Kadiel et de leurs zones adjacentes et élaboration des plans d’aménagement ;
- - Réalisation de l’étude sur les opportunités des produits des filières (produits forestiers non ligneux et plantes médicinales..) ;
- - Réalisation d’une étude sur les coûts et avantages des produits de la biodiversité.

VII. Impacts socio-économiques

- la diversification des moyens d’existence, des sources de revenu et de production ;
- la réduction de l’insécurité alimentaire et de la malnutrition ;
- la dynamique de renforcement de la protection et de l’’intégration sociale ;
- la gestion communautaire des risques et renforcement des capacités des populations à prévenir et à atténuer l'impact des risques et de réduire le degré de vulnérabilité des communautés à risque.

<u>Autres</u> :

- lancement officiel activités de la Grande Muraille couplé au lancement de la campagne de reboisement 2016 à Tienfala (Région de Koulikoro) sur une superficie de 10ha ;
- Elaboration de 1000 cartes et plaquettes de communication sur la GMV du Mali.
- Elaboration de la Charte de l'Alliance Nationale de la Grande Muraille Verte.

VIII. **Financement et partenariats développés**

- **National :**

- Budget Spécial d'investissement pour le fonctionnement de la GMV ;
- Partenariat en cours de formalisation avec la Société DEGUESSI Vert pour la réalisation de 6000 ha de plantations de gommiers à Nara.

International :

Convention de financement entre la DNEF et RRI/HELVETAS Swiss Inter coopération pour l'année 2015.

Financement FEM/Banque Mondiale : Projet de Gestion des Ressources Naturelles et Changements Climatiques au Mali (PGRNCC) - Programme Sahélien et Ouest-Africain (SAWAP) ;

Financement Projet Modèle GMV transfrontalier Burkina- Mali-Niger du Millennium Seed Bank Partnership KEW Garden à Bankass (Région de Mopti) ;

Financement de L'Alliance Global pour le Changement Climatique (AGCC) pour le boisement et le reboisement dans la région de Kayes dans le cadre de la GMV.

- Le projet Front Local Environnemental pour une Union Verte (FLEUVE)

du Mécanisme Mondial de l'UNCCD financé par l'Union Européenne avec l'UICN comme Agence Fiduciaire dans le Cercle de Nioro communes de Gavinané et Diaye Coura. Ce projet est mis en œuvre par le Resad/GCOZA, l'AEDD et l'UGMV en cours d'exécution avec comme réalisations :

- lancement officiel du projet à Nioro ;
- la conduite d'une étude sur la situation de référence dans les communes de Diaye-Coura et Gavinané ;
- La réalisation de la clôture de 3 jardins polyvalents et de 2 périmètres maraîchers
- Le lancement en Octobre 2016 du projet intitulé « Réduire les écarts dans la Grande Muraille Verte : Relier les secteurs et les acteurs pour renforcer les synergies et le changement d'échelle » financé par le Fonds Environnemental mondial (FEM) et dont la mise en œuvre est confiée au PNUE et l'UICN.

IX.Contraintes :

Insuffisance de moyens matériels et financiers pour l’UGMV pour l’investissement sur le terrain et pour son fonctionnement.

MERCI DE VOTRE AIMABLE ATTENTION

Annexe 3

3e atelier projet pilote Kew - Grande Muraille Verte, près d'Agadir (Maroc)
27 – 30 Mars 2017

GMV : Une réponse africaine à la désertification, la dégradation des terres, la sécheresse, les changements climatiques et la perte de biodiversité

DOULKOM Adama
doulkom.adama@yahoo.fr

Agadir, le 27/03/17

CONTEXTE/DEFIS









- Dégradation des terres
- Variabilité du climat
- Insuffisance des infrastructures
- Conflits
- Marginalisation politique

Importance des zones arides pour le développement de l'Afrique

- Les zones arides d'Afrique sont les suivantes:
  - 43% de la superficie(**600 Million Hectares)**
  - 50% de la population
  - 75% des terres agricoles
- La Région Sahel c'est environ 400 millions d'hbts dont 80% vivant dans les zones rurales
- Burkina Faso : plus de 34% du territoire national, soit + 9 234 500 ha des terres de production, sont dégradés en raison de causes anthropiques et climatiques, avec une progression de la dégradation des terres estimée à 360.000 ha par an.

Conséquence

❖**des résultats négatifs en matière de développement :** Indice numérique de pauvreté élevé dans la zone d'aridité

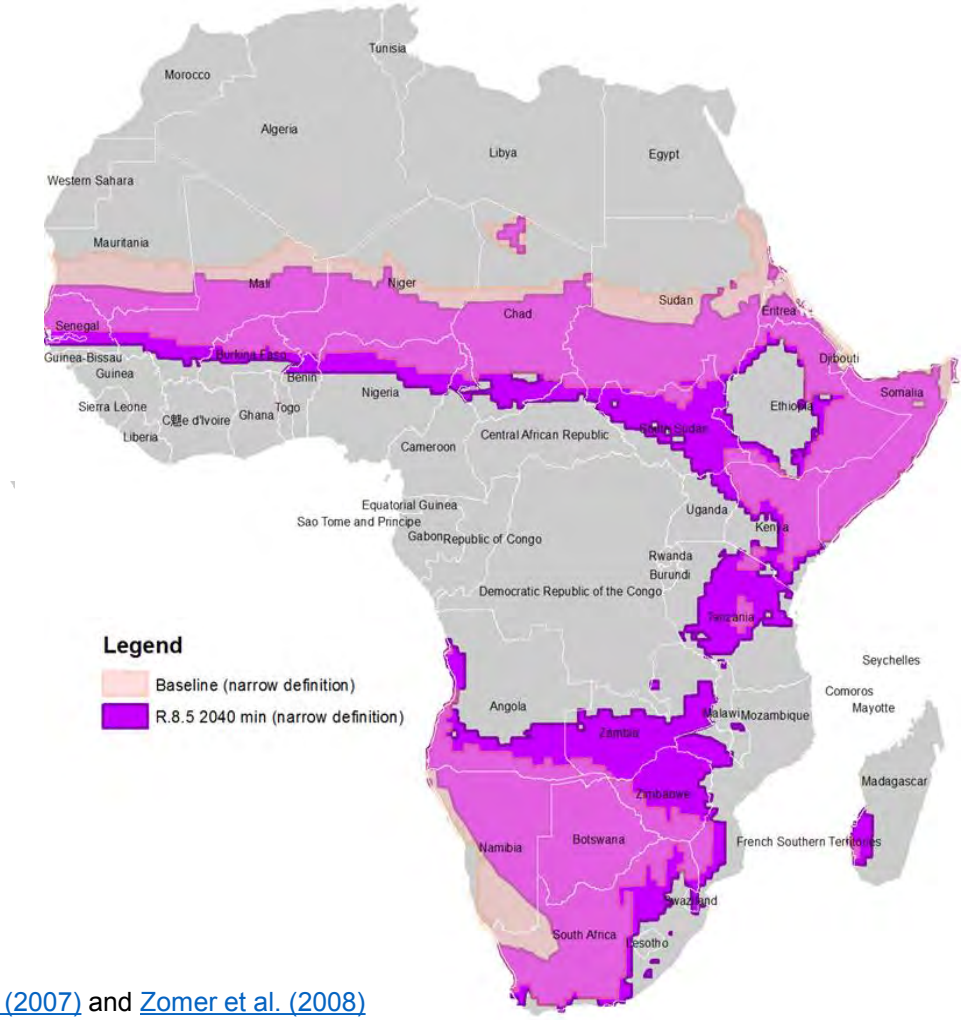
❖**des indicateurs de développement à la traîne:**

- Niveaux de consommation alimentaire inférieurs dans les zones arides
- Proportion des enfants en insuffisance pondérale plus élevée dans les zones arides

❖ **Les profils de vulnérabilité évolueront dans le futur**

- La croissance démographique et le changement climatique augmenteront le nombre des habitants vulnérables des zones arides

Le changement climatique devrait déplacer la position des zones arides



Legend **Légende**

- Référence
- Déplacement et extension dus au changement climatique

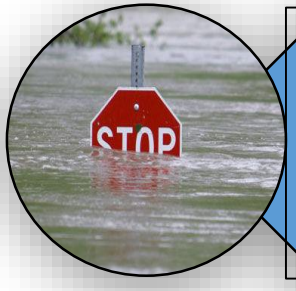
Source: (CGIAR) - Zomer et al. (2007) and Zomer et al. (2008) based on WorldClim Bauque mondiale

Changement climatique

- Modèles climatiques utilisés pour analyser une série de scénarios de changement climatique
- **Les zones arides s'étendront et se déplaceront en raison du changement climatique**
- **Certaines zones pourraient devenir incapables de soutenir la production animale et la culture intensive**
- **Dans le scénario le plus sec, l'extension des zones arides pourrait atteindre 20 % dans l'ensemble, et plus dans certains pays**

... avec de graves impacts sur la pauvreté

Les chocs et les tensions climatiques, qui constituent déjà un obstacle majeur à la réduction de la pauvreté, se dégraderont avec le changement climatique



Les pauvres sont 50% plus susceptibles d'être inondés

Les pauvres sont 130% plus susceptibles d'être touchés par une sécheresse

Les pauvres sont 80% plus susceptibles d'être touchés par la chaleur extrême

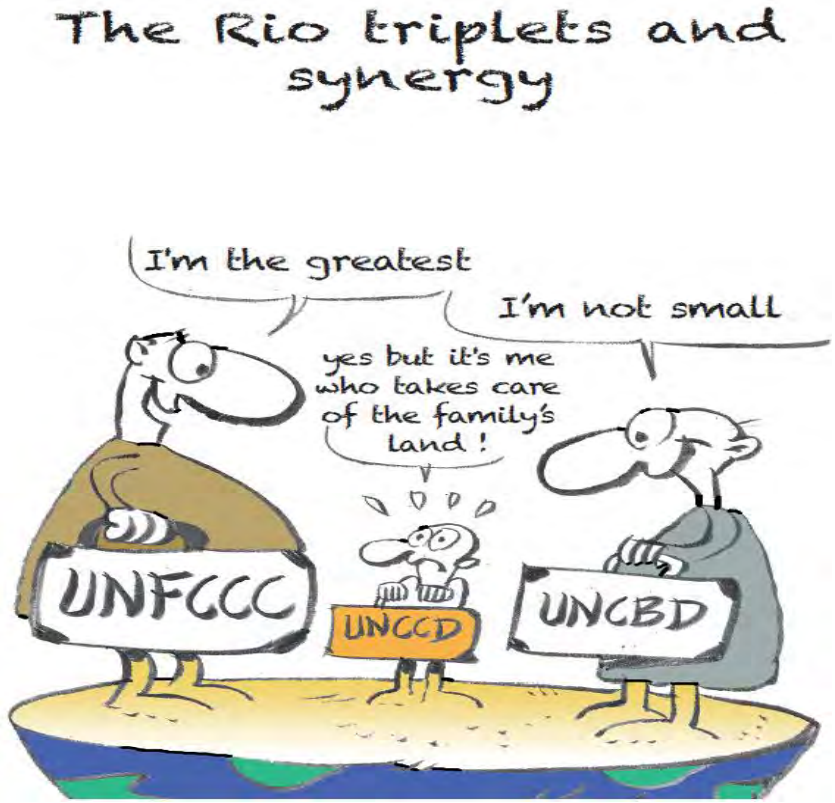
Source: *Shock Waves: Managing the Impacts of Climate Change on Poverty* (World Bank)

- Les terroirs sahéliens : terreaux de la pauvreté, de l'insécurité alimentaire, de la malnutrition et des migrations forcées.

- Accroissement des risques de tension et de conflits sociaux du fait de la forte compétition sur les ressources et l'absence de perspectives alternatives.

Le lien désertification dégradation des terres, sécheresse, changement climatique, la perte de biodiversité, dans les zones arides du Sahara et de la région du Sahel

Besoin de synergie dans les 3 conventions de Rio



Dans ce cadre, ces Etats sahélo-sahariens doivent impérativement pour la survie de leur économie, leur cohésion sociale et leur émergence économique mettre en œuvre à l'échelle de leurs terroirs un modèle opérationnel de Développement Economique intégrant la problématique du défi climatique et environnemental.

Une réponse politique

Nécessité d'un **Partenariat africain** soutenu par **la communauté internationale** afin d'arrêter et d'inverser les tendances de la dégradation des terres et de la perte de biodiversité, en particulier dans les régions arides d'Afrique par le biais d'un ensemble cohérent et commun d'interventions

Ce partenariat africain pour relever le défi de la DDSS, CC , la perte de la biodiversité , la promotion de la paix et de la sécurité est appelée la **"Grande muraille verte pour le Sahara et le Sahel Initiative»**

Historique de l'IGMVSS

❖**Juin 2005 Ouagadougou : émergence de** l'idée de la GMV lors de la 7ème Session de la Conférence des Chefs d'Etat membres de la Communauté des Etats Sahélo-sahariens

- Burkina Faso
- République de Djibouti
- Etat d'Erythrée
- République Démocratique Fédérale d'Ethiopie
- République du Mali
- République Islamique de Mauritanie
- République du Niger
- République Fédérale du Nigéria
- République du Sénégal
- République du Soudan
- République du Tchad

Mur d'arbre , Muraille, mosaïques (métaphore pour symboliser la solidarité entre les pays et les partenaire).

VISION -OBJECTIF

Vision actuelle : « En 2063, les vastes zones arides du Sahara et du Sahel sont transformées en pôles ruraux de développement verdoyants, fertiles et prospères, débarrassés de la famine et des crises humanitaires à répétition ».

Objectif :Améliorer la résilience des systèmes humains et naturels dans la zone sahélo-saharienne par une bonne gestion des écosystèmes, un développement durable des ressources foncières, la protection du patrimoine rural et l'amélioration des conditions de vie et des moyens de subsistance des populations vivant dans ces zones

Quels principes retenir pour la Grande Muraille Verte

Harmonisation des approches

Partenariat/synergie /complementarité

Investissement sur le long terme

Réponse multi-sectorielle

Diversification des activités économiques

SITUATION ACTUELLE DE L'INITIATIVE

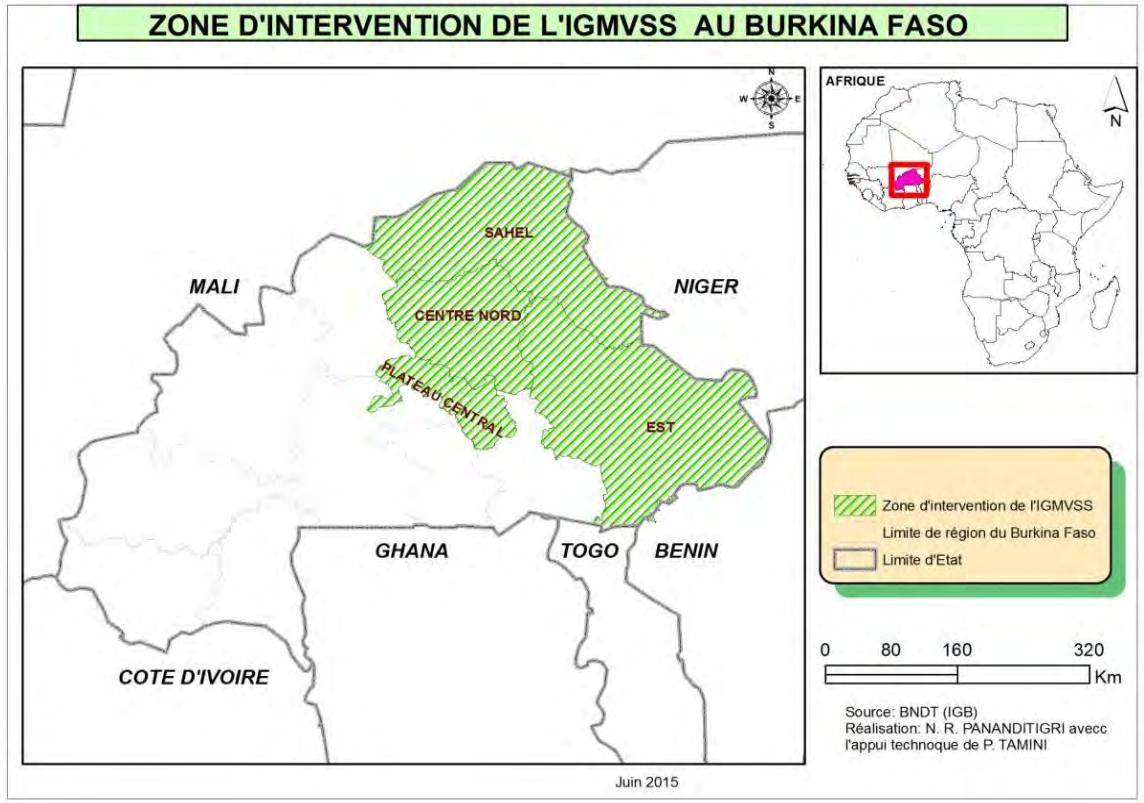
1.Niveau politique

- Résolutions de l'Union africaine (tutelle politique de l'IGMVSS)
- Résolution et adoption par les Commissions Economiques Régionales
- AMCEN
- Ratification de la convention sur l'IGMVSS dans les États membres
- Création d'Agences Nationales/coordination pour la mise en œuvre (Burkina Faso, Djibouti, Érythrée, Ethiopie, Mali, Niger, Nigéria, Sénégal, Tchad)
- Création de l'Agence Panafricaine de la Grande Muraille Verte (APGMV)
- Création de la cellule GMV au sein de la CUA

2.Au niveau technique

- Stratégie régionale harmonisée;
- Stratégie de communication ;
- Stratégie de renforcement des capacités ;
- Plans d'actions nationaux au niveau de différents pays

IGMVSS AU BURKINA FASO



	Burkina Faso	ZI-IGMVSS
Régions	13	4
Provinces	45	15
Communes	351	101
Habits(2015)	18 450 494	5 311 760
Sup(Km^2)	274 000	92 709

Plan d'action IGMVSS/BF

Objectif Global

Contribuer à une meilleure productivité des terres et à la réduction de la pauvreté au moyen de bonnes pratiques de gestion durable des ressources naturelles et de l'environnement, dans l'optique de la réalisation et de la consolidation des OMD

OS 1 : Améliorer la sécurité alimentaire dans la zone prioritaire d'intervention par la réalisation d'actions multiformes et intégrées de Gestion Durable des Terres et la promotion d'Activités Génératrices de Revenus

OS 2 : Traiter les impacts environnementaux et sociaux des autres initiatives humaines affectant la gestion durable des terres

OS 3 : Consolider la GDT et l'environnement par la valorisation des acquis de la recherche scientifique et la mise en œuvre d'une communication de développement.

OS4: Assurer la coordination et le suivi évaluation des activités du plan d'actions de l'IGMV.

Projets de l'IGMVSS

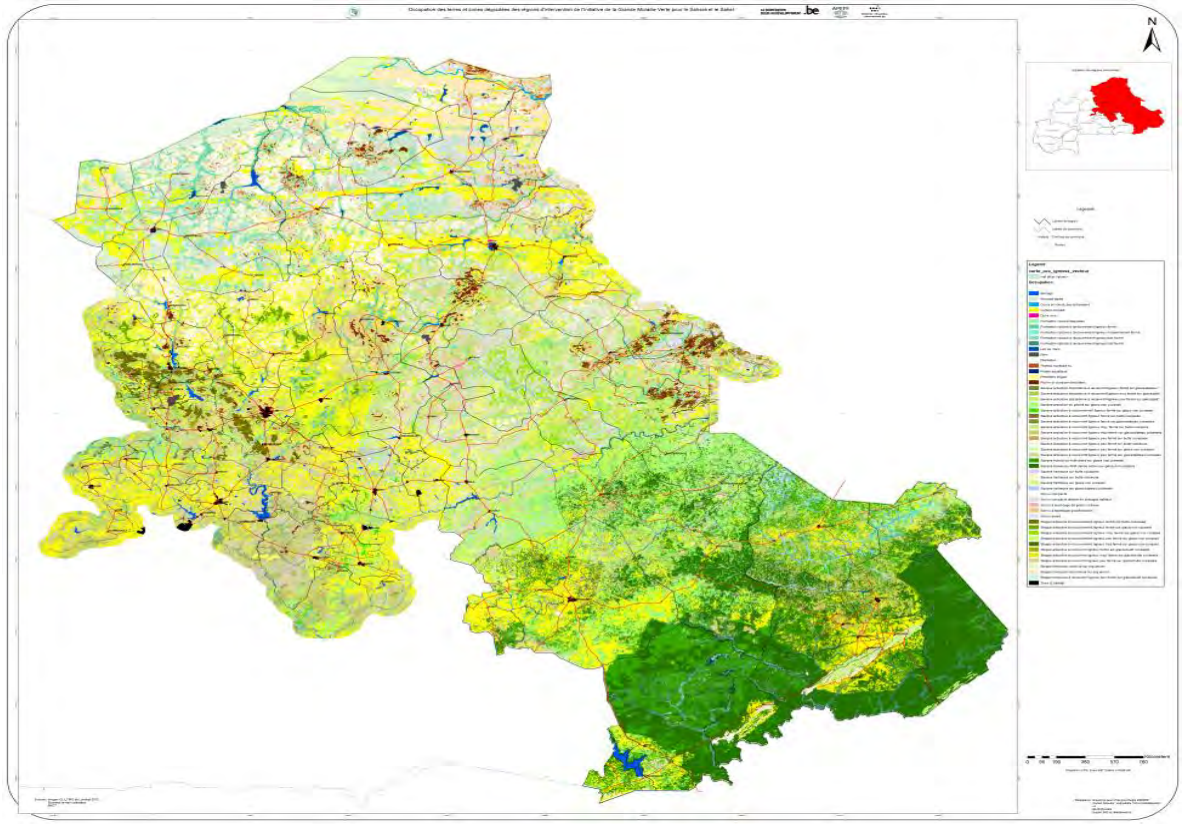
En cours de mise en œuvre	En Instance de démarrage	En formulation	en quête de financement
1.Programme de Renforcement des Capacités pour l'Initiative de la Grande Muraille Verte pour le Sahara et le Sahel - APEFE, WBI	1.Réduire les écarts dans la Grande Muraille Verte Lancement : décembre 20156 à Dosso (Niger)	1.restauration des écosystème et des paysages ;	1. Lutte contre la désertification et pour l'adaptation aux effets du changement climatique
2. Projet « Action Contre la Désertification » UE-FAO	2,Amélioration de la Résilience des populations locales aux changements climatiques et à la pauvreté par le développement et la valorisation de l'apiculture en complément d'un projet local de reboisement et de maraîchage / FACI	.2,Gestion durable des systèmes oasiens dans la région Sahelo_sahelienne	2.Requête de financement adressée à l'UEMOA
3. projet FLEUVE : " Front Local Environnemental pour une Union Verte« UE-MM-UICN			
4.Projets et programmes mise en œuvre sous les auspices du CILSS et de la Banque Mondiale notamment : SAWAP, PRGD, Projet Régional d'Appui au Pastoralisme au Sahel	cas du projet Kew :**projet de restauration des terres dégradées au profit des communautés locales vivant dans les zones transfrontalières Burkina Faso – Niger et Burkina Faso – Mali**		

QUELQUES ACQUIS

Coordination, pilotage, Concertation

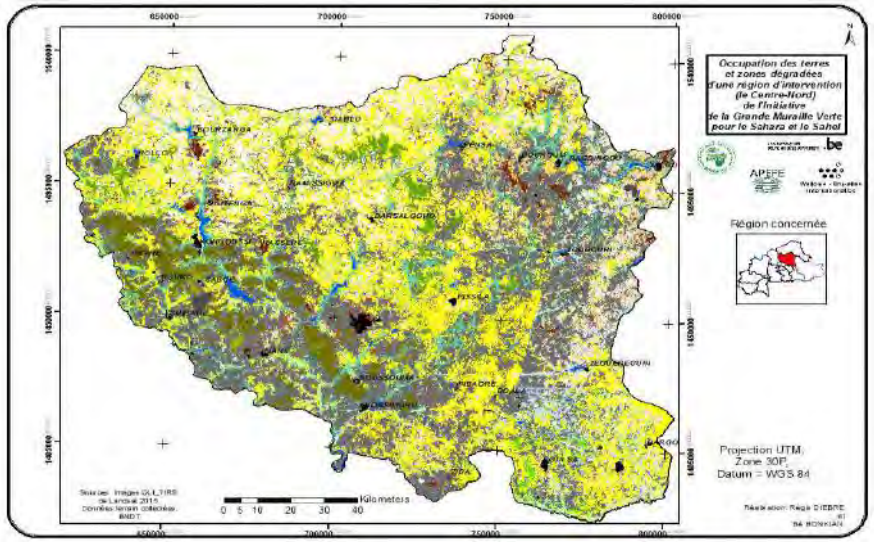
- Appui à la mise en place de la CN-IGMVSS et appui aux Directions Régionales de l'Environnement (**coordination**, planification, mobilisation des ressources, gestion des partenariats, communication interne, capitalisation, suivi des activités, équipements)
- Appui aux Cadres de Concertation Régionaux ---→ GDT
- Appui pour la Production de 800.000 plants forestiers (DR, Tiipaalga
- Elaboration d'une stratégie de mobilisation des ressources en faveur de l'IGMVSS
- Contribution à la formulation de 4 projets en appui à l'IGMVSS

Suivi – Evaluation

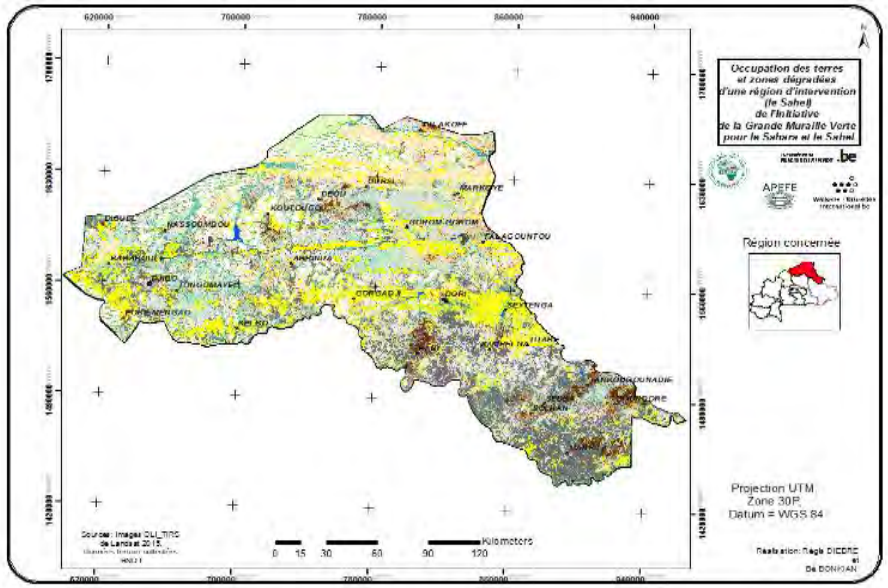


- 1 manuel de suivi-évaluation
- 3 Situations de références établies :
  - Biophysique
  - Produits Forestiers Non Ligneux
  - Profil socio-économiques

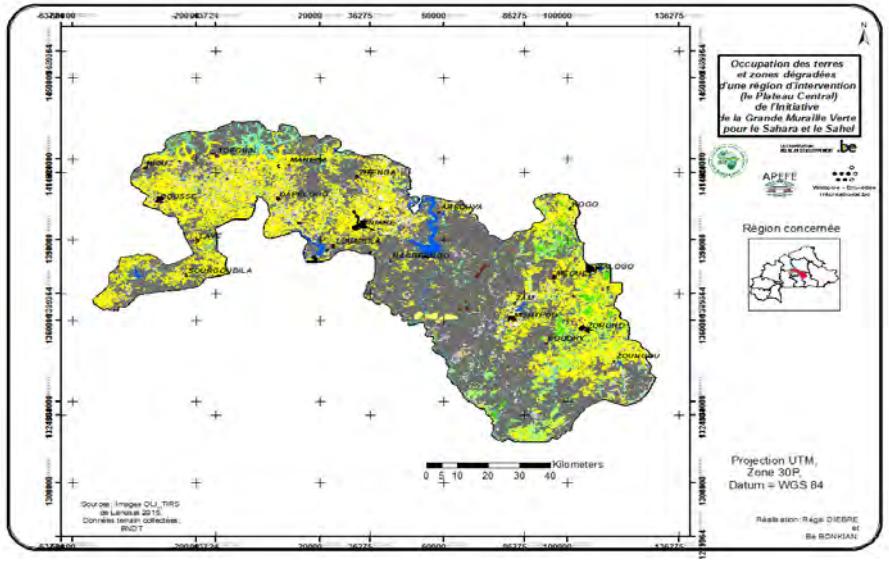
carte d'occupation des terres des 4 régions de l'IGMVSS



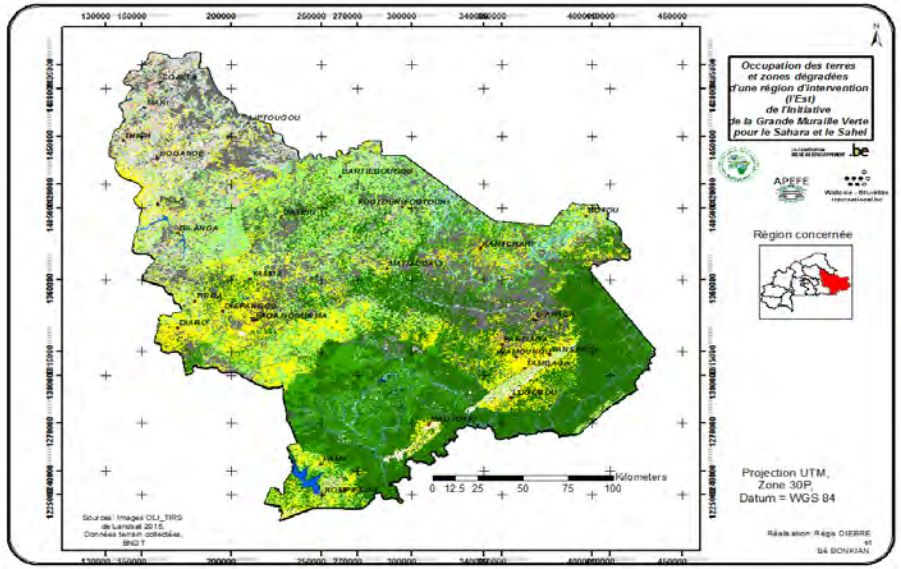
centre nord



Sahel



Plateau central



EST

renforcement des compétences

- 1 plan de formation élaboré : Ministère de l'environnement
- 586 cadres et agents du ministère de l'environnement formés sur 16 thématiques
- 35 membres des OSCs et des conseils municipaux formés sur 1 thématique
- 30 pépiniéristes villageois formés
- 1 voyage d'études au Sénégal

Communication

- 1 plan de communication (institutionnelle – au développement)
- Productions supports de communication : dépliants, dérouleurs, films, Kadapacks, ….
- 1 caravane médiatique : 3 télévisions, 6 radios, 6 quotidiens 3 presse en ligne.
- Présentation de l'IGMVSS dans quatre régions

•**Activités opérationnelles :** reboisement, MED, la RNA, agroforesterie, les techniques de CES/DRS restauration des terres, conservation des ressources naturelles

Récupération de terre à l'aide de la charrue Delphino

Activités réalisées dans le cadre de ACD

Terrain destiné à être récupération

MED réalisées par Tiipaalga

Challenges

Concrétiser l'intégralité de la Grande Muraille Verte nécessite de relever d'importants défis tels que:

- l'engagement politique constant dans tous les pays,
- la mobilisation de ressources(beaucoup d'engagement à la cop22)
- le renforcement de capacités ainsi que l'appui aux communautés locales.
- **Synergie et complémentarité**/ alliance nationale autour de la GMV pour fédérer les énergies (Public-Privé-PTF-OSC) – projet transfrontalier
- Communication / visibilité

Les perspectives

Wallonie - Bruxelles
International.be

APEFE

LA COOPÉRATION
BELGE AU DÉVELOPPEMENT .be

coordination, pilotage, Suivi- Evaluation

- Poursuite du renforcement de la coordination nationale et des quatre Directions Régionales
- Actualisation du plan d'action/IGMVSS 2017-2021 (ODD, PNDES, PNSR, cadre de résultats CUA, situations de références, …)
- Pilotage et concertation de l'IGMVSS (genre, du niveau communal au niveau national);
- Opérationnalisation du système de suivi-évaluation
- Mobilisation des ressources : Mise en œuvre de la stratégie, expert en mobilisation des ressources
- Operationalisation de l'alliance nationale autour de la GMV
- Renfiorfer le partenariat avec les ONG (Tiipaalga, Tree Aid, SOS Sahel,,,

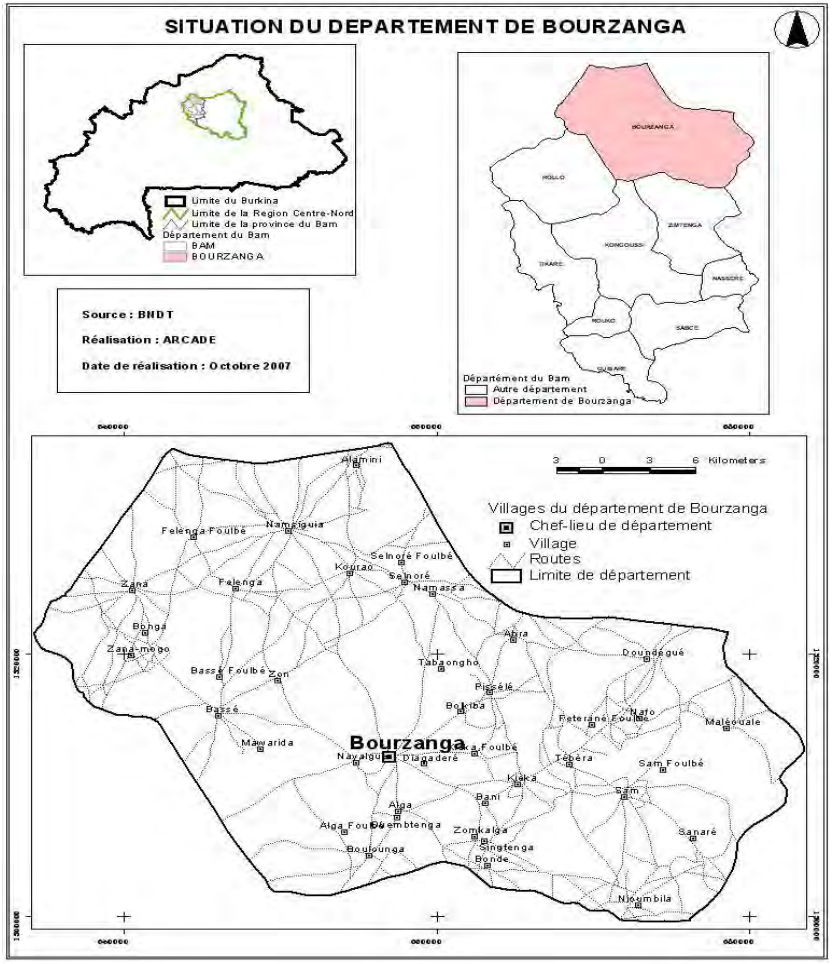
Gestion des connaissances - communication

- Mise en place du Conseil Scientifique et Technique de l'IGMVSS :
  - Identification des thèmes de recherche, valorisation des résultats de la recherche, diffusion,
  - Elaboration d'une stratégie de digitalisation
- Communication :
  - Mise en œuvre du plan de communication : Communication institutionnelle et communication au développement;
  - Expert en communication

renforcement des compétences

- Révision du plan de formation (intégration de nouvelles thématiques identifiées lors de la formulation);
- Mise en œuvre et suivi du plan de formation ;
- Voyages d’échanges

Expérience pilote au niveau communal



- Expérimentation du processus de mise en œuvre de l'IGMVSS au niveau d'une commune (gestion décentralisée des ressources naturelles)

  → leçons pour améliorer la mise en œuvre de l'IGMVSS.

- Commune ; Bourzanga (Centre Nord) ;

- Acceptation officielle du PRC2/IGMVSS (2017-2021) **27 mars 2017**

Partenaires de la GMV

Annexe 4

INITIATIVE GRANDE MURAILLE VERTE: Une Opportunité de Relance du Développement Economique Local au Niger

ATELIER D'ECHANGE ENTRELES ACTEURS DE LA GRANDE MURAILLE VERTE

AGADIR, 27 – 30 Mars 2017

Abdou MAISHAROU,
Directeur Général,
Agence Nationale de la Grande Muraille Verte
maisharou.abdou@yahoo.fr

SOMMAIRE

- INTRODUCTION: PRESENTATION DU NIGER
- CONTEXTE DE L'ÉMERGENCE DE L'IGMVSS
- OBJECTIFS DE L'IGMVSS
- GRANDE MURAILLE VERTE AU NIGER:

✓ ZONES D'INTERVENTION DE LA GMV;

✓ VISION DE LA GMV NIGER

✓ STRATÉGIE DE MISE EN ŒUVRE

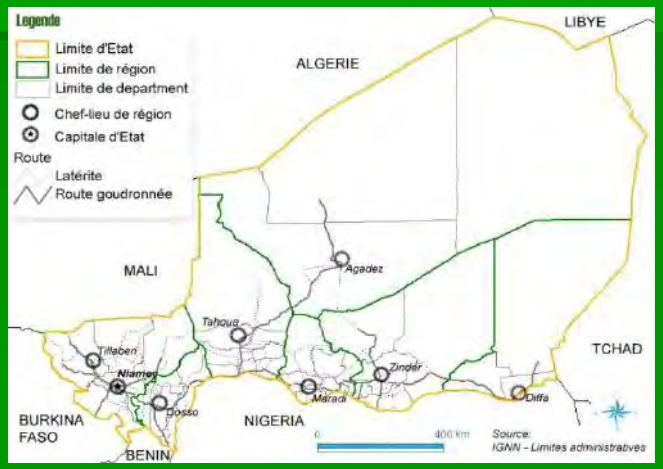
✓ ACTIONS ENTREPRISES DEPUIS 2010

- PERSPECTIVE: PLAN D'ACTION 2017 - 2021
- MOBILISATION DES RESSOURCES

Présentation sommaire du Niger

1.267.000 km2 dont environ de 500 000 km2 de déserts véritables (Ténéré, Tall);

- un vaste espace, reposant sur le socle africain primitif, marqué par des massifs montagneux très anciens affleurant au nord-ouest (Aïr);



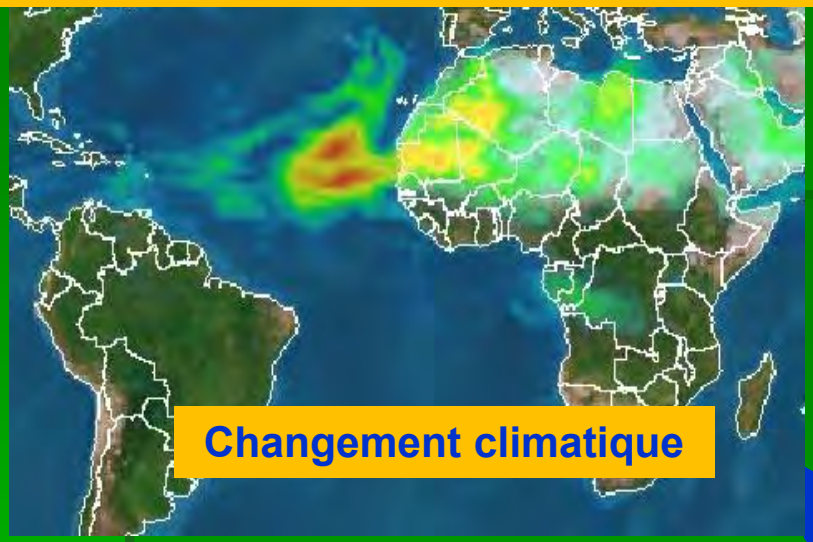
- 8 Régions;
- 65 Départements;
- 266 Communes et Arrondissements Communaux;

CONTEXTE DE L'EMERGENCE DE LA IGMVSS

Le Développement Durable en Afrique est fortement liée aux impacts environnementaux induits par le changement climatique et ses conséquences: désertification, dégradation des terres et sécheresse;

L'Afrique (surtout les zones saharo-sahéliennes), est toujours caractérisée par des images de désolation, de pauvreté, de conflits et d'insécurité alimentaire, voire de famine et un bilan socio-économique lourd impactant très négativement les politiques macro-économiques et vecteur d'insécurité transfrontalière et de flux migratoires.

Conséquences des Changement climatique



DEGRADATION DES TERRES

DESERTIFICATION

CONSÉQUENCES/IMPACTS DIVERSES DES C.C.

-Sociaux et Economiques

-Environnementaux

FLUX MIGRATOIRE CONTINUEL

Exemple : Le Lac Tchad régresse et la vie de plus de 30 Millions de personnes en dépend

- En Afrique divers Programmes-cadres, Plans d'actions nationaux et sous-régionaux ont été élaborés et mis en œuvre.

- Malgré les énormes efforts consentis, les résultats, escomptés sont demeurés en deçà des attentes.

- Les capacités de productions agricole et pastorale s'amenuisent, l'insécurité alimentaire, la faim et la famine demeurent récurrentes.

CONTEXTE DE L'ÉMERGENCE DE IGMVSS

✓Les actions et approches classiques **individuelles** de reboisement ou de reverdissement du Sahel n'ont pas permis d'inverser les tendances de déforestation, de désertification, de perte de biodiversité et de dégradation des terres et du couvert végétal (les ligneux et les herbacées)

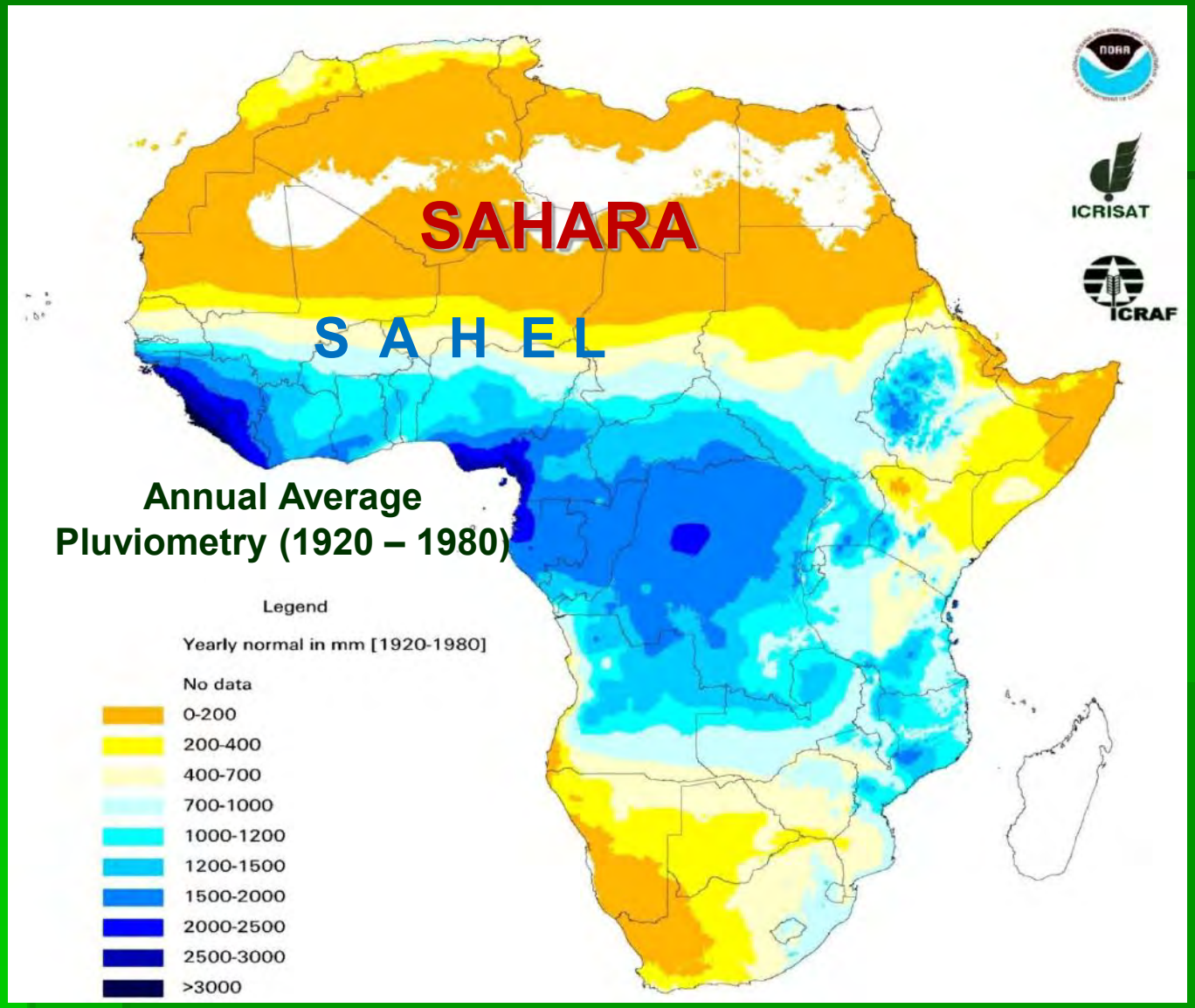
➢D'où la nécessité et l'urgence de mettre en place **des mécanismes de coopération régionale et sous-régionale** pour une mise en valeur globale des ressources naturelles du Sahel.

CONTEXTE DE L'ÉMERGENCE DE IGMVSS

Face à de tels défis persistants, l'Afrique a décidé de **faire front commun** et de donner une réponse à travers une Nouvelle Stratégie Africaine

L'INITIATIVE GRANDE MURAILLE VERTE SAHELO-SAHARIENNE.

INITIATIVE AFRICAINE TRANSCONTINENTALE




Sénégal


Mauritanie


Mali


Burkina


Nigeria


Niger


Tchad


Soudan


Ethiopie


Érythrée


Djibouti

Pays saharo-sahéliens de l’APGMV

OBJECTIFS STRATÉGIQUES

OBJECTIF GLOBAL: Contribuer, par des activités de reboisements, restauration des systèmes de production et la valorisation des potentialités naturelles, à la lutte contre l'avancée du désert à travers la mise en valeur des zones saharo sahéliennes afin d'assurer leur transformation et de créer les conditions d'émergence économique

OBJECTIFS SPÉCIFIQUES

- Promouvoir les activités de reboisement, de restauration conservation de terres, protection de la Biodiversité, des ressources en eau et des forêts;
- Renforcer et diversifier les systèmes de production et de transformation agrosylvopastoraux;

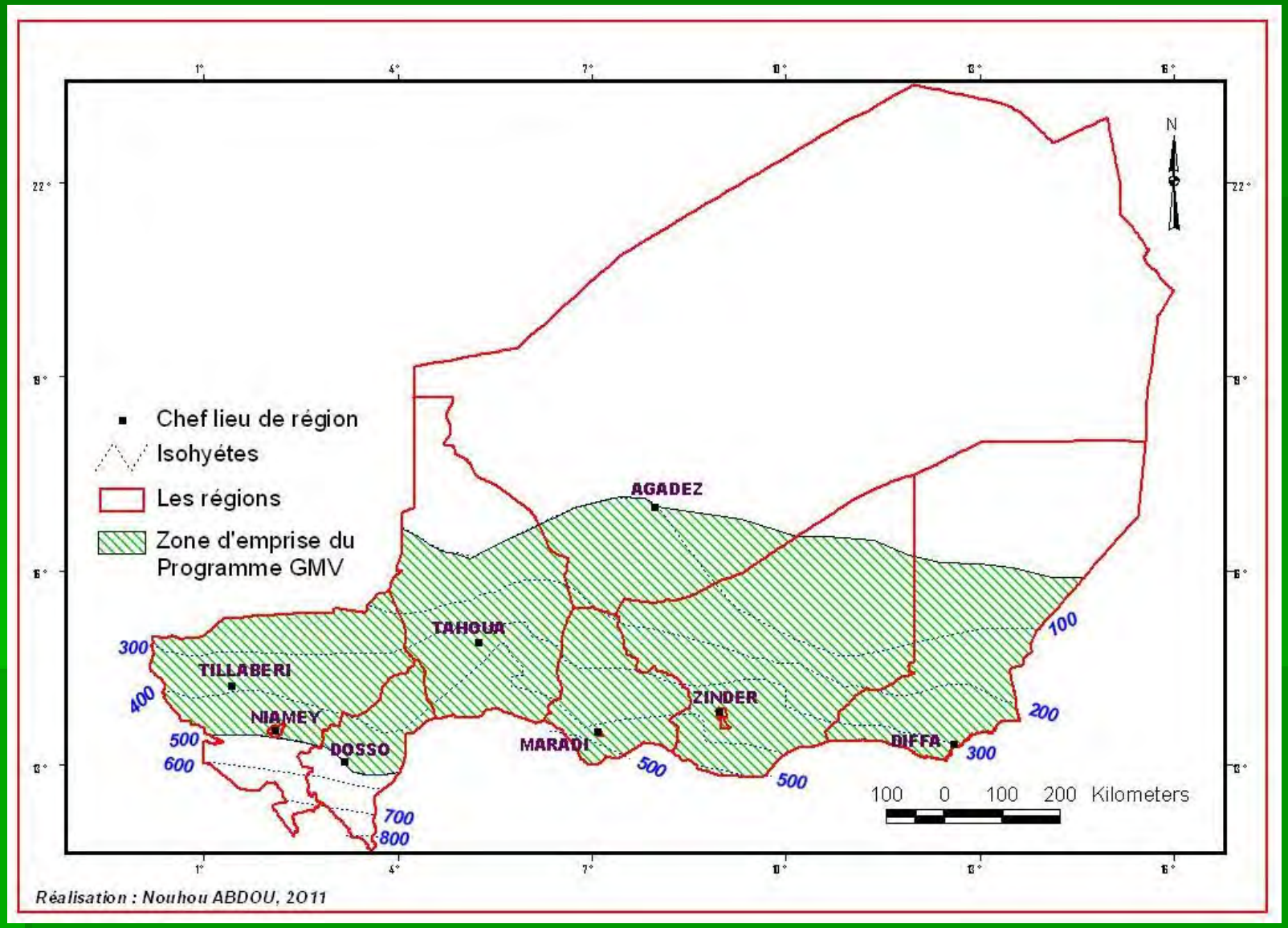
OBJECTIF SPÉCIFIQUES (suite)

- ✓ Accroître la séquestration du CO_2 dans les couvertures végétales et les sols par des stratégies et techniques efficientes et durable d'occupation des terres;
- ✓ Réhabiliter et renforcer les infrastructures et services socio éco. de base en terme de santé, d'éducation, d'énergie, d'infrastructures, etc.;
- ✓ Promouvoir le repeuplement des zones restaurées;
- ✓ Améliorer les condition de vie des communautés locales et inverser les flux migratoires des ruraux.

GRANDE MURAILLE VERTE AU NIGER

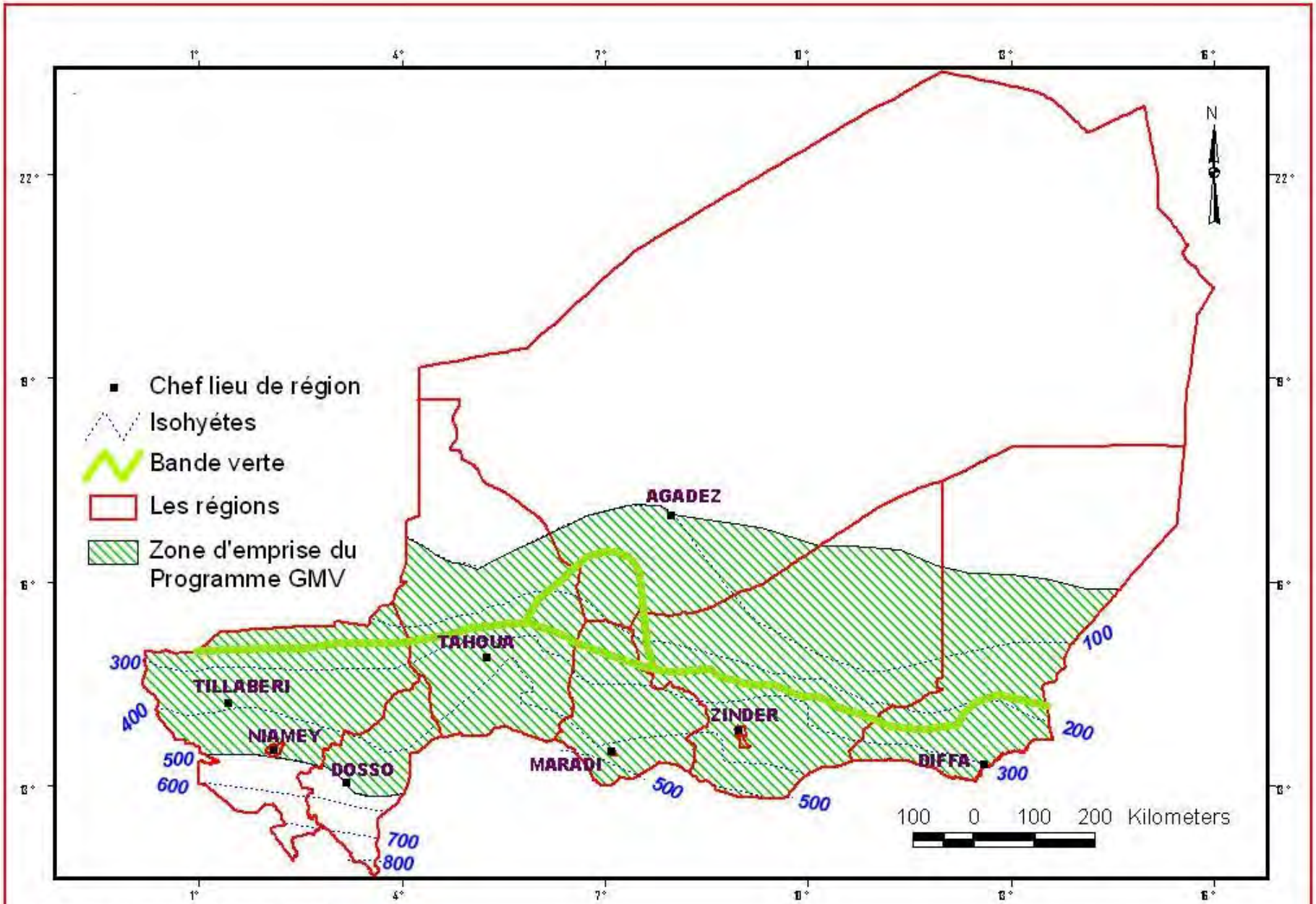
EFFORTS ENTREPRIS DEPUIS 2010

ZONES D'INTERVENTION DE LA GMV AU NIGER



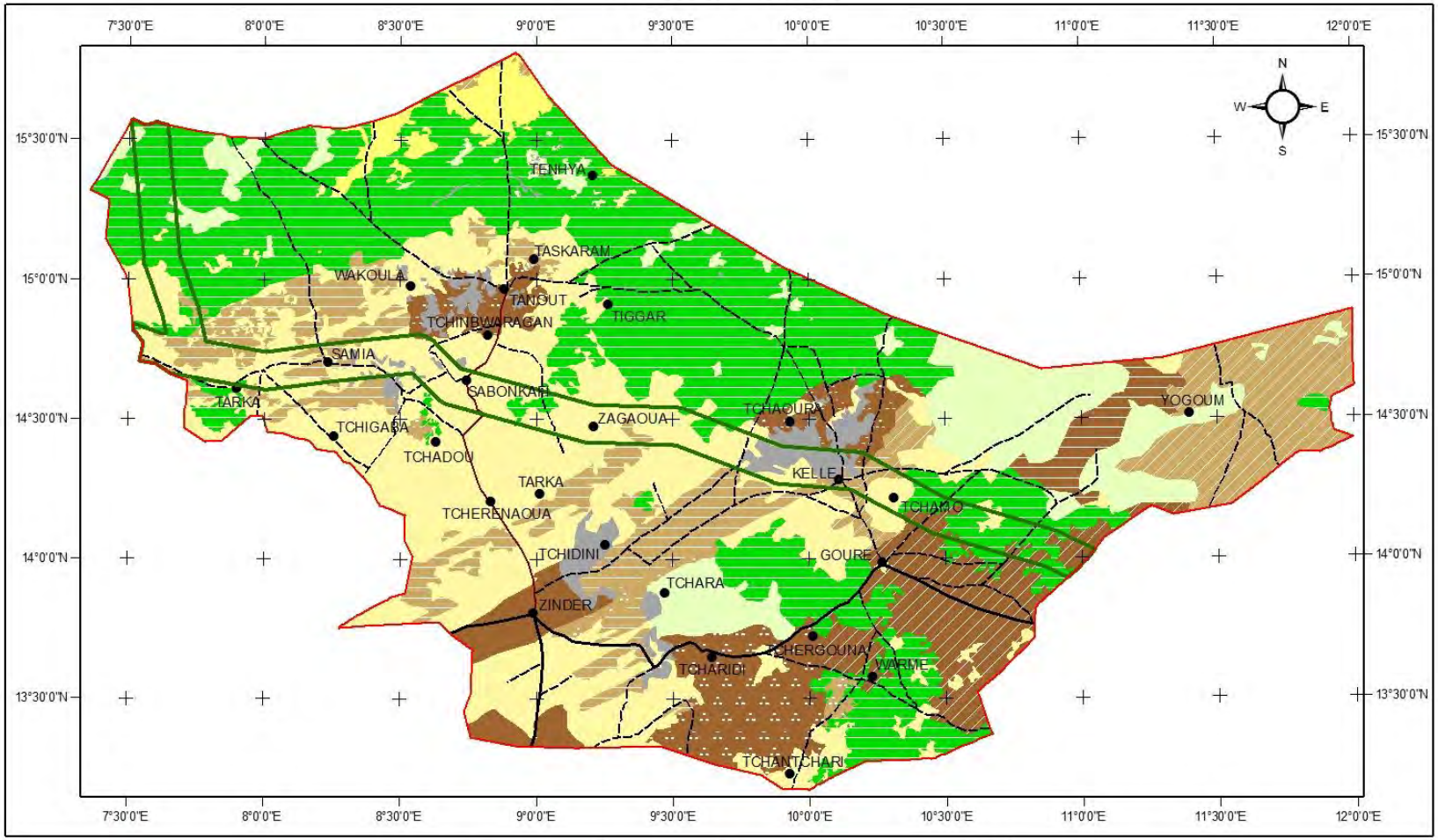
- **228 Communes touchées dans les 8 régions**

EMPRISE DE LA BANDE VERTE



OCCUPATION DES SOLS DANS LA ZONE DE LA MURAILLE VERTE

REGION DE ZINDER



0 50 100 200 KM

- Localité
- Route bitumée
- Route latéritique
- Piste
- Limite muraille verte
- Bande verte
- Steppe arbustive dense
- Steppe arbustive dégradée
- Steppe arbustive très dégradée
- Cordon ripicole
- Prairie
- Culture irriguée
- Dune
- Mare
- Sol nu (glacis d'érosion, terrain rocheux)
- Culture pluviale (plus de 70% de zone couverte)
- Culture de vallée et basfond (plus de 70% de zone couverte)

Culture pluviale et jachère couvrant la z

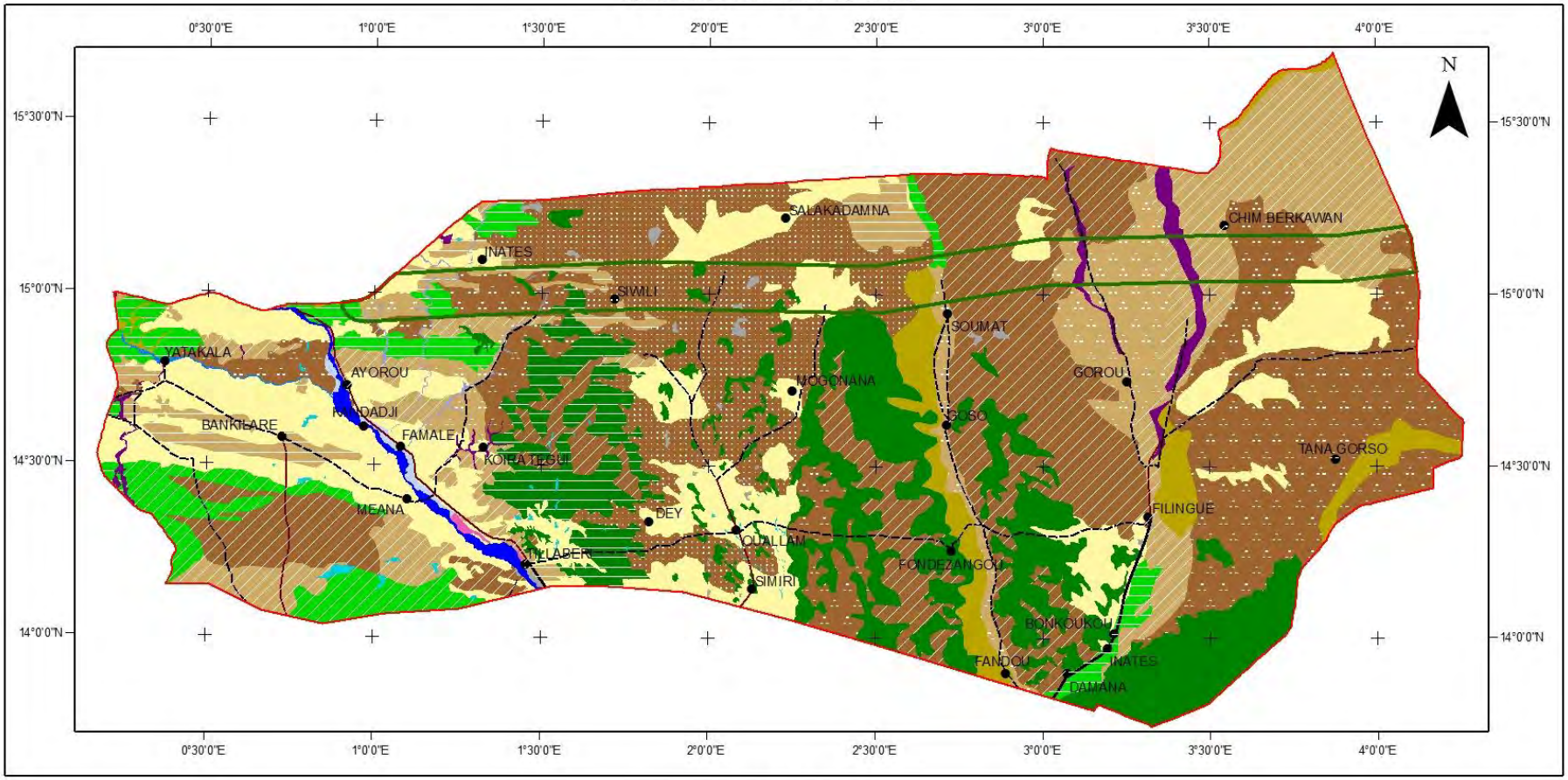
- De 1% à 10%
- De 10% à 25%
- De 25% à 50%

ZONE D'EMPRISE DU PROGRAMME GMV

OCCUPATION DES SOLS

OCCUPATION DES SOLS DANS LA ZONE DE LA MURAILLE VERTE

REGION DE TILLABERI



ECHELLE: 1/1750000

0 50 100 KM

- Localité
- Route bitumée
- Route latéritique
- Piste

- Brousse tigrée dégradée
- Steppe arbustive dense
- Steppe arbustive dégradée
- Steppe arbustive très dégradée

- Fleuve
- Rivière (affluent)
- Zone d'innondation
- Kori

- Cordon ripicole
- Culture pluviale (plus de 70% de zone couverte)
- Culture de vallée et basfond (plus de 70% de zone couverte)
- Culture irriguée

- Mare
- Sol nu (glacis d'érosion, terrain rocheux)
- tillaberi_muraille
- bande_tillaberiutm

Culture pluviale et jachère couvrant la zone de:

- De 1% à 10%
- De 10% à 25%
- De 25% à 50%
- De 50% à 70%

ÉVALUATION DE LA SUPERFICIE GLOBALE ET PAR RÉGION DE LA MURAILLE VERTE

REGIONS	Superficie en ha	Pourcentage %
AGADEZ	250 000	9%
DIFFA	450 000	16%
TILLABERI	500 000	18%
ZINDER	700 000	25%
MARADI	200 000	7%
TAHOUA	700 000	25%
TOTAL	**2 800 000**	**100%**

IDENTIFICATION DES BONNES PRATIQUES GDT ET ESTIMATION DES SUPERFICIES PAR RÉGION

Régions	CES/DRS agricole	CES/DRS pastorale	Fixation des dunes	Plantation enrichissement	Superficie total en ha
AGADEZ	0	200 000	50 000	0	**250 000**
DIFFA	20 000	150 000	250 000	30 000	**450 000**
TILLABERI	250 000	150 000	20 000	80 000	**500 000**
ZINDER	300 000	150 000	50 000	200 000	**700 000**
MARADI	20 000	30 000	20 000	130 000	**200 000**
TAHOUA	350 000	200 000	50 000	100 000	**700 000**
TOTAL	**940 000**	**880 000**	**440 000**	**540 000**	**2 800 000**

✓Plusieurs milliers de km de Plantations d'alignement; Plantations d'ombrages; Bois villageois; Plantations fruitières, Etc. dans la zone d'intervention de la GMV(Sur demande des populations)

EVALUATION DES BESOINS EN SEMENCES

Critères de choix des espèces

- ✓ Avoir une plasticité écologique permettant un maintien et un développement dans les zones écologiques allant jusqu'à 100 mm de pluviométrie,
- ✓ Présenter une utilité économique et répondre aux besoins des populations:
  - Les espèces fruitières, pour la création de richesses
  - Les espèces forestières alimentaires contribuant à l'équilibre nutritionnel des populations;
  - Les forestières à haute valeur économique pour la lutte contre la pauvreté et à la satisfaction des besoins en produits ligneux et non ligneux ;
  - Les espèces forestières et herbacées à haute valeur nutritionnelle pour les animaux .

IDENTIFICATION DES ESPÈCES PRIORITAIRES ET QUANTITÉ/AN

Espèces ligneuses	Quantité/an
Acacia senegal	2 000
Acacia seyal	800
Bauhinia rufescens	500
Faidherbia albida	500
Adansonia digitata	200
Moringa oleifera	20
Prosopis juliflora	200
P. chilensis	100
Autres	608
TOTAL	4 928

Herbacées
Eragrostis tremula
Brachiaria sp,
Cenchrus biflorus
Cymbopogom schoenamthus
Pennisetum pedicellatum,
Aristida stipoïdes,
Zornia glochidiata
Citrillus lanatus
Penisecum purpureum
Commelina forskalaei
Andropogon gayanus

ESTIMATION DES BESOINS GLOBAUX EN SEMENCES DES LIGNEUX PAR RÉGION

Régions	Superficie en ha	Pourcentage %	Plants requis	Qté de semences kg
AGADEZ	250 000	9%	110 000 000	11 000
DIFFA	450 000	16%	198 000 000	19 800
TILLABERI	500 000	18%	220 000 000	22 000
ZINDER	700 000	25%	308 000 000	30 800
MARADI	200 000	7%	88 000 000	8 800
TAHOUA	700 000	25%	308 000 000	30 800
TOTAL	2 800 000	100%	1 232 000 000	123 200

VISION

- Appuyer le développement des Collectivités locales à travers…….

✓ La lutte contre la dégradation des terres et la désertification;

✓ La mise en valeur les écosystèmes particuliers existantes traversés (Oasis et Cuvettes);

✓ La réhabilitation des formations forestières naturelles dégradées et renforcement de la production et la commercialisation des PFNL;

VISION (suite)

- ✓ La valorisation des formations forestières denses pour la satisfaction des besoins vitaux des populations (alimentations, bois énergie et de service; etc.);
- ✓ La création et renforcement des infrastructures socioéconomiques de base dans ses zones d'intervention;
- ✓ L'adoption et l'amplification des approches GDTE et des pratiques agroforestières éprouvées et de moins coûts (RNA, etc.);

AXES STRATEGIQUES DE MISE EN ŒUVRE

1: Promotion de la bonne gouvernance des ressources naturelles et du Développement Communautaire et Local dans la zone d'intervention de la Grande Muraille Verte

2: Amélioration de la sécurité alimentaire par la valorisation et la gestion durable des systèmes de productions agro-sylvo-pastorales

3: Recherche d'accompagnement et Gestion des connaissances

4: Coordination, Suivi/Evaluation des activités du Programme

- **PROGRAMMES OPERATIONNELS**

OP1. Promotion of sound governance of natural resources and development of technical capacities

OP2. Promotion of community local development in the intervention areas of the great green wall

OP3. Sustainable Management of Agro sylvo pastoral systems and improving food security

OP4. Support for Research and Development and knowledge development

OP5. Institutional support for the implementation of the GGWI

EFFORTS ENTREPRIS DEPUIS 2010

1. Mise en place des Organes de la Coordination et de Pilotage de l'Initiative

- ✓ Une Cellule Nationale de Coordination en 2010;
- ✓ Ratification de la Convention portant création de l'Agence Panafricaine de la Grande Muraille Verte pour le Sahel et le Sahara;
- ✓ Création d'une Agence Nationale depuis mai, 2015

Région de	Département	Superficie	Type de réalisation	Localité
Agadez		180		
	Tchirozérine	50	CES/DRS et Reboisement	Tchiro
	Ingall	80	CES/DRS et Reboisement	Ingall
	Aderbissinat	50	Amélioration des pâturages	
Diffa		120		
	Mainé-Soroa	70	Fixation des dunes	Foulatari
	Diffa	50	Fixation des dunes	N'Guel kollo
Dosso		200		
	Doutchi	200	CES/DRS et Reboisement	Koutounbou, C.R de Dogon Kirya
Tahoua		420		
	Illéla	180	CES/DRS et Reboisement	Dindi (Badaguichiri)
	Illéla	240	CES/DRS et Reboisement	Dan Doutchi, Illéla
Tillabéri		550		
	Filingué	150	CES/DRS et Reboisement	Wagani dans la CR Imana
	Abala	100	CES/DRS et Reboisement	Commune de Abala
	Ouallam	200	CES/DRS et Reboisement	Bane kaina, C. R. Simiri
	Téra	100	Protection de la forêt classée (mise en dépens)	Téra
Zinder	Tanout	230	CES/DRS et Reboisement	Sites pastorale de Tanout
Niamey	Commune 5	70		
Total		1 770	-	-

Cadre d'investissement 2016 / Rubriques	Budget National	Projet FLEUVE	Projet PAC3/SAWAP	ACD FAO	TOTAL
1. Formation des acteurs en planification participative des activités physiques sur le terrain	-	80	-	54	134
1. Formation des cadres sur l'outil *Collect Earth*	-	-	8	-	8
1. Formation des acteurs en techniques de GDTE	-	160	-	-	160
1. Récupération des terres dégradées et reboisement (ha)	50	320	29 112	-	29 482
1. Plants forestiers plantés	20 000	128 000	970 052	-	1 118 052
1. Microprojets AGR (Embouche et aviculture)	-	8		-	8
1. Elaboration du document de situation de référence biophysique et socioéconomique dans 8 Communes		1			1
1. Nombre de bénéficiaires du *Cash for Work*	400	2 560	357 731	-	360 691

PLAN D’ACTION 2017-2021

ANNEE RESULTAT ATTENDU	BUDGET/AN/RESULTAT ATTENDU					TOTAL
	2017	2018	2019	2020	2021	
RESULTAT 1 : Un environnement favorable est créé et les capacités des acteurs et des parties prenantes compétentes, y compris les ONG et le Collectivités Territoriales renforcées dans la zone d'intervention de la GMV pour leur permettre de mener à bien des travaux intersectoriels efficaces comme la planification, la recherche des financements, la budgétisation, la mise en œuvre et assurer une gestion durable et une restauration efficace des terres/forêts dans leurs paysage.						
Coût des activités	200 000 000	210 000 000	215 000 000	125 000 000	120 000 000	870 000 000

ANNÉE / RÉSULTATS ATTENDUS	BUDGET/AN/RESULTAT ATTENDU					TOTAL
	2017	2018	2019	2020	2021	
RESULTAT 2 : Les collectivités locales, les acteurs gouvernementaux et non gouvernementaux (notamment les jeunes, les femmes et la société civile) dans les Communes d'intervention de la GMV ont adopté et utilisent des pratiques appropriées de gestion durable des terres/forêts et de création de richesse dans le cadre de la mise en œuvre des Plans de Développement des Communes. Les moyens d'existence durables et la résilience des populations face aux changements climatiques sont améliorés et renforcés.						
Coût des activités	2 900 000 000	5 000 000 000	7 000 000 000	7 000 000 000	7 000 000 000	28 900 000 000

ANNEE / RESULTATS ATTENDUS	BUDGET/AN/RESULTAT ATTENDU					TOTAL
	2017	2018	2019	2020	2021	

RESULTAT 3 : Les connaissances et la sensibilisation sont améliorées au sein des publics cibles et acteurs clés de la Grande Muraille. Un suivi-évaluation efficace des efforts déployés pour la connaissance sur les causes et les impacts des mesures appropriées mises en œuvre pour lutter contre la désertification et la dégradation des terres, est effectuée de manière participative.

Coût des activités	65 000 000	130 000 000	150 000 000	150 000 000	150 000 000	685 000 000
TOTAL GENERAL	3 165 000 000	5 340 000 000	7 365 000 000	7 275 000 000	7 270 000 000	30 455 000 000

Partenariat développé et projet en cours et instance de démarrage

Le Secrétariat Exécutif de la CCD pour la mise en œuvre du projet FLEUVE : Front Local Environnemental pour une Union VertE sous la supervision technique du MM

La FAO pour la mise en œuvre du projet régional *Actions contre la désertification*. Le projet est financé par l'Union Européenne et exécuté avec l'appui technique de la FAO

Le PNUE pour la mise en œuvre du projet Réduire les écarts dans la Grande Muraille Verte pour le Sahel et le Sahara : Lier les acteurs aux acteurs pour renforcer la synergie et la mise à l'échelle. Il a pour objectif de renforcer le dialogue entre les pays africains et les partenaires internationaux dans un effort commun pour trouver les solutions à long termes face aux problèmes urgents de la dégradation des terres et de la désertification

Opportunités pour la mobilisation des financements, notamment privés

Alliance Nationale autours de la GMV:

- ✓ Ministères du Développement du Secteur;
- ✓ Ministères des Finances et Ministères des Affaires Etrangères et de la Coopérations;
- ✓ Les importations des véhicules d'occasion.

Ecotaxes sur:

- ✓ Les sociétés de transport (nombreuses au Niger);
- ✓ Les exploitants des produits pétroliers;
- ✓ Les importations des véhicules d'occasion.

JE VOUS REMERCIE

Annexe 5

‘Great Green Wall’ Cross Border Pilot Project

Burkina Faso, Mali and Niger

*To contribute fighting desert progress in the Sahel by **restoring ecosystems**, **valorising** and **managing** sustainably natural resources*

- ❑ Improve habitats
- ❑ Improve food security
- ❑ Improve livelihoods
- ❑ Contribute to climate change mitigation

Tiziana Ulian and Stephane Riviere

Natural Capital & Plant Health Department, RBG Kew

Kew Royal Botanic Gardens

Background

The Royal Botanic Gardens, Kew, is a global resource for plant and fungal knowledge.

One of the largest and most diverse **collections of plant and fungal specimens** (living and preserved) in the world:

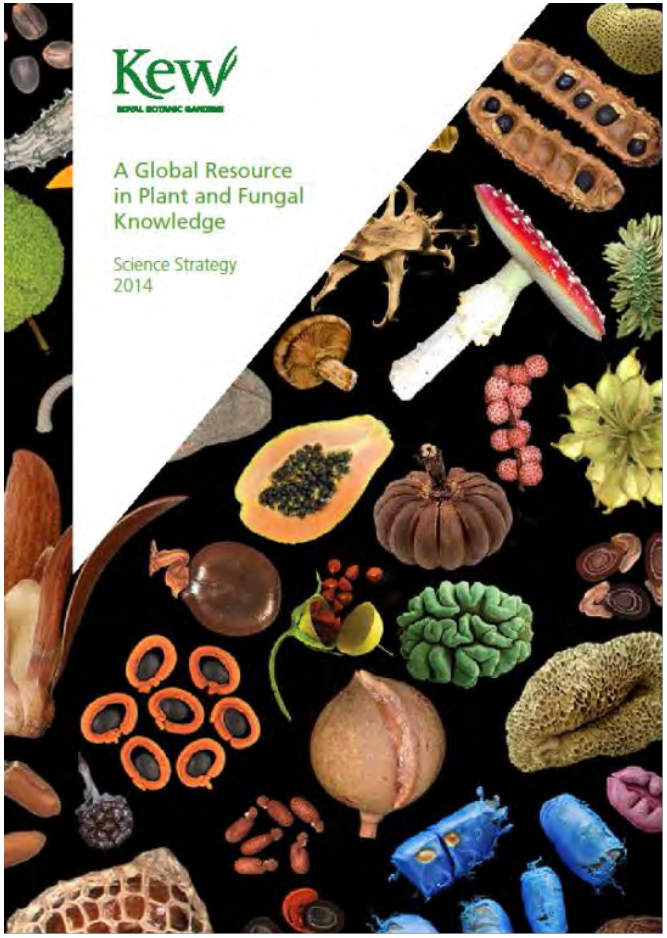
- >7 million herbarium vouchers
- 35,000 species conserved *ex situ* as seeds
- >30,000 *taxa* in the living collection
- Library, art, archive

1,000 collaborators in **> 100 countries** provides the focus for developing plant-based solutions to global challenges such as biodiversity loss, food and water security, poverty, disease and climate change.

Kew's Science Strategy (2015-2020)

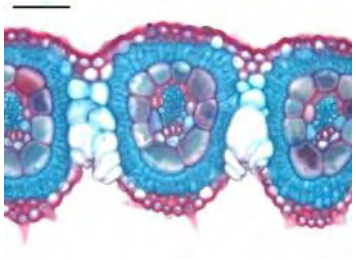
Strategic priorities

1. **To document and conduct research** into global plant and fungal diversity and its uses for humanity.
2. **To curate and provide data**-rich evidence from Kew's unrivalled collections as a global asset for scientific research.
3. **To disseminate** our scientific knowledge of plants and fungi, maximising its impact in science, education, conservation policy and management.



Six science departments

- Collections
- Identification and Naming
- Comparative Plant and Fungal Biology
- Conservation Science
- **Natural Capital and Plant Health**
- Biodiversity Informatics and Spatial Analysis



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Kew Royal Botanic Gardens

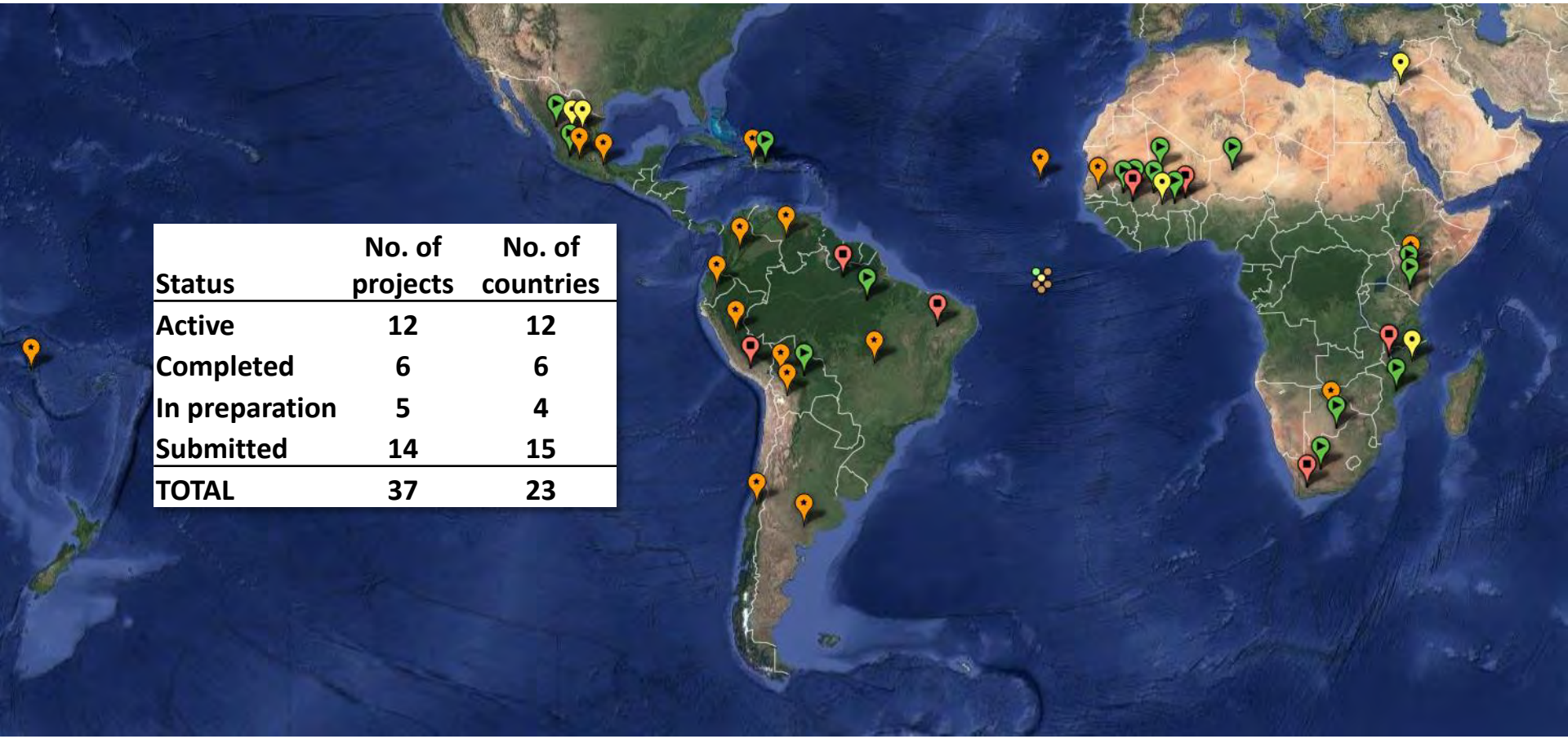
Natural Capital and Plant Health Dept.

To identify and evaluate the role plant and fungi play in providing services to humankind.

- **Agrobiodiversity research**, ranging from global plant resources such as coffee to smaller scale products such as woody crops, legumes, cereals and tubers.
- **Natural product chemistry** approaches to studying plant-insect and plant-fungal interactions (pollinator behaviour and health), identifying natural chemical defence mechanisms against herbivores and pathogens, and **authenticating medicinal plants** and **evaluate their bioactivity.**
- Research into the beneficial impact on **human livelihoods** of plant and fungal diversity, from medicinal herbs to forest trees
- **Plant disease**, especially fungal pathogens in native UK plants principally in agricultural, forestry and horticultural.

Conserving, using sustainably and restoring plant diversity

12 projects in progress



Status	No. of projects	No. of countries
Active	12	12
Completed	6	6
In preparation	5	4
Submitted	14	15
TOTAL	37	23

Background on African Great Green Wall (GGW) Initiative

Land restoration initiative proposed as a solution to the increasing desertification and land degradation of sub-Saharan Africa which affects some of the world's poorest people who depend on rainfed agriculture to sustain their livelihoods.

15km by 8,000km **mosaic of sustainable land management approaches** across Africa.

GGW cross border pilot project (2013-2017)

Support from Theresa Sackler and Dr Mortimer Foundation to enable RBG Kew's Millennium Seed Bank Partnership (MSBP) to develop a **model of land restoration in the Sahel region across Burkina Faso, Mali and Niger**.

Rationale

Engage a range of in-country stakeholders to **generate biotic and socio-economic data** which could be used to help and inform other restoration initiatives and the local communities to **restore degraded landscapes in the Sahel region**.

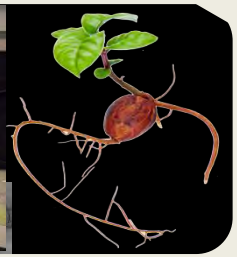
GGW restoration model: the approach

Communities

- **consult** with communities and assess their **commitment** and **motivation**
- understand local **needs** and **requirements** for restoration
- **gather information** on species and their uses

Research

- be **authenticated** and be able to **survive long-term**
- **knowledge**, **expertise** and quality **material** available
- be locally adapted and **economically** useful to communities
- **bio-diverse** (trees/shrubs/grasses)



Procedures

- collecting quality **seeds**, **seedling production** and **soil preparation**
- restoration – planting trees, direct seeding and assisting natural regeneration at the onset of and during the rainy seasons.

Monitoring

- Monitor and evaluate field performance:
  of planted seedlings, including collecting data on their **maintenance** and **management**
- of committed **activities** with and by **communities**

Cap. Building

Training in:

- the development of **plant products**, **marketing** and local business management
- seed collecting and nursery **techniques**
- planting, maintenance and **management of plantations**

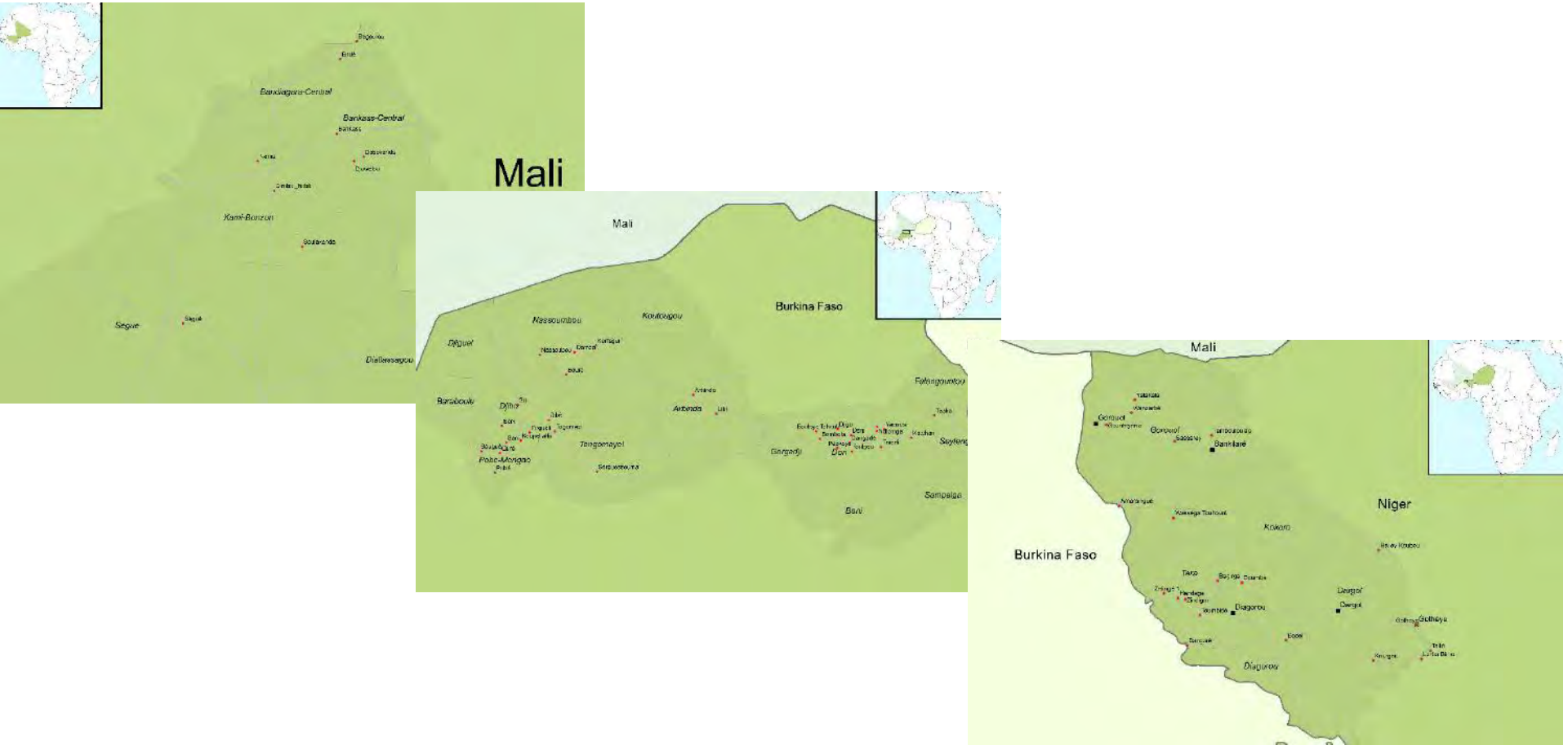
Strategy

Focus on **selecting the most useful species to be considered in the restorations activities** (from ethnobotanical surveys) and the **type of techniques** that can be used to improve and accelerate restoration (plantations, fencing, Assisted Natural Regeneration).

Farmers interview in Tiyi, Mali, 2015

Strategy

- **Engaging local communities** in the process



Strategy

In parallel, **monitoring in-situ activities** and **running socio-economic surveys** designed and administered to determine **possible socio-economic outcomes** delivered by the project for local communities

Farmers interview in Burkina Faso, 2014

Review of 6 project outputs

Output 1	**Project administration**
Output 2	**Ex situ conservation of useful plant species**
Output 3	**Propagation and conservation of useful species in communities**
Output 4	**Support to in situ conservation and use**
Output 5	**Plant species supported by the project used to support sustainable economic activities**
Output 6	**Dissemination of information on project achievements**

Project administration

Coordination with:

- the 3 partner institutions and their coordinators
- GGW National focal points
- NGOs
- local governments
- forestry departments

	Mali	Burkina Faso	Niger
National Tree Seed Centres and their coordinators	**Institut Economie Rurale**	**National Tree Seed Centre –** CNSF-BF	**National Tree Seed Centre –** CNSF-Niger
GGW Focal Points	National Focal Point	National Focal Point	National Focal Point
Local Administrations	Bankass	East - Dori West - Djibo	Tera
NGOs Environment & Development	Sahel Eco	Tiipalga SOS Sahel	SOS Sahel International
Forestry Departments	Forestry Service	Forestry Service (Djibo and Dori)	Forestry Service

Example Mali

Propagation and planting of useful species in the communities

- Production & planting: ca. 60,000 plants of 45 species per year
- Training of 9 private nursery holders in seedling production and supply of nursery materials
- Training of 2 local associations for environment protection in seed harvesting
- Training of local women association in compost production and market garden good practices

Soil improvement

‘Great Green Wall’ Cross Border Pilot Project

Example Mali

Support to *in situ* conservation

- **Assisting natural regeneration** in 5 sites of 20 ha (2015) and in 3 sites of 13 ha (2016)
- **Restoring** 25 ha in **state forest** (district of Bankass) by sowing herbaceous useful species (ground cover)
- **Restoring** vegetation by sowing herbaceous useful species on **fallow land** at two sites (1 ha and 3 ha)

Output 2: Ex situ conservation of useful plant species

A total of 84 useful woody (72) and herbaceous species (12) collected and stored to international standards

Collections assessed through seed testing (viability, germination, dormancy, barriers to storage)

Output 3A: Propagation and conservation of useful species in communities

A total of 36 useful woody (30) and herbaceous (6) species propagated in communities

	2013-2014	2015-2016
Burkina Faso	308,000	486,695
Mali	70,100	66,172
Niger	76,366	18,500
Total seedlings produced	454,466	571,367

Output 3B: Capacity building of local communities via technical training

Where	When	Who	Type of training	
Dori (Burkina Faso)	2014	50 farmers from 3 regions; Djibo (Burkina), Dori (Burkina) and Tera (Niger).	Forest-seed harvesting and nursery-seed collection	
Tera (Niger)	2015	50 farmers from 3 regions; Djibo (Burkina), Dori (Burkina) and Tera (Niger).	Bee-keeping	
Dimbal (Mali)	2016	Dimbal Women's Association	- Fruit harvesting and juice preparation of *Balanites aegyptiaca* and *Adansonia digitata* - Syrup production of *Tamarindus indica* and *Lannea microcarpa* - Composting	

Output 4A: Support to in situ conservation:half-moons technique

Community digging 'half-moons' planting holes for GGW restoration in Tera, Niger, 2014.

Traditional technique used to stop rain water run-off and increase survival and growth of young seedlings.

Output 4B: Support to in situ conservation: engaging with local communities

Meeting with project-farmers in Dimbal, 2016

Output 4C: Support to in situ conservation: woody plantations

	2013-2014	2015-2016
Burkina Faso	308,000	486,695
Mali	70,100	66,172
Niger	76,366	18,500
Total woody seedlings planted	454,466	571,367

Output 4C: Support to in situ conservation: herbaceous plantations

Example of planting of herbaceous in 2015 in Burkina Faso:

570kg and 130ha in Dori
280kg and 99ha in Djibo

Alysicarpus ovalifolius
Brachiaria ramosa
Eragrostis tremula
Cenchrus biflorus

Soula Kanda plot (Mali), planting of herbaceous

Output 4D: Support to in situ conservation: Assisted Natural Regeneration (ANR)

Sélection et marquage de rejets à conserver Elimination des autres rejets

Site Mali	Plot	Area (ha)
Dimbal I	Plot set up in 2013	3
Endé I	Plot set up in 2013	3
Ségué	Fallow	6,5
Endé II	Natural stand of Acridocarpus monodii	1,5
Yatabalu	Natural stand of Acridocarpus monodii	6
Total area (ha)		20

ANR plot Soula Kanda (Mali)

Output 4E: Support to in situ conservation: Naked-root baobab planting

Adansonia digitata used by 14 farmers in the Bankass area (100 plants per farmer)

Because of high mortality rate in previous years (cattle encroachment, digging by kids for food), taller plants are needed.

Output 4: Main issues encountered

Distance of intervention areas
Security issues
Lack of water
Animal encroachment

Solutions implemented:

- Fencing
- Using higher plants for replenishing

Output 4: Support to in situ conservation: Monitoring of plantations

Data collected on in Burkina Faso, Mali and Niger:

- **Growth per species and per site** (height, diameter)
- **Survival rate per species and per site** (Mali and Niger only)

Species	Country plot	Species	Country plot
Acacia nilotica	Mali	*Faidherbia albida*	Mali
Acacia raddiana	Niger	*Khaya senegalensis*	Mali
Acacia senegal	Niger	*Lannea microcarpa*	Mali
Adansonia digitata	Mali	*Parkia biglobosa*	Mali
Alysicarpus ovalifolius	Niger	*Pennisetum pedicellatum*	Niger
Balanites aegyptiaca	Mali	*Prosopis africana*	Mali
Balanites aegyptiaca	Niger	*Sclerocaria birrea*	Niger
Bauhinia rufescens	Mali	*Sclerocarya birrea subsp. caffra*	Niger
Cassia tora	Niger	*Tamarindus indica*	Mali
Eragrostis tremula	Niger	*Ziziphus mauritiana*	Niger

Output 5: Plant species supported by the project used to support sustainable economic activities

Most of the planted species are **ecologically fit for the Sahel dryland and socio-economically useful to these rural communities** – such as *Acacia senegal*, which is being hugely planted to generate income from the Gum Arabic its produces.

Gum arabic,
a natural resin produced from *Acacia senegal*

Output 5: Plant species supported by the project used to support sustainable economic activities

Burkina Faso	**Beekeeping**
Mali	500 kg of fruits of *Balanites aegyptiaca* harvested for the **extraction of pulp and oil.**
Niger	2 communities (Bajirga and Doumba in Téra municipality) collected grasses and sold it for **animal feeding**

Output 6: Dissemination of information on project achievements

Report of GGW activities and results presented at:

Niamey, Niger, 2015: **GGW review/programming workshop** with partners and national focal points of GGW pilot project

Abuja, Nigeria, 2016: **GGW technical workshop on restoration**, with representatives of Action Against Desertification project partner countries and representatives of agriculture and environment in Nigeria, NGOs, civil societies.

Dakar, Senegal, May 2016: **first international conference on the GGW for Sahara and Sahel** « Restoring the Landscapes of Africa - The Way Forward ».

Bamako, Mali, June 2016: reports evaluated by IER Program Committee, i.e. the scientific director of the IER in collaboration with the other research and teaching structures of Mali.

Cotonou, Benin, October 2016: Internal meeting on data mobilisation (seed, propagation and plantations) and production of indicators for the monitoring of activities

Output 6: Dissemination of information on project achievements

Joint presentation Kew-FAO submitted to the World Forestry Congress in September 2015 in Durban, South Africa.

Joint presentation Kew-FAO given at the European Geosciences Union in 2014.

Information about the project on **Kew's website** was updated in a blog post to coincide with UNESCO's World Science Day on 10 November 2014.

Further details

Details to be explained by each country Partner, as well as case study and work plan

Annexe 6

Expanding Africa's Great Green Wall

Evaluation & Planning Workshop - "Great Green Wall" Cross border Pilot Project Burkina Faso - Mali - Niger

Marc Parfondry - marc.parfondry@fao.org
Moctar Sacande - moctar.sacande@fao.org

Agadir, Morocco | 28 March 2017

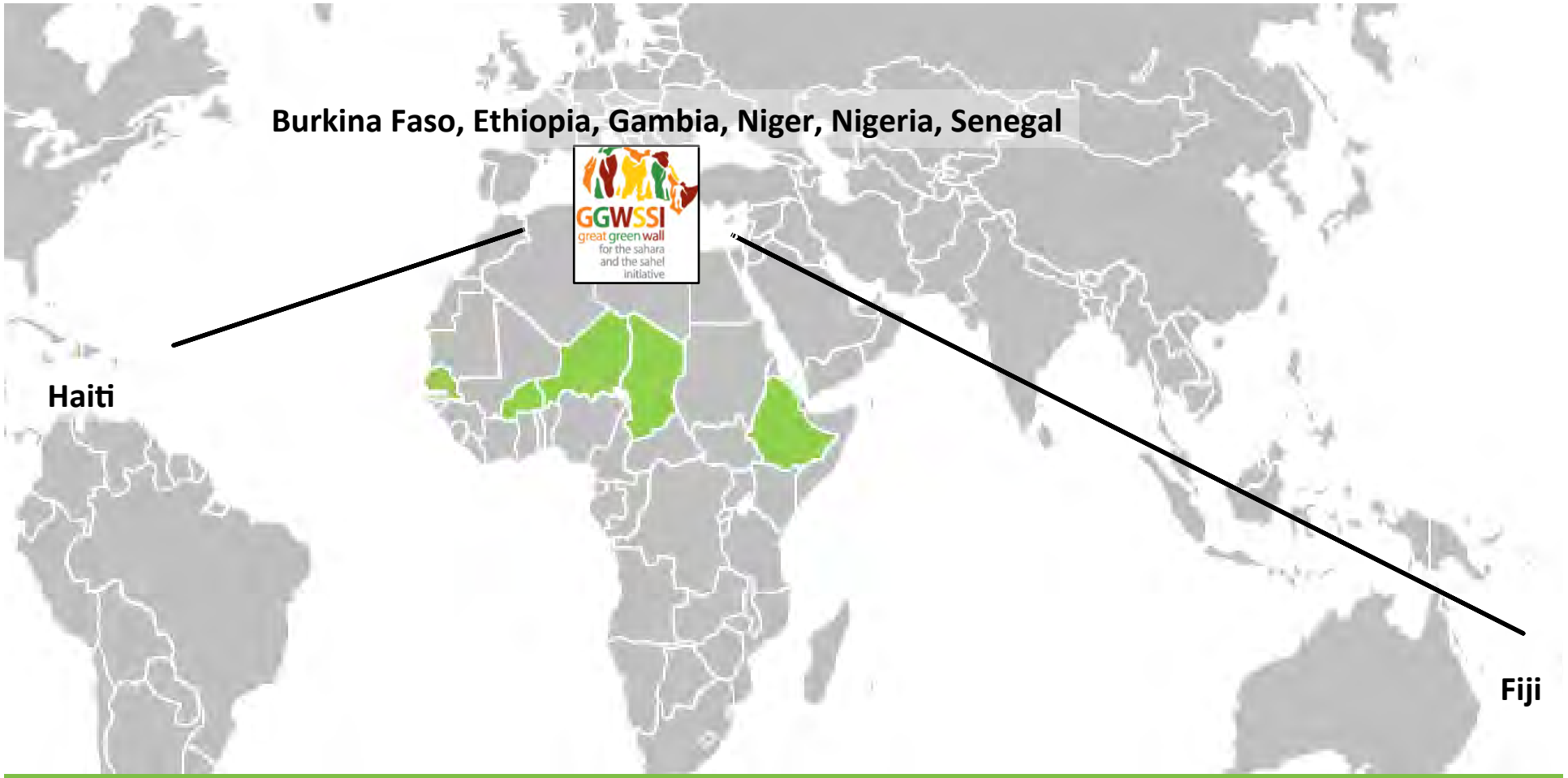
AAD objectives

Overall objectives: Contribute to (i) poverty alleviation; (ii) ending hunger; (iii) improving resilience to Climate change using Landscape approach.

⇧

Specific objective: Improve the condition and productivity of landscapes including degraded forests, agriculture, agroforestry and pastoral systems.

Scope of the project (ACP)



AAD expected results

Result 1 - Enabling environment
Capacity development for effective cross-sectoral work by all stakeholders involved in Sustainable land and forest management and restoration at large-scale landscape levels.

Result 2 – Field activities
Implementation of selected activities from the National Action Plans of the Great Green Wall (Africa component);
Implementation of UNCCD National Action Plans for the Caribbean (Haiti) and the Pacific (Fiji) component.

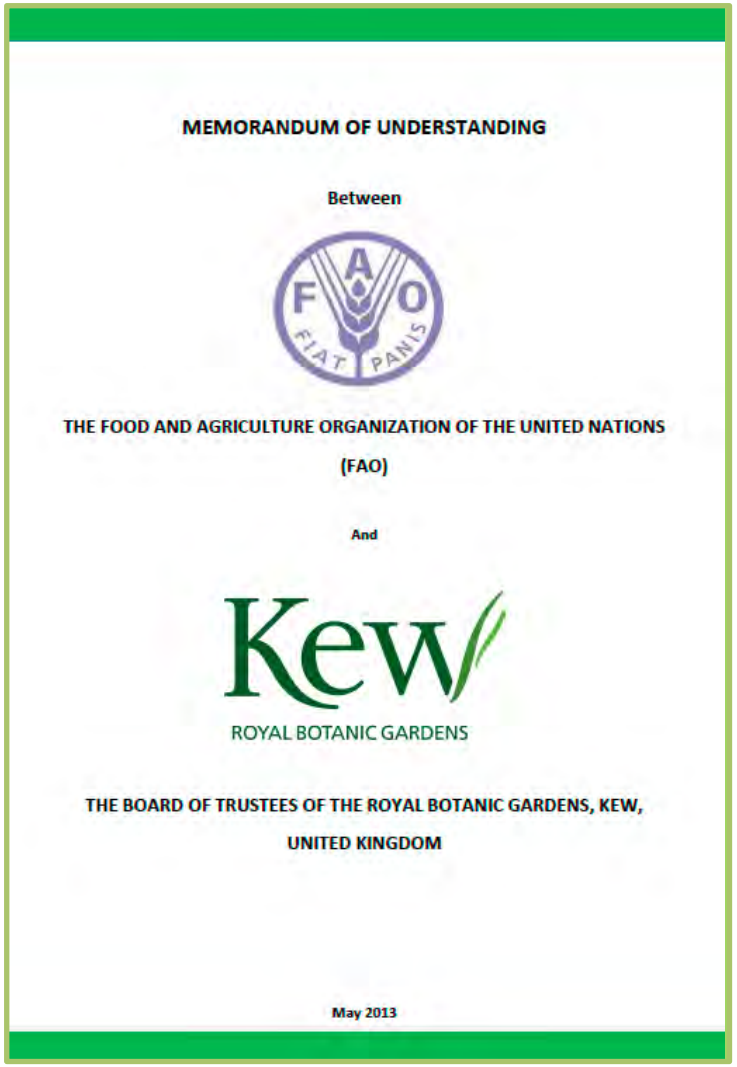
Result 3 – Communication and Visibility
Knowledge management/sharing awareness raising, Communication.

What we've done so far in Niger and Burkina Faso

	Niger	Burkina Faso
Result I	• Establishment of a NAGGW and AAD national steering committee • Capacity assessment workshop and capacity development planning workshops organized • Participation of Niger experts to different regional workshops (MA&D, • Socio-economic and biophysical baselines • Consultation of local communities on plant use	• Hosting of 2 regional workshops (M&E, MA&D). • Capacity assessment workshop as well as 3 smaller technical/operational meetings were also organized for the national partners and beneficiaries • Socio-economic and biophysical baselines • Consultation of local communities on local species preferences • 950 farmers trained on restoration • Training on MA&D of 10 facilitators
Result II	Preparation of mechanized field work (reparation of a Delphino plough, training of the tractor driver, etc.)	In total, 45 villages including 35 in Soum and 10 in Seno took part in the first field activities which covered 81 sites and **2,963.13 ha of degraded lands** (in 2016)
Result III	Communications officer recruited to develop a communication plan and strategy in Niger	• A communication plan was developed and implemented. • Project results were shared with the other actors and national partners. • A national GGW (for the 4 regions) partnership platform for SLM was set-up and is functional

Kew-FAO partnership: MoU

- Signed in August 2013 (until 2018)
- **Technical areas of collaboration**
  - Guidelines and information on seeds & forest species
  - Reports: State of the World Forest Genetic Resources
  - Plant Species naming & reference list
  - Capacity development (i.e. Tree Seed Centers)
- **Joint project**
  - Great Green Wall



MEMORANDUM OF UNDERSTANDING

Between

THE FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS

(FAO)

And

Kew

ROYAL BOTANIC GARDENS

THE BOARD OF TRUSTEES OF THE ROYAL BOTANIC GARDENS, KEW,

UNITED KINGDOM

May 2013

Kew-FAO partnership: Joint activities

2015

- Technical meeting between RBG Kew Seed Conservation Department (Prof Pritchard & Dr Ulian) and FAO AGPM –Agriculture + Forestry Departments (Rome, 18 March 2015);
- High level meeting between RBG KEW Foundation directorate + Sackler Foundation and FAO Deputy Director General + Forestry Department (Rome, 15 May 2015);
- FAO (Eduardo Mansur) participated in the launch of Kew's Science Strategy (23 February 2015);
- FAO/AAD Training workshops involving KEW partners:
  - **Collect Earth** Rome (January 2015) –
    - participants from RBG Kew (Serene), Aghrymet (Bako), CNSF -Burkina (Régis) and Niamey (April 2015) - participants from Mali (3), BF (3), Niger (2)
  - **African Farm/Family Forestry Producer Organizations** Conference (Nairobi, June 2015) –
    - TiiPaalga (Serge), Sahara Sahel Foods (Josef)

Kew-FAO partnership: Joint activities

2016

- FAO/AAD Training workshops involving KEW partners
  - **M&E and socio-economic baseline assessment** (Ouagadougou, March 2016)
    - participants from CNSF-Burkina (Régis), Tii Paalga (Serge), Niger (Abdou)
  - Training on **Market Analysis and Development** (MA&D - Kaya, November 2016)
    - participants from Burkina-Dori (Yaya), Tii Paalga (Serge), Niger (Abdou)
  - **Technical workshop on restoration in West Africa** (Abuja, January 2016)
    - Tree seed centers from BF (Lassina, Régis), Mali (Sidi, Bokary), Niger (Maman, Abdou)

+ Participation of FAO in all the meetings of the transboundary project since 2013

Seed provision for FAO/AAD

- **2016**: seeds provided by only USF (Mali)

- **2017**: FAO/AAD is proposing Letters of Agreements to CNSF-Niger, CNSF-Burkina and USF-Mali for provision of seeds for all its restoration sites. These LOAs include detailed activities and budgets.

KEW-FAO Partnership : Way Forward

- MoU is ongoing until 2018.
- The technical areas for collaboration are still valid.
- Major areas of collaboration for AAD remain:
  - Support in mobilization of quality seeds of native species for the restoration programme;
  - Capacity development of technicians for seed and data collection, field performance of native species, monitoring of restoration sites, etc.

Thank you !

www.fao.org/in-action/action-against-desertification

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Annexe 7

RECOMMANDATIONS OF PREVIOUS WORKSHOPS

Workshop: Sikasso (Mali), 4 – 8 December 2013

1. Adopting common canvas and format for reporting activities, by creating coordination unity in each country for global coordination and capitalization of findings.
2. Mapping interventions and activities in the 3 countries so that to Coordinate all activities of projects/programs/NGOs acting in GGW intervention zone for capitalization of efforts of all actors.
3. Organizing technical exchange workshop on some goods practices and successes in land restoration by local adapted species in a rotary manner among countries; Niger has been pronounced for the next meeting.
4. Defining strategies for founds mobilization for GGW in the 3 countries
5. Organizing laureate system rewarding the best farmers in restoration and management activities for motivating communities and maintaining their mobilization and their engagement/infatuation

Workshop: Niamey (Niger), 10 – 14 February 2015

1. Harmonizing approaches in executing des activities;
2. Mobilization of financial resources by different partners so that to respect the planning of the activities;
3. Putting particular accent the capitalization;
4. Improving and/or reinforcing information-exchange among field teams and national coordinators;
5. Organizing the coming workshop on some goods practices and successes in land restoration by local adapted species in a rotary manner among countries
6. Adopting common canvas and format for reporting activities, by creating coordination unity in each country for global coordination, capitalization of findings and data collection.

Annexe 8

Evaluation & Planning Workshop
'Great Green Wall' Cross Border Pilot Project
Burkina Faso-Mali-Niger

Agadir, Morocco 27th - 30th March 2017

Mali case study: Assisted Natural Regeneration (ANR)

Dr Sidi SANOGO and Dr Bokary A. KELLY

INTRODUCTION

To face the reduction of vegetation cover in the Sahel, many techniques aiming to fight desertification were tested among which, that experimented by farmers at Niger in middle 1980s which consisted to protect young trees in their field.

That technique since known as Assisted Natural Regeneration (ANR), has been exported in other Sahelian countries (Burkina Faso, Tchad, Senegal, Mali) and in others Africa regions like Kenya and Ethiopia.

The Pilot project Kew, in implementing this approach drives the way to meet targeted objectives and was in accordance with the Global Green Wall strategy in restoring land and vegetation.

During the First Conference of the Great Green Wall for the Sahara and the Sahel Initiative (GGWSSI) held at Dakar (Senegal) in May 2016, it was reported in technical sessions that all GGWs' countries should put accent on natural regeneration approach (easier and lower cost as compared to plantation).

Copping with natural regeneration is a fair choice in the context of Bankass due to hard environmental and socio-economical conditions. Restoring land and vegetation in that zone by planting need huge efforts (watering and protecting) to be successful.

This communication concerns a case of ANR at Bankass in the region of Mopti (centre of Mali) in sahelian zone in the frame of GGW-Pilot Project activities aiming to contribute fighting desert progress in the sahel.

THE APPROACH AND ITS OBJECTIVES

Assisted natural Regeneration (ANR) is an agroforestry technique consisting to protect and manage natural regrowth (shoots) that produce the stumps of trees and shrubs in the fields and fallows.

Objectives of the approach could be: - protecting cultivated lands through combating wind and water erosion, - improving soils fertility of the soil, - producing fire and craft wood, - producing fodder for the animals, - reducing evapotranspiration.

These objectives were included in the global objective of GGW-Pilot project which was to contribute fighting desert progress in the Sahel by restoring ecosystems, valorising and managing sustainably natural resources.

Some of them were also in accordance with some specific objectives of GGW-Pilot project like:
-Planting and maintaining parcels in the interest of the communities,

-Enriching and restoring degraded zones in village territories ,

- Improving communities' income by valorising the vegetal potential (fruit, fodder, wood, medicaments, etc.).

METHODS

Implementing ANR's approach involves several steps globally summarized below:

1. **Identification of sites and inventory of species**

2. **Choice of subjects (shoots) to assist**

3. **Maintenance of selected shoots**

4. **Protection against the dangers**

5. **Monitoring**

In our case study , these steps were described in the following slides

1. Site identification and species inventory

Site should be chosen according to targeted objectives of assisting natural regeneration. Its area depends on the availability of land and vegetal resources. Facilities for protecting and caring are also important parameters in selection of the site. Inventorying species is important as it allows knowing the vegetal material present in the site with which to cope and the products to expect varying according to species (wood, fruits, fodder, organic matter, etc.).

In the zone of Bankass, fields and fallows are the only available lands. Sites selected for GGW-Pilot project activities are fallows either or not used as parcels for planting. Guiera senegalensis is the dominant species (99%). *Balanites aegyptiaca* or *Anona senegalensis* are often found in some site. Selected sites for GGW-Pilot project were shown in table 1. Photo 1 shows the state of natural regeneration before intervention. Sites and area covered were presented in table 1.

Photo 1: State of regeneration before intervention

Tableau 1: Sites, ANR parcels' characteristics and superficies

Site	Parcel characteristics	Superficies (ha)
Dimbal I	Planted in 2013, ANR 2015	3
Endé I	Planted in 2013, ANR 2015	3
Ségué	Fallow selected 2015, extended 2016, partially used for cultivation in 2016	7,5
Soula Kanda	Planted 2014, converted in ANR 2016	3
Total superficies (ha)		16.5*

*: This area doesn't include 7.5 ha of natural population of *Acridocarpus monodii* (endemic species Mali) at Endé and Yatabalou

2. Selecting shoots to assist

Shoots are selected based on some criteria like their vigour, sanitary state, straightness and often their point of insertion on the stump (lower shoots are preferred). The number of selected shoots varied according to the objectives but usually less than 5 (1 or 2, sometimes 3 shoots are frequent). Selected shoots are marked with paint and the other shoots are cleared to favour selected shoots by reducing competition for nutriments. Photos 2 and 3 illustrate these operations and photo 4 illustrates the outcome.

Photo 2: paint handling

Photo 3: marking selected shoots

Photo 4: state when clearing other shoots

3. Maintenance of selected shoots

This is a current and continuous operation. It involves all maintenances brought in favour of selected shoots and includes

- pruning selected shoots to enhance their shape (photo 5),

- removing new growing shoot after clearing (photo 6),

-weeding during and after the rainy season to avoid attacks by termites and competition for water and nutrients from the soil.

Photo 5: Pruning shoots of *Balanites aegyptiaca*

Photo 6: Removing new growing shoots from *Guiera senegalensis*

4. Protection against dangers

Potential destruction factors of ANR were bush fire, animals, abusive or fraudulent wood exploitation, diseases winds, etc.

At Bankass, the main destruction factors are:

-fraudulent wood exploitation and

- animals

Preventing these damages remains very difficult in the context of Bankass where all populations use fire wood and animals were left free the whole dry season just after harvesting.

Measures to prevent these damages in this zone include surveillance of ANR parcels and population sensitization.

Planting appropriate trees species for fire wood production is advisable but it took long time before their exploitation and need also to be protected and even watered.

5. Monitoring

This operation also involves several operations like growth assessment, damages assessment, sanitary assessment, etc.

In GGW-Pilot Project monitoring consisted for now estimating shoots growth parameters by measuring the total height and the diameter at the base and at 1.30 m. This assessment was made on a sample of 30 shoots at Endé and Soula Kanda.

RESULTS

It is important noting that these results are very preliminary since Assisting the Natural Regeneration in GGW-Pilot Project case started in 2015 (see table 1).

These results are however comforting and promising, when considering regeneration aspect in parcels assisted from 2015 (photo 7 below).

Photo 7: Assisted regeneration of *Guiera senegalensis* at Segué

Shoots growth at Endé from 2015 to 2016 is shown in table 2.

Table 2: Averages and (coefficients of variation) for assessed variables

	Statistics of assessed variables		
	DB (cm)	DBH(cm)	TH (cm)
2015	5.17 (20)	3.19 (24)	266 (15)
2016	6.65 (16)	4.55 (26)	317 (14)
CAI (cm/year)	1.49	1.36	51

DB = diameter at basis, DBH = Diameter at body height, TH = Total Height, CAI = Current Annual Increase

Assisted shoots had a noticeable growth in diameter and height. The current annual increase for the different variables is high. The increase in height (51 cm/year) exceeded that observed for all local species experienced in plantation at Zangasso except for *Anogeissus leiocarpa* which had a current annual increase varying between 30 and 90 cm per year from 1989 to 1992) . Photo 8 opposite, shows measured shoot at Endé.

Photo 8: Assisted shoot measured at Endé

CONCLUSION AND....

ANR was identified as very promising approach which could be promoted in the whole intervention band of the Great Green Wall for the Sahara and the Sahel (GGWSS). ANR provides enormous environmental, economic and social benefits. Unlike the reforestation by planting, ANR is less demanding in terms of initial monetary investment. In practice, each farmer can adapt this agroforestry system to its needs and its location. Table 3 below summarizes this approach in terms of benefits and constraints.

Table 3: Advantages, inconvenient and constraints of ANR

Advantages	Disadvantages	Constraints
1. Species adapted to local conditions	1. Limited choice of the species	1. Fraudulent exploitation
2. Low costs	2. Spatial distribution not ordered	
3. Fast and very accessible to all farmers	3. Random (dependent on a source of regeneration)	2. Mutilation of trees for livestock feeding
4. Better survival rate	4. Lack of knowledge of the sylviculture of local tree species	3. Lack of forest regulations taking into account the status of the tree regenerated in the fields.
5. Guarantee biodiversity, reducing the risks and the importance of parasite attacks	5. Psychological aspect: a tree is more appreciated and better maintained when planted	
6. Produces a wide range of products	6. Products perceived as common resources	

.....RECOMMENDATIONS

Finally, even though realizations in the case of GGW-Pilot project are timid in terms of time and superficies, preliminary results are satisfactory and promising. More accents must be put in this activity so that to cover more area.

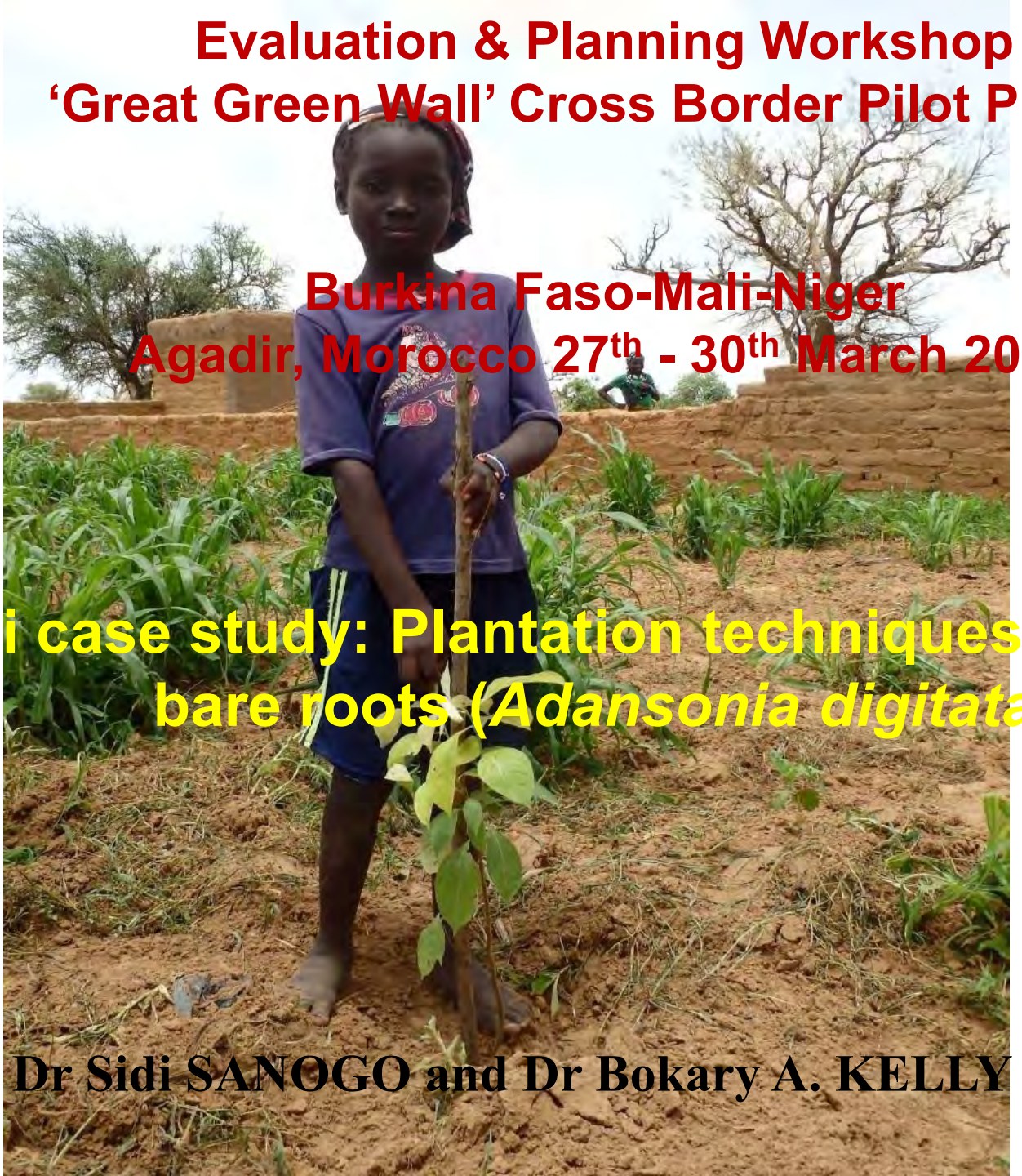
For GGW-Pilot Project to be successful, it is also necessary to address encountered constraints in the context of Bankass by protecting parcels at least for few years (3 – 5 years).

In failing to protect parcels with wire, local surveillance committees can be created and supported. A continuous sensitization of populations against fraudulent exploitation through local radios should also be undertaken and supported.


Thank you for your
pleasing attention

Annexe 9

Evaluation & Planning Workshop
'Great Green Wall' Cross Border Pilot Project



Burkina Faso-Mali-Niger
Agadir, Morocco 27th - 30th March 2017

Mali case study: Plantation techniques involving bare roots (*Adansonia digitata*)

Dr Sidi SANOGO and Dr Bokary A. KELLY

INTRODUCTION

Drought in years 1970 and 1980 and the huge pressure caused noticeable reduction of vegetation cover in the whole Sahel. In the sahelian region of Africa planting trees species after extensive de-forestation of natural stands *was* one of the first initiative to face the problem.

Exotic species like *Eucalyptus camaldulensis, Gmelina arborea, Azadirachta indica* , were tested but results did not satisfy targeted objectives, while the need of wood for cooking, heating, building, etc., increased because of growing population. Then research activities on forest local tree species were undertaken to support governments' initiatives and to develop regeneration techniques to fight desertification.

In Mali, researches on the sylviculture of local species were undertaken in mid 1980's and since more than 20 years, forest research program in southern Mali (Sikasso), has experimented several simple and low cost techniques in stations and farmed fields to support reforestation and restoration of vegetal. These researches started with prior useful species among which *Adansonia* was one of the top prior species.

This communication concerns the test of planting bare roots of *Adansonia* in farmers' fields at Bankass in the region of Mopti (centre of Mali) in sahelian zone in the frame of GGW-Pilot Project activities aiming to contribute fighting desert progress in the Sahel.

OBJECTIVES

Objectives of planting *Adansonia* in farmers' parcels meet specific objectives of GGW-Pilot project like:

- Planting and maintaining parcels in the interest of the communities;

- Enriching and restoring degraded zones in village territories ;

- Improving communities' income by valorising the vegetal potential (leaves, fruits, medicaments, etc.).

METHODS

*** The species**

Adansonia digitata (Baobab) is a forest tree species originated from Africa.

Rural populations of semi-arid West Africa have selected the baobab tree as one of the priority species for domestication programs.

Photo 1: Baobab trees in a field at Bankass

In all surveys held at Bankass Bandiagara and Koro for identifying useful species, in the frame of GGW-Pilot, this species was the first of the top ten species.

Baobab products are used for medicine and food.

Pulp is rich in vitamin C and calcium, seeds contain essential amino acids and fatty acids, oil is used in the cosmetics industry.

Market of Baobab products concerns now many countries (Soudan, Senegal, Mali, Burkina Faso, Benin, Togo, Benin, etc.). and contribute significantly to household income.

Recently, baobab fruit pulp has been approved for sale in the and USA.

* Strategy for *Adansonia* plants supply to farmers

Several local plants species producers (private nursery holders) were identified in 2015 in the Bankass, Koro and Bandiagara districts and are collaborating with GMV-Pilot Project.

Most of them were helped in terms of training, supplying nursery materials (seeds, pots; watering cans, barrows).

Tall plants *Adansonia* are produced by some of these private nursery holders and sold to the project at the price of 1000 FCFA/unit.

Photo 2: Seedlings of several species in Jean Damango's nursery at Tyi, Bankass (discussion with owner around the well)

The list of identified and collaborating nursery holder is given in table 1.

Table 1: Identified nursery holders (names in bold indicate satisfactory nurseries and very motivated nursery holders)

No	Names	Communes	Villages	Phone contact
1	**Harouna Guindo*+**	**Bankass**	**Bankass**	**65 95 19 13**
2	**Justin S. Somboro+**	**Segué**	**Segué**	**61 72 19 62**
3	**Luc Doho+**	**Segué**	**Leguere**	**65 22 22 67**
4	Amadou Togo	Dougoutèné II	Tinsagou	63 24 82 23
5	**Nouzon Senou+**	**Baye**	**Minta**	**78 47 08 82**
6	Lassina Irango	Baye	Baye	79 28 01 79
7	**Egaly SAGARA***	**Koro**	**Pomoro Dojou**	**77 64 30 18**
8	**Emmanuel DOUGNON***	**Barapireli**	**Barapireli**	**62 18 29 19**
9	**Fidèle TOGO***	**Koporo-Pen**	**Koporo-Pen**	**65 66 63 48**
10	Hamidou TOGO	Koporo-Na	Koporo-Na	65 72 06 11
11	**Jean DAMANGO #***	**Segue**	**Tyi**	**65 77 51 79**
12	Hamidou FONGORO+	Tori	Ogoboro	73 78 40 18
13	Amagouan GUINDO+	Tori	Tori	74 61 72 02
14	**Youssouf TOGO#***	**Koulogon-Habe**	**Sinsagou**	**62 18 69 02**
15	Bonsara TESSOUGUE+	Dimbal	Dimbal	65 21 39 84
16	Issa GUINDO	Bara-Sara	Parou	65 71 90 88

 # : Purchase of tall plants of *Adansonia*

***: Purchase of seedling in pots of several species**

+ : Support of GMV-Pilot Project

Photo 3a: Seedlings of several species in Egaly Sagara's nursery at Pomoro Dojou, Koro (discussion with owner)

Photo 3b: Seedlings of *Adansonia* in Youssouf Togo's nursery at Sinsagou, Bankass (image of owner)

*Planting sites and collaborating farmers

Tall plants of *Adansonia*, **extremely appreciated** by the farmers, have been distributed to volunteer farmers for planting (Photo 5 opposite). Several plantation sites like home compounds, current farm fields, home gardens, etc.

Photo 5: Tall *Adansonia* plants bought and distributed to collaborating farmers at Dimbal

Photo 4: Young plants of *Adansonia* in Emanuel Dougnon's nursery at Barapireli, Koro. Young plants in plank gave tall plants in 1.5 – 2 years (photo 5) and sold by farmers as bare roots for planting.

The list of volunteers for planting is shown in table 2 and planting was done in August 2016.

Table 2 : List of volunteer farmers and number of plants

Villages	Volonteer farmers	Number of plants	Site of plantation	Coordinates
Kouyentombo	Allaye Guindo	20	CFF	N 14,08.358 W 003,53.529
Daboye	Soumaïla guindo	20	CFF	N14,08.062 W003,50.114
Daboye	Oumar Daouda Guindo	20	CFF	N14,04.849 W003,49.474
Daboye	Seydou Y. Guindo	20	CFF	N 14,02.966 W 003,29.818
Daboye	Boury Guindo	20	CFF	N 14,02.434 W 003,29.653
Dianwely	Allaye Kounidji Guindo	20	HC	N 14,02.508 W 003.30,575
Dianwely	Amadou Allaye Guindo	20	HC +G	N 14,02.305 W 003,30.502
Dianwely	Macki Guindo	20	HC	N 14,02.400 W 003,30.470
Ogotena	Mamadou Aly Guindo	20	CFF	N14,06.254 W003,51.511
Ogotena	Allaye Alboury Guindo	20	CFF	N14,06.175 W003,52.078
Ogotena	Soumaïla M. Guindo	20	CFF	N14.06591 W003.51847
Endé	Salif Guindo	20	CFF	N 14,10.775 W 003,31.742
Dimbal	Gadri Tessougué	20	CFF	N 14,01.885 W 003,36.628
Dimbal	Moudou Tessougué	20	CFF	N 14,01.209 W 003,37.668
	14 farmers and a total of	280 plants		

Legend: CFF = Current farm fields, HC = Home compound, G = Garden

* Monitoring

Plantations are monitored at the end of rainy season (November-December) each year for at least 3 to 4 years after planting. First assessment is usually conducted 3 months after plantation to estimate plant **resumption rate**.

The other collected data in following years are the **survival rate** and growth parameters like the diameter at the basis **(DB)**, diameter at 1.30 m above ground **(DBH)**, total height **(TH)**. During monitoring, insects' attacks, diseases and other damages are also observed and noticed.

Photo 6b: Measurement of total height

Photo 6a: Measurement of diameter at the basis

RESULTS

*** Survival of plants**

The resumption rates per site are displayed in table 3. They varied from 95% to 100% with an average of 98%. This result is satisfactory but it is very a first one, plantations being assessed only 3 months after planting.

*** Growth parameters**

Averages of measured variables on a sample of sites are shown in table 4. The Average of DB varied from 4.2 cm to 5.92 cm with global mean of 5 cm.

That of DBH varied from 1.34 cm to 2.23 cm with global mean of 1.83 cm.

The average of TH varied from 164 cm to 219 cm with global mean of 194 cm.

Coefficients of variation were bit high (29%, 40% and 22% for the 3 variables respectively).

Photo 7: *Andansonia* planted at HC (farmers are motivated to protect their plants using available tools)

Tableau 3: Resumption rates 3 months after planting

Collaborating farmers	Number planted	Number surviving	Resumption rate (%)
Allaye Guindo	20	20	100
Soumaïla Guindo	20	20	100
Oumar Daouda Guindo	20	20	100
Seydou Y. Guindo	20	20	100
Boury Guindo	20	18	90
Allaye Kounidji Guindo	20	20	100
Amadou Allaye Guindo	20	20	100
Macki Guindo	20	20	100
Mamadou Aly Guindo	20	20	100
Allaye Alboury Guindo	20	20	100
Soumaïla M. Guindo	20	20	100
Salif Guindo	20	19	95
Gadri Tessougué	20	19	95
Moudou Tessougué	20	19	95
Total	280	275	
		Average	98,21

Table 4: Averages of measured variables 3 months after planting (coefficients of variation were indicated between brackets)

Farmers	Nb plants	R R (%)	DB (cm)	DBH (cm)	TH (m)
Gadri Tessougué	19	95	4,74 (19)	1,53 (44)	184 (19)
Moudou Tessougué	19	95	4,20 (48)	1,34 (45)	164 (24)
Allaye K. Guindo	20	100	5,59 (20)	2,21 (32)	219 (16)
Amadou Guindo	20	100	5,92 (8)	2,23 (22)	214 (20)
	Global mean		5,04 (29)	1,83 (40)	194 (22)

Legend : Nb = number; RR = Resumption Rate; DB = diameter at basis ; DBH = diameter at body height (1,30m) ; TH = total height

CONCLUSION AND RECOMMENDATIONS

Like ANR case study, results are preliminary and plantation activities including that of tall bare roots of *Adansonia* in the case of GGW-Pilot project are timid in terms of time and superficies.

Despite encountered constraints, plantation of tall *Adansonia* is promising based on the observed resumption rates and the huge motivation of farmers for this very important species in that zone.

However it is important for the project to be successful and meet its objectives to face the main constraints.

A summary of the mains constraints and some suggestions / recommendations as potential ways in seeking solutions is shown below.

Table 5: Constraints and suggestions for successful plantation activity in the context of Bankass

Main constraints	Suggestions /Recommendations
❖ Damages due to animals ❖ Damages due to persons ❖ Huge drought	• Conveying farmers that supply and plantation of tall plants of *Adansonia* could be an accompaniment to other successful actions in restoring the soil and the vegetation, maintaining biodiversity. These action might be progressive plantation of other useful species at small scale, ANR, fighting soil erosion, etc. • Undertaking sensitization sessions of partners to encourage them to appropriate achievements and to play their role to reach project objectives • Motivating best partners by rewarding successful realizations (prize, protection tools, helping in water constraints, etc.) • Holding discussions including all partners (project team, technical services, local community authorities and farmers so that to think about how to conduct and strengthened activities in the perspectives beyond pilot project


Thank you for your
pleasing attention

Annexe 10

3e atelier projet pilote Kew - Grande Muraille Verte, près d'Agadir (Maroc)
27 – 30 Mars 2017

MISE EN ŒUVRE DU PROJET PILOTE TRANSFRONTALIER DE LA GRANDE MURAILLE VERTE AU CENTRE NATIONAL DE SEMENCES FORESTIERES (CNSF) OUAGADOUGOU – BURKINA FASO

ÉTUDE DE CAS

***Dr. Lassina SANOU*,**
Coordonnateur du Projet pilote GMV au CNSF/Ouagadougou
BURKINA FASO

PLAN DE PRENSENTATION

- INTRODUCTION/CONTEXTE
- BUT ET OBJECTIFS
- ZONE D'INTERVENTION DU PROJET ET COMMUNAUTES PARTENAIRES
- STRUCTURE DE GESTION DU PROJET ET PERSONNES IMPLIQUEES
- ETUDE DE CAS : RÔLE DE LA STRATE HERBACEE UTILITAIRE DANS LA RESTAURATION DES TERRES DEGRADEES EN ZONE SAHELIENNE

INTRODUCTION/CONTEXTE

- le Burkina Faso est situé au cœur de l'Afrique de l'Ouest ;
- c'est un pays enclavé et couvre une superficie de 274 000 km² ;
- Trois zones climatiques majeures :
  - ✓ *la zone sahélienne ;*
  - ✓ *La zone soudano-sahélienne ;*
  - ✓ *la zone soudanienne.*
- Population : **14 017 262** (2006) habitants, dont 51,7% de femmes
- Taux de croissance de la population : 3,1%
- **15 730 977** habitants en 2010,
- **18 450 494** habitants en 2015

- L'économie fortement dominée par l'agriculture, l'élevage et la foresterie. Ces trois secteurs mobilisent près de 85% de la population et produisent 2/3 des richesses nationales.

INTRODUCTION/CONTEXTE (Suite)

- Principale source énergie : **Bois et charbon de bois représentent 90%** du bilan énergétique au plan national contre **8% pour les hydrocarbures et 2% pour l'électricité.**

- **84%** des ménages au Burkina Faso utilisent le bois comme source d'énergie ;

  - ✓ Conséquences : Pression énorme sur les **ressources en bois et le couvert végétal par la coupe abusive** ;

- Sans oublier la pressions pastorale sur les ressources végétales fourragères, surtout dans la zone sahélienne ;

- Aggravée par les changements climatiques et l'irrégularité des pluies ;

- Dégradation des terres, du couvert végétal et perte de la diversité biologique ;

BUT ET OBJECTIFS DU PROJET PILOTE GMV

- Améliorer la sécurité alimentaire dans la zone prioritaire d'intervention par la réalisation d'actions multiformes et intégrées de Gestion Durable des Terres (GDT) et la promotion d'activités génératrices de revenus ;

- Traiter les impacts environnementaux et sociaux des autres initiatives humaines affectant la gestion durable des terres ;

- Consolider la GDT et l'environnement par la valorisation des acquis de la recherche scientifique et la mise en œuvre d'une communication de développement.

STRUCTURE DE GESTION DU PROJET ET PERSONNES IMPLIQUEES

- ✓ Un coordonnateur nommé par le Directeur Général du Centre National de Semences Forestières (CNSF), et coordonne les activités du projet pilote ;

Une équipe technique operationnelle est constituée en fonction des ouputs du projet et chacun selon sa spécialité. ***Les personnes impliquées dans la gestion du projet :***

- **Dr. Moussa OUEDRAOGO :** Director general;
- **Dr. Lassina SANOU :** Seed collection, taxonomy and Community capacity building responsible, nouveau coordonnateur du projet pilote GMV au Burkina Faso ;
- **Dr Bassioru BELEM :** sylviculture and spieces domestication responsible ;
- **Daboue Edith :** Seed manutention and testing responsible;
- **Outbids Regis :** Data collection, management and analysis responsible;
- **Bassirou SOUGUE** : Sahel regional fore st seed antenna responsible;
- **Aristide Nikiéma :** Financial and administrative officer;
- **Abasse Soungue :** Accounting officer;
- **Other "on ground" partners** (technicians, community rural and ONG).

Partenaires du projet GMV et rôles

Partenaires	Statut	Rôle
Centre National de Semences Forestières (CNSF)	Structure technique étatique centrale chargée de la mise en œuvre du projet pilote en partenariat avec Kew	▪ Collecte et fourniture des semences de bonne qualité ▪ Production des plants ▪ Renforcement des capacités des différents acteurs ▪ Encadrement pour la réalisation des plantation ▪ Supervision et évaluation des activités (récolte, formation, production et plantations).
Tiipaalga	ONG de développement	▪ Facilitateur pour identification et le choix des communautés et les sites à récupérer; ▪ Sensibilisation des communautés villageoises; ▪ Duplication du modèle de la technique de réalisation des mises en défens; ▪ Mise en œuvre des actions sur le terrain .
Mairies de Djibo et de Dori	Collectivités décentralisées	▪ Point focal au niveau communal pour l'identification et le choix des communautés et les sites à récupérer; ▪ Sensibilisation des communautés villageoises; ▪ Mise en œuvre des actions sur le terrain.
Direction Régionale en charge de Environnement dans la région du Sahel	Services techniques déconcentrés de l'état	▪ Appui technique au niveau déconcentré; ▪ Mise en œuvre des actions et suivi rapproché sur le terrain.

Partenaires du projet GMV et rôles/ suite

Partenaires	Statut	Rôle
Coordination National de l'IGMVSS au Burkina Faso	Structure de coordination	Cordonne et veille à la mise en œuvre de toutes les activités entrant dans les objectifs de l'IGMVSS au Burkina Faso

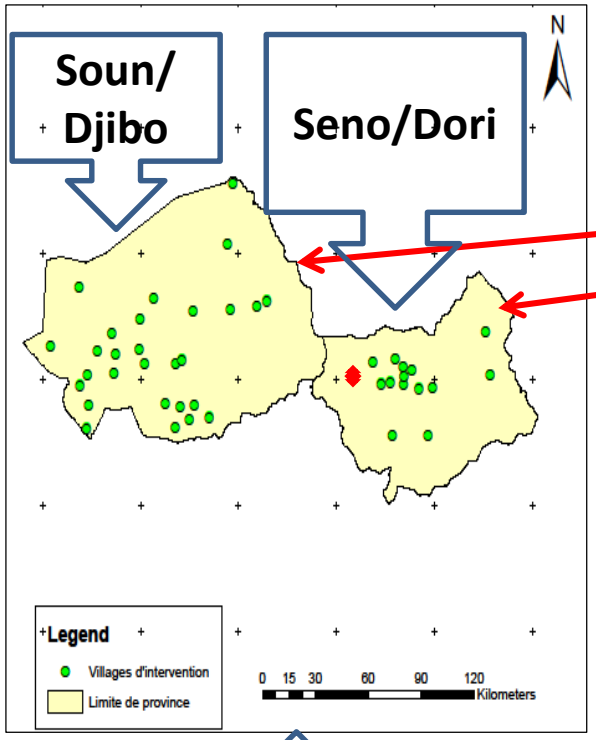
Quelle synergie ? : Projet Pilote GMV/Kew, la Coordination Nationale de l'Initiative GMVSS et le Projet ACD

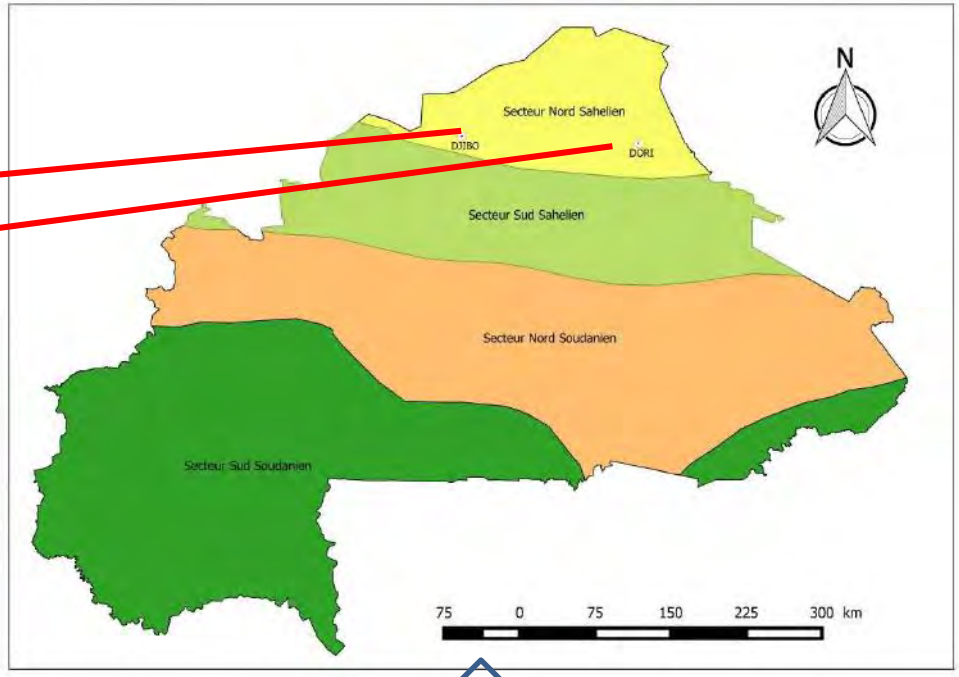
ETUDE DE CAS : ROLE DE LA STRATE HERBACEE UTILITAIRE DANS LA RESTAURATION DES TERRES DEGRADEES EN ZONE SAHELIENNE

PLAN

- **ZONE D'INTERVENTION**
- **INTRODUCTION/CONTEXTE**
- **OBJECTIF GLOBAL DE L'ÉTUDE ET DEMARCHE**
- **ACTIVITES REALISEES**
- **RESULTATS**
- **CONCLUSION ET RECOMMANDATION**

ZONE D'INTERVENTION





Localisation des villages d'intervention dans les deux provinces

Zone phytogéographique du Burkina Faso

Le projet transfrontalier « Grande Muraille Verte » intervient dans la zone nord-sahélienne du domaine sahélien du Burkina Faso (Guinko, 1984); plus précisément dans les provinces du Seno (Dori) et du Soun (Djibo).

Les sites de restauration sont implantés dans 65 villages (49 à Djibo et 16 Dori).

INTRODUCTION

- Au Burkina Faso le problème de dégradation des ressources en terres, surtout dans la zone sahélienne, est crucial.
- En effet, l'agriculture, l'élevage et la foresterie mobilisent près de 85% de la population (INSD, 2006).
- Pression anthropique (homme et animaux) exercée sur les ressources naturelles a conduit, avec la péjoration climatique, à une forte dégradation du couvert végétal et des sols, notamment la région sahélienne.
- La culture des herbacées utilitaires vise à les promouvoir et à les valoriser pour satisfaire les besoins des communautés rurales d'une part et de lutter contre la dégradation des terres d'autre part.

INTRODUCTION/Suite

- Dans le cadre du projet pilote GMV, le CNSF a mené une recherche participative à travers la culture de trois graminées utilitaires dans la zone d'intervention du projet.

- Le but recherché est d'accompagner les efforts des communautés rurales, dans la gestion durable des terres.

- En effet, plusieurs approches techniques intelligentes de gestion durable des terres ont été mises au point par les chercheurs à travers une recherche participative.

INTRODUCTION/Suite

- Parmi lesquelles on peut citer **le sous-solage, les demi-lunes et les cordons pierreux.**
- Cependant, ces ouvrages de construction en terre et en pierre ont montré leurs limites à cause de leur dégradation due aux intempéries au fil du temps, et les zones restaurées regagnent le processus de dégradation.
- C'est donc dans l'optique d'une meilleure utilisation des graminées et d'une gestion durable des terres agricoles et pastorales, que l'expérience de culture des herbacés utilitaires pour renforcer les ouvrages réalisés dans les sites de restauration de l'Initiative Grande Muraille Verte a été réalisée.

OBJECTIF GLOBAL DE L'ÉTUDE

- Soutenir les actions de restauration des terres dégradées par le **renforcement des ouvrages mis en place pour lutter contre l'érosion éolienne et hydrique et à lutter contre la pauvreté à travers la promotion d'espèces herbacées utilitaires pour les communautés rurales de la région du sahel**

De façon spécifique :

- Connaître l'aptitude de chaque espèce herbacée à fixer les ouvrages de restauration des sites ;
- Promouvoir la culture et l'utilisation de graminées concernées pour la restauration des terres dégradées, la production de semence et du fourrage.

ACTIVITÉS RÉALISÉES

- ***Choix des espèces herbacées : le choix des espèces cible a été fait selon les critères suivant :***
  - ✓ Intérêt socio-économique et écologique;
  - ✓ Importance relative de l'espèce pour les populations locales
  - ✓ Adaptation aux conditions écologiques de la zone de culture
  - ✓ Aptitude de renforcer et fixer les ouvrages de GDT

Le couplage de ces trois critères ont permis de retenir trois espèces que sont : ***Adropogon gayanus, Cymbopogon schoenanthus et Pennisetum pedicellatum.***

- ***Récolte des semences :*** En fonction de la phénologie des trois espèces herbacées identifiées, des missions de récolte de semences ont été effectuée dans le mois de Novembre et Décembre 2014 pour récolter les quantités de semences nécessaire à l'expérimentation

ACTIVITÉS RÉALISÉES /SUITE

- ***Les tests de germination des semences récoltées***
  - ✓ Ils ont permis d'évaluer et de s'assurer de la bonne qualité des semences collectées avant la réalisation des ensemencements sur le terrain
  - ✓ Le test est fait en milieu réel (pépinière) dans des pots plastiques destinés à la production des plants
  - ✓ 50 graines par lots de semence de chaque espèce ont été testées
  - ✓ Les résultats des tests ont été bons pour les trois espèces herbacées choisies : ***Andropogon gayanus* (100%), *Cymbopogon schoenanthus* (80%) *et Pennisetum pedicellatum* (100%) *de germination***.

ACTIVITÉS RÉALISÉES /SUITE

- ***Réalisation des ouvrages :*** Trois types d'ouvrages de restauration ont été mis en place par la mairie de Dori :
  - ✓ Le sous-solage mécanique avec la charrue delfino suivant les courbes de niveau sur le terrain;
  - ✓ Les demi-lunes : creusé à la main est une terre compactée en forme de demi-cercle, les cordons pierreux : constructions d'obstacles empêchant l'eau de couler trop vite ou n'importe comment. Ces ouvrage ont été construits manuellement par les communautés rurales avec l'appui de la commune de Dori.

ACTIVITÉS RÉALISÉES /SUITE

- **Réalisation des semis :** deux modes de semis ont été utilisés :
  - ✓ semis dans des **poquets** placés en amont et en aval de chaque ouvrage,
  - ✓ semis dans **des sillon s**tracés sur chaque type d'ouvrage

RESULTATS

- Levée des semis : D'une manière générale, le taux de germination des trois espèces ensemencées est relativement élevé, avec respectivement 90% pour l'ensemble des espèces (*Andropogon gayanus, Cymbopogon schoenanthus et Pennicetum pedicellatum)*.
- Leur état végétatif et le renforcement des ouvrages ensemencés a été aussi jugé satisfaisant pour les trois espèces, tant sur les lignes de sous-solage, que sur les demi-lunes et les cordons pierreux

Plantule d'Andropogon gayanus de 45 jours

Plantule d'Andropogon gayanus de 60 jours

RESULTATS/suite

Andropogon gayanus à gauche et *Pennisetum pedicellatum* à droite : semis dans des poquets espacés de 40 cm sur les raie des lignes de sous-solage

RESULTATS/suite

Bande enherbée de *Cymbopogon schoenanthus* (un an) sur un cordon pierreux dans une exploitation agricole restaurée

Bande enherbée d'Andropogon gayanus (2 ans) sur un cordon pierreux dans une exploitation agricole restaurée

Conclusion et recommandation

- Les semis ont été suivis d'une germination satisfaisante pour toutes les trois espèces et sur tous les ouvrages de restauration ;
- Ce qui traduit la bonne qualité des semences utilisées ;
- Tous les modes de semis utilisés (en poquets et dans des sillons) ont tous répondus favorablement pour les trois espèces herbacées ;
- Les plantules des deux espèces pérennes : *Andropogon gayanus* et *Cymbopogon schoenanthus* ont survécus à la sécheresse et se sont bien développées à saison hivernale suivante et ont bien contribué au renforcement des différents ouvrages (lignes de sous-solage, demi-lune et cordon pierreux ;
- Pennisetum pedicellatum une espèce annuelle, le stage végétatif des plantules a évolué jusqu'à la floraison et fructification. Les semences ont tout de même arrivées à maturité. Celles tombées sur les ouvrages ensemencés ont germé à la saison hivernale suivante ;
- Les essais de culture des trois graminées ont été riche en enseignements au vu des résultats satisfaisants enregistrés sur le terrain ;

Conclusion et recommandation

- On retiendra qu'il est possible d'entreprendre la promotion des herbacées pour la **fixation des lignes de sous-solage, des demi-lunes et des cordons pierreux ;**
- **Ce qui leur permettra de** jouer effectivement leur rôle dans la restauration des terres dégradées ;
- Grâce à cette technique simple et appropriée, les travaux de réhabilitation des ouvrages seront réduits et les producteurs auront le temps de vaquer à d'autres activités ;
- D'autres avantages sont à saluer dans la culture des herbacés. Il s'agit de la production du fourrage, des ballets et de la paille pour la confection des seccos et les toitures des cases ;
- Les sites d'ensemencements serviront de sources d'approvisionnements de semences d'herbacées que les producteurs pourront récolter et utiliser pour agrandir les parcelles ensemencements afin d'assurer la durabilité des ouvrages de restauration des terres ;


MERCI DE VOTRE AIMABLE ATTENTION

Annexe 11

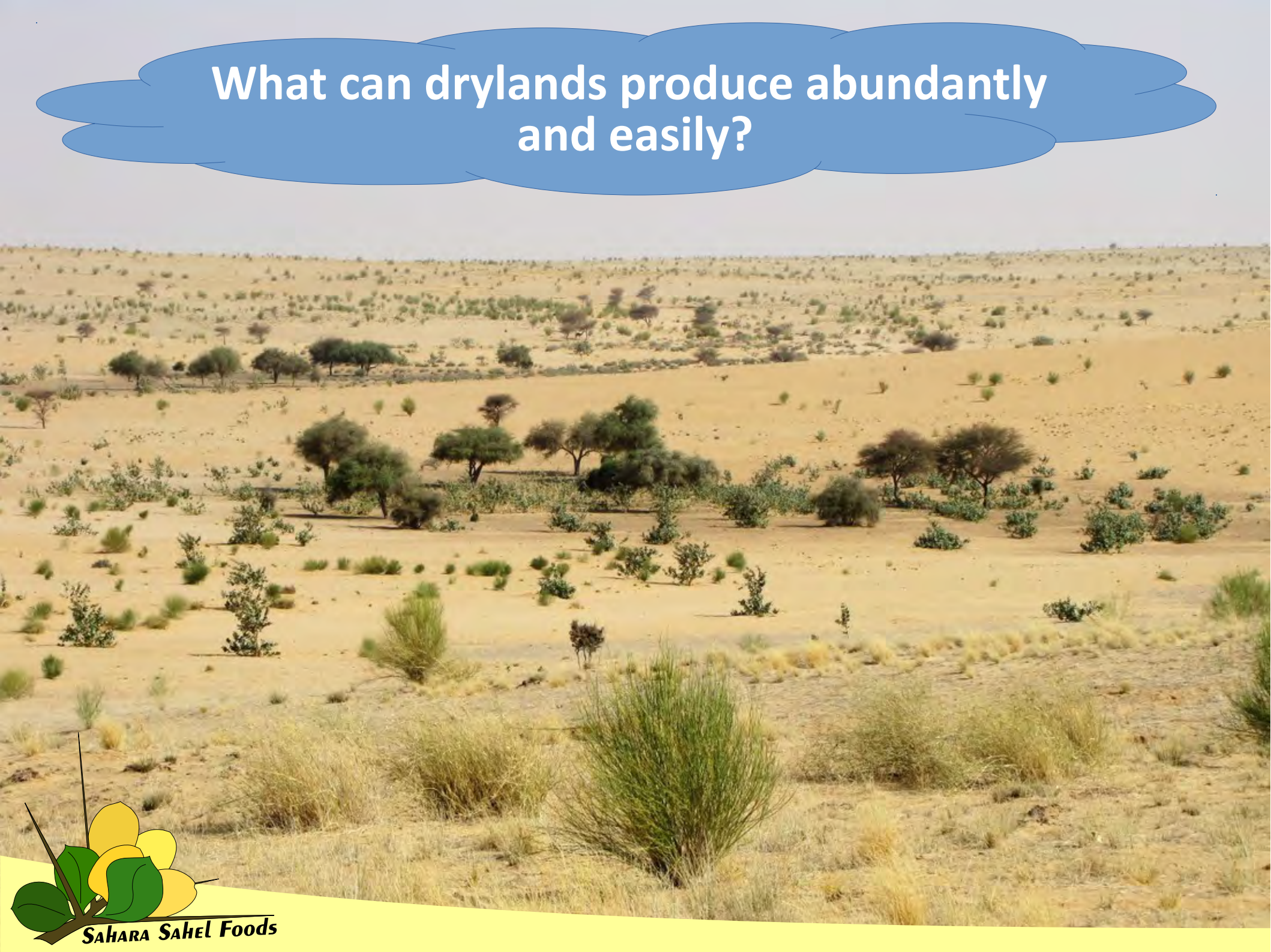
Building NWFP businesses that are inclusive to rural women

Case of the social entreprise Sahara Sahel Foods in Zinder, Niger Republic

Sahara Sahel Foods

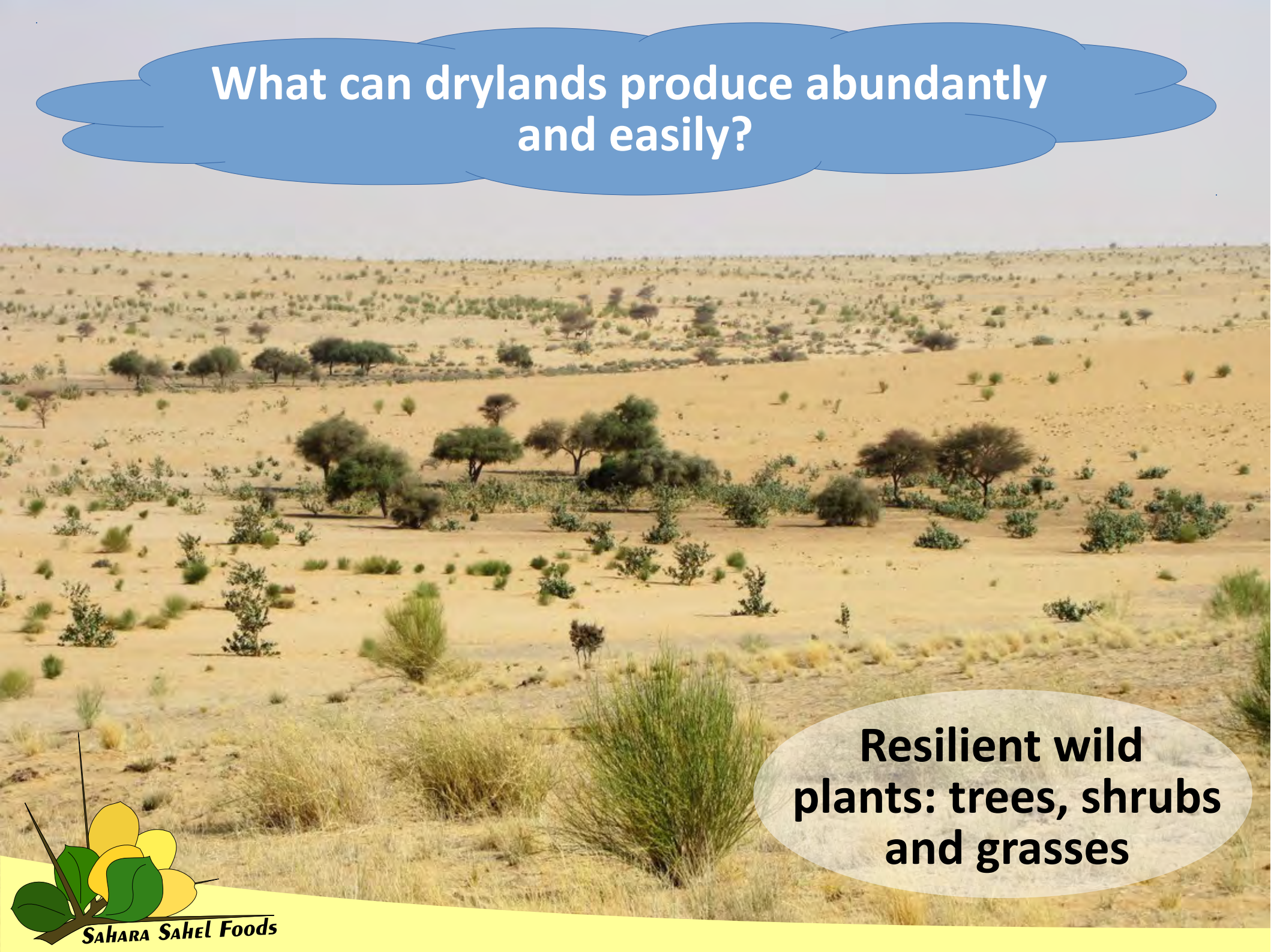
People profiting from nature
Nature profiting from people

What can drylands produce abundantly and easily?



Sahara Sahel Foods

What can drylands produce abundantly and easily?



Resilient wild plants: trees, shrubs and grasses

Sahara Sahel Foods


We must make use of what they give
Sahara Sahel Foods


Gathering wild crops is traditionally
a domain for women and children
Sahara Sahel Foods

So is processing them

Sahara Sahel Foods


These foods were very common
in precolonial Sahara and Sahel
Sahara Sahel Foods

Why don't local communities develop major value chains around these foods today?

Sahara Sahel Foods

They have been stigmatised in modern times

Sahara Sahel Foods

They have been stigmatised in modern times

Press

SOCIETE

DAMERGOU

LA MORT EN DIRECT

Chaque jour les femmes accompagnées de leurs enfants parcourent des distances pour cueillir ces quelques rares graines d'Anza.

Sahara Sahel Foods

They have been stigmatised in modern times

Press

SOCIETE

DAMERGOU

LA MORT EN DIRECT

Chaque jour les femmes accompagnées de leurs enfants parcourent des distances pour cueillir ces quelques rares graines d'Anza.

some rare seeds of hanza.

Sahara Sahel Foods

They have been stigmatised in modern times

Press

SOCIÉTÉ

DAMERGOU

LA MORT EN DIRECT

Chaque jour les femmes accompagnées de leurs enfants parcourent des distances pour cueillir ces quelques rares graines d'Anza.

Aid Groups

"yesterday, […] mothers were forced to feed their children **toxic berries**"

"She feeds this **poison** to her children because there is simply no other choice! It's her attempt at diet diversity: **wild leaves** one day, potentially **toxic berries** the next!"

Ertharin Cousin, Executive Director WFP
May 2012

some rare seeds of hanza.

Sahara Sahel Foods

Other major challenges:

Sahara Sahel Foods

Other major challenges:

Hygiene

Sahara Sahel Foods

Other major challenges:

Hygiene

Clean water

Sahara Sahel Foods

Other major challenges:

Hygiene

Clean water

Appropriate tools

Sahara Sahel Foods

Other major challenges:

Hygiene

Appropriate tools

Clean water

Food processing skills

Sahara Sahel Foods

Other major challenges:

Hygiene

Appropriate tools

Clean water

Food processing skills

Packaging materials

Sahara Sahel Foods

Other major challenges:

Hygiene

Appropriate tools

Clean water

Empowerment

Food processing skills

Packaging materials

Sahara Sahel Foods

Sahara Sahel Foods

Foods from Wild Perennials

Sahara Sahel Foods

Sahara Sahel Foods creates quality consumer products from these foods

Sahara Sahel Foods


Around 1000 rural people supply the raw materials
Some have never owned €10 in cash
Sahara Sahel Foods

They group their shipments and send them to our factory

Sahara Sahel Foods


Some organise into small cooperatives
Sahara Sahel Foods


Sahara Sahel Foods
The majority are women
Sahara Sahel Foods

They include farmer wives

Sahara Sahel Foods

Pastoralists

Sahara Sahel Foods


Refugees from
Boko Haram
Sahara Sahel Foods

Sahara Sahel Foods

Sahara Sahel Foods processes their produce

Sahara Sahel Foods

Through debittering

Sahara Sahel Foods

Oil expelling

Sahara Sahel Foods

Flour and couscous milling

Sahara Sahel Foods

Packaging

Sahara Sahel Foods

And many other tasks

Sahara Sahel Foods

Sahara Sahel Foods sells the finished products

Sahara Sahel Foods

In various urban stores

Sahara Sahel Foods

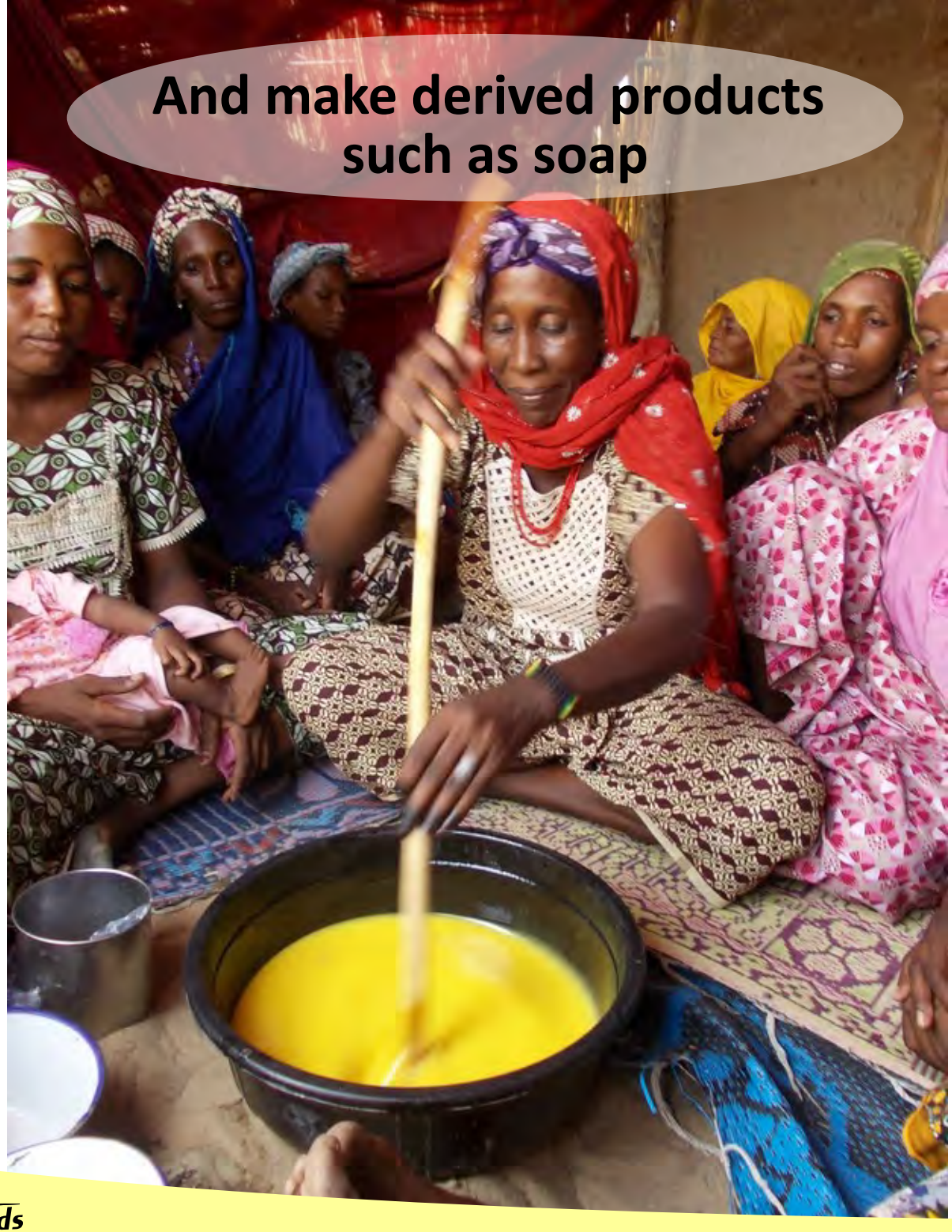
We also barter with our suppliers

Sahara Sahel Foods

Who consume the foods at home

Sahara Sahel Foods


Sell
Sahara Sahel Foods



Sahara Sahel Foods

The women engage in the direct seeding of new trees

Sahara Sahel Foods

In order to reforest their lands

Sahara Sahel Foods

What is the outlook for the future?

Sahara Sahel Foods

Lots of people want to join as suppliers

Sahara Sahel Foods

Lots of people want to join as suppliers

- We are imposing supplier quotas

Sahara Sahel Foods

Lots of people want to join as suppliers

- We are imposing supplier quotas
- We say no to new networks of suppliers

Sahara Sahel Foods

Lots of people want to join as suppliers

- We are imposing supplier quotas
- Women identify their profession as fruit collectors
- We say no to new networks of suppliers

Sahara Sahel Foods

Lots of people want to join as suppliers

- We are imposing supplier quotas
- Women identify their profession as fruit collectors
- We say no to new networks of suppliers
- If sales grow we can take on more farmers

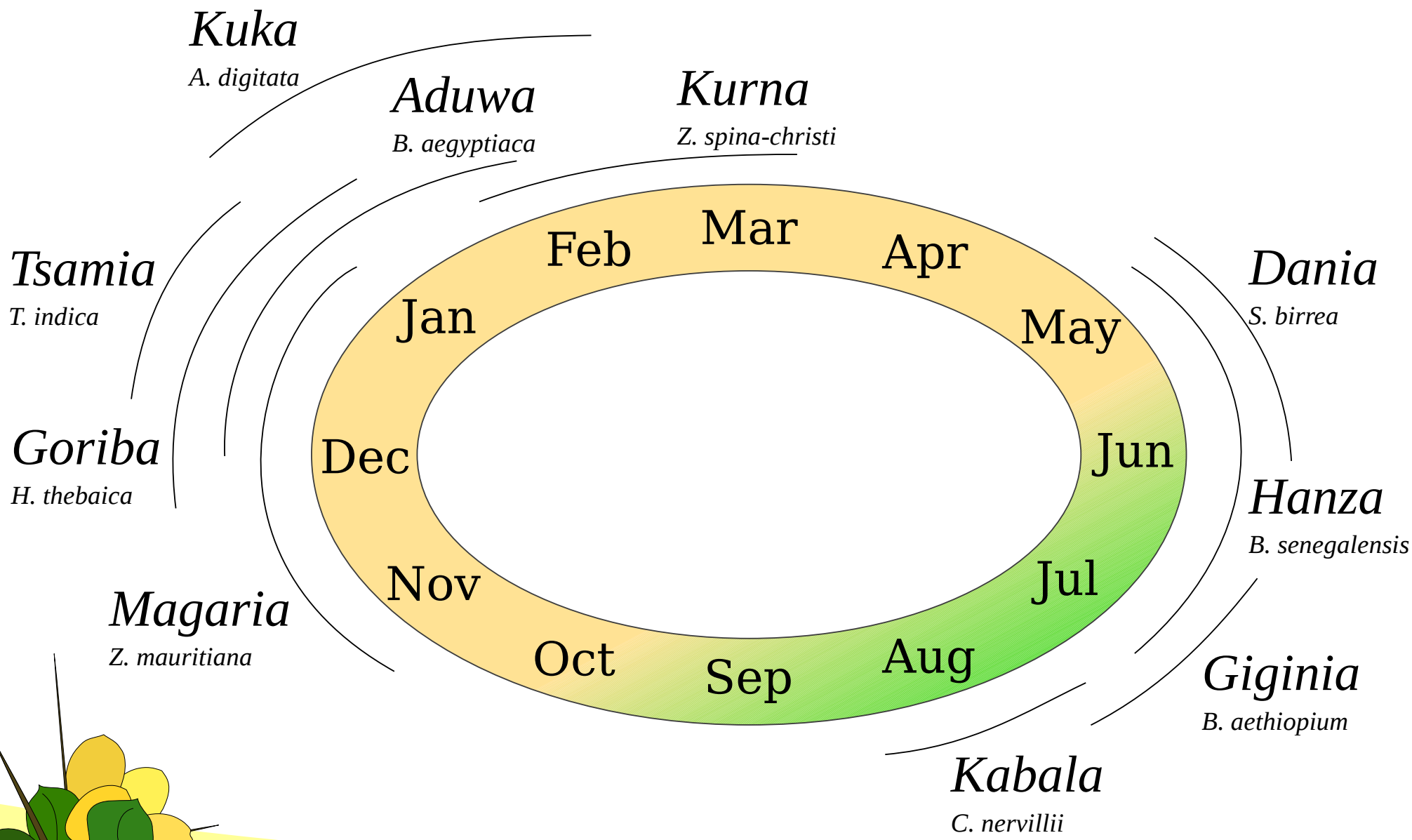
Sahara Sahel Foods

Lots of people want to join as suppliers

- We are imposing supplier quotas
- Women identify their profession as fruit collectors
- We say no to new networks of suppliers
- If sales grow we can take on more farmers
- Practically every village in Niger can produce the foods we process

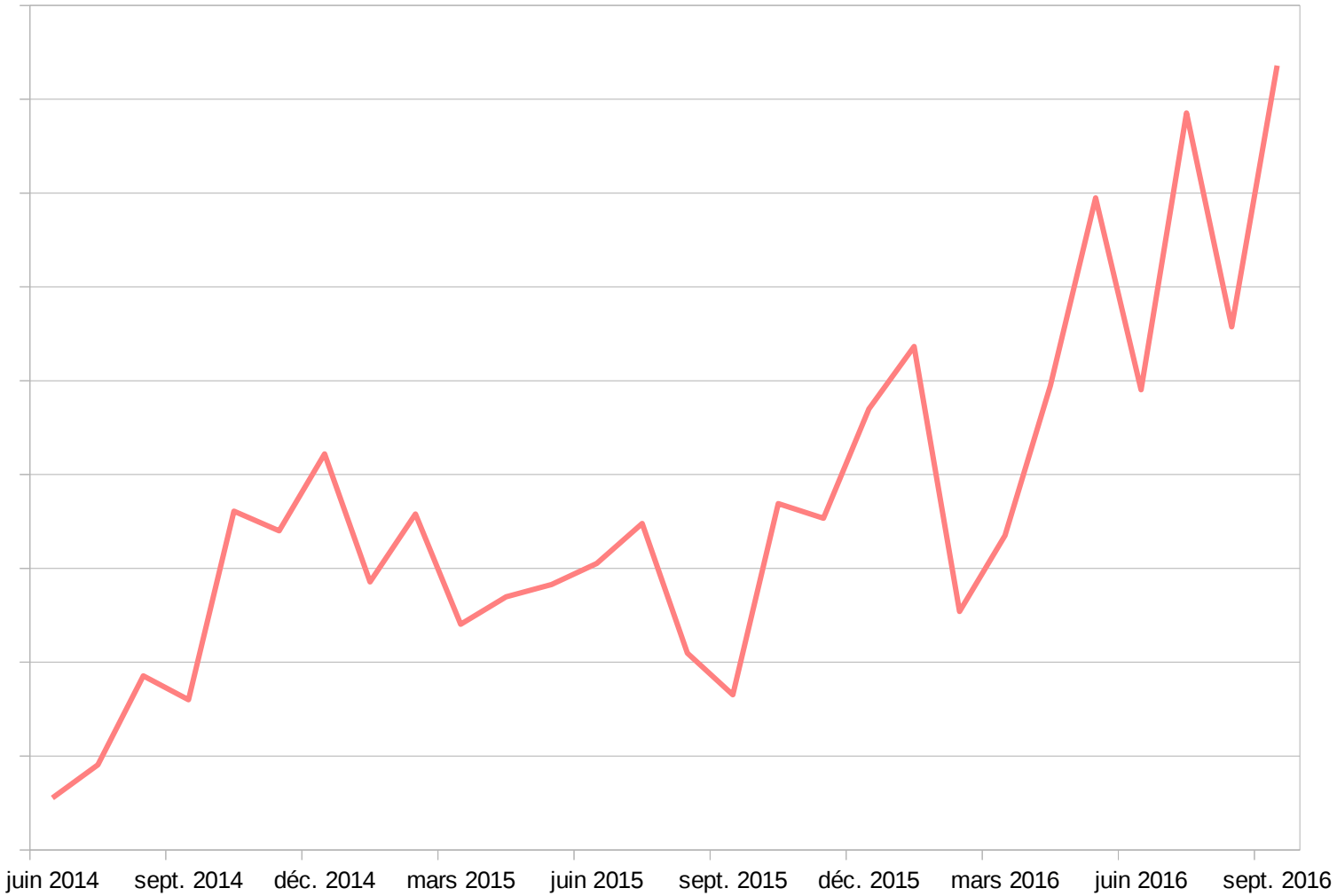
Sahara Sahel Foods

We can create activity most of the year



Sahara Sahel Foods

Sahara Sahel Foods needs to achieve financial self-sustainability

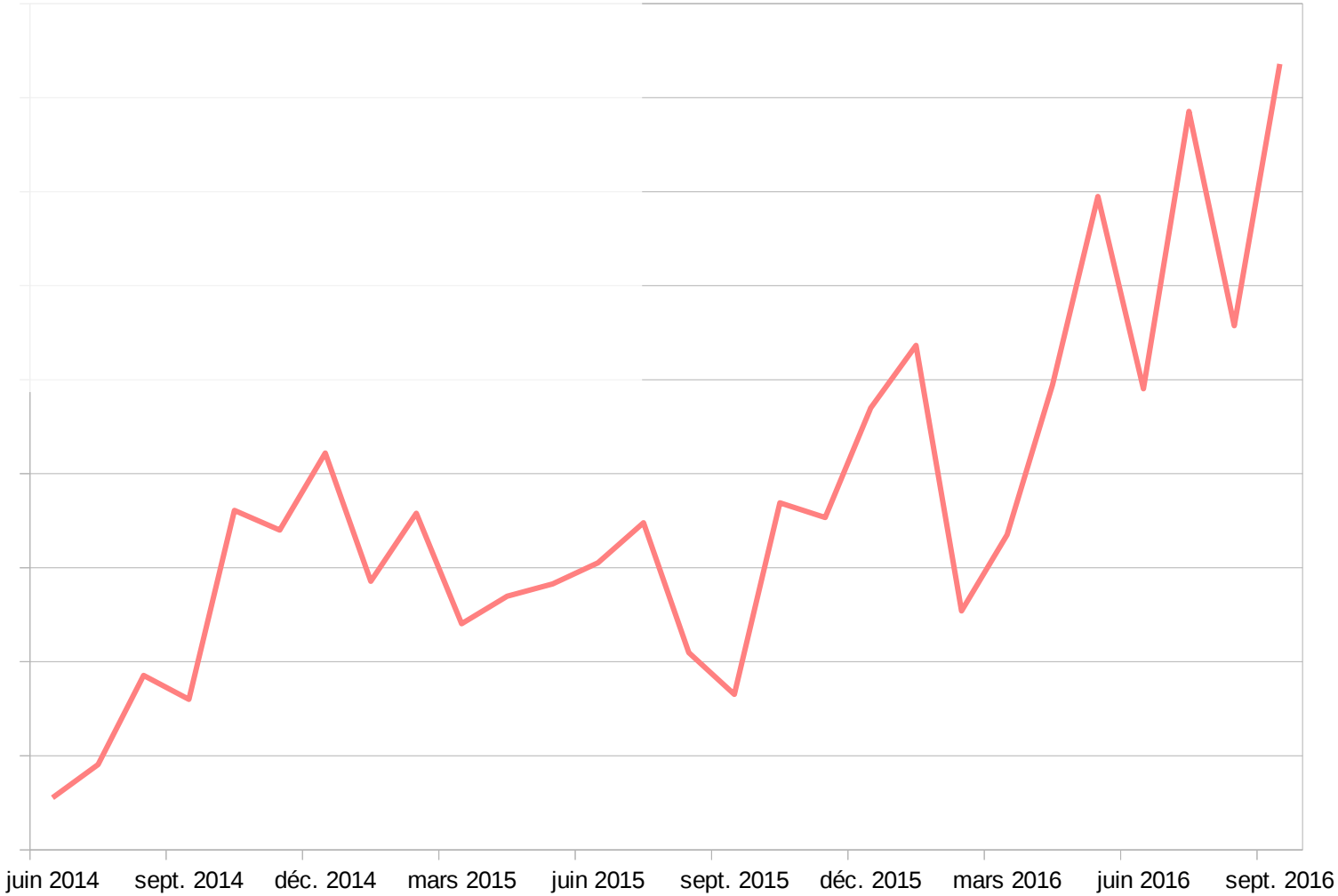


Sales Progress

Sahara Sahel Foods

Sahara Sahel Foods needs to achieve financial self-sustainability

- Founded in 2014

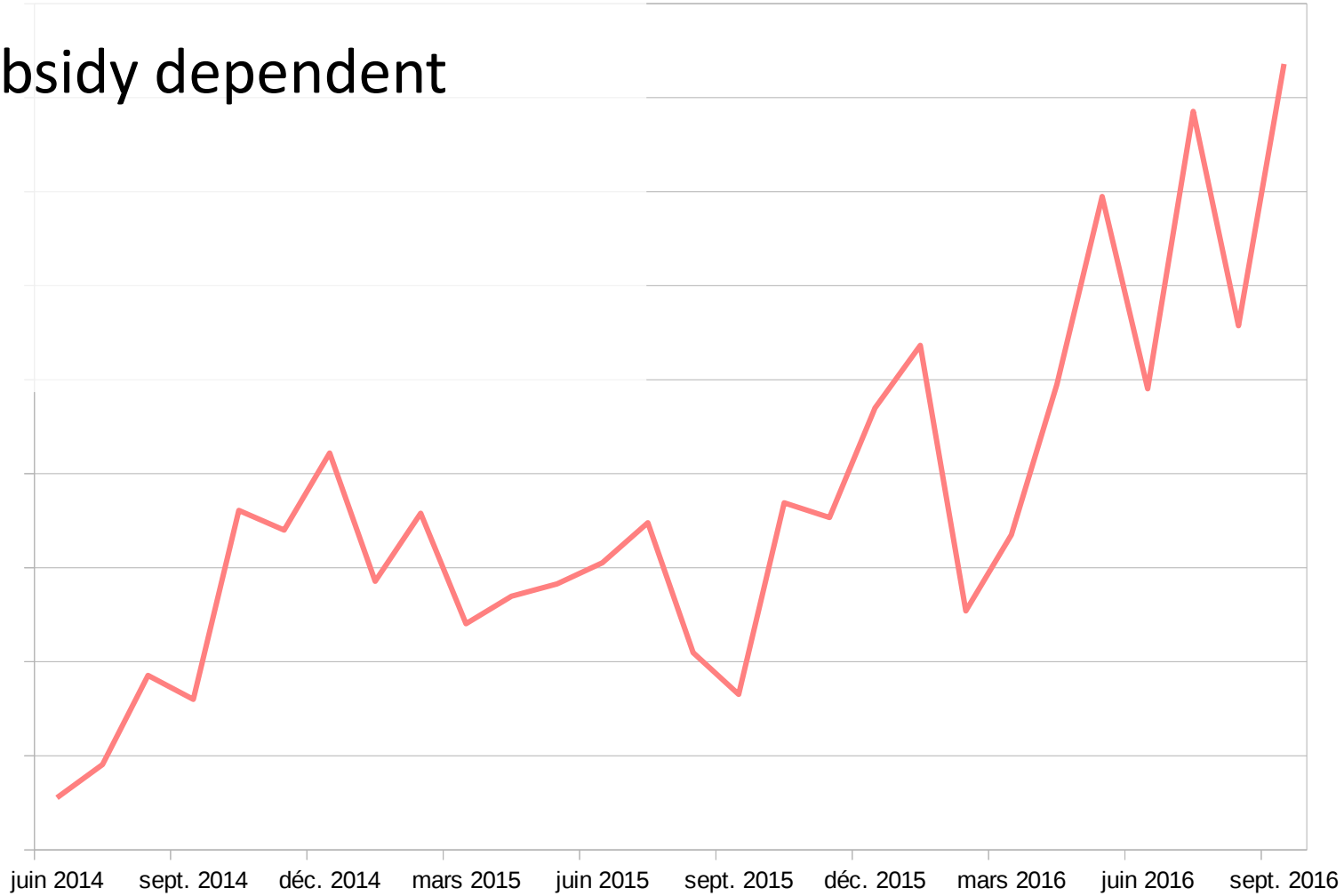


Sales Progress

Sahara Sahel Foods

Sahara Sahel Foods needs to achieve financial self-sustainability

- Founded in 2014
- We are subsidy dependent

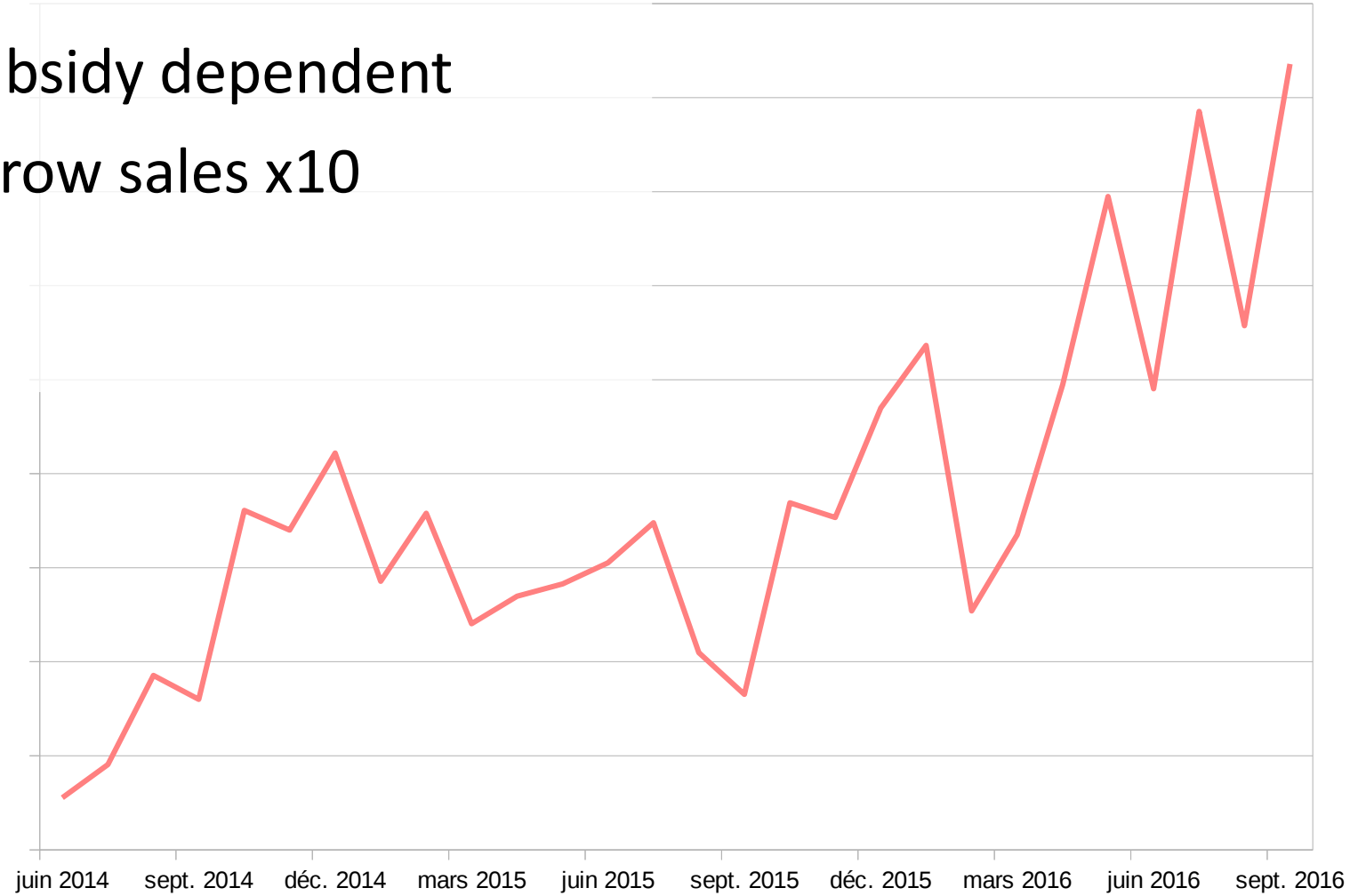


Sales Progress

Sahara Sahel Foods

Sahara Sahel Foods needs to achieve financial self-sustainability

- Founded in 2014
- We are subsidy dependent
- Need to grow sales x10

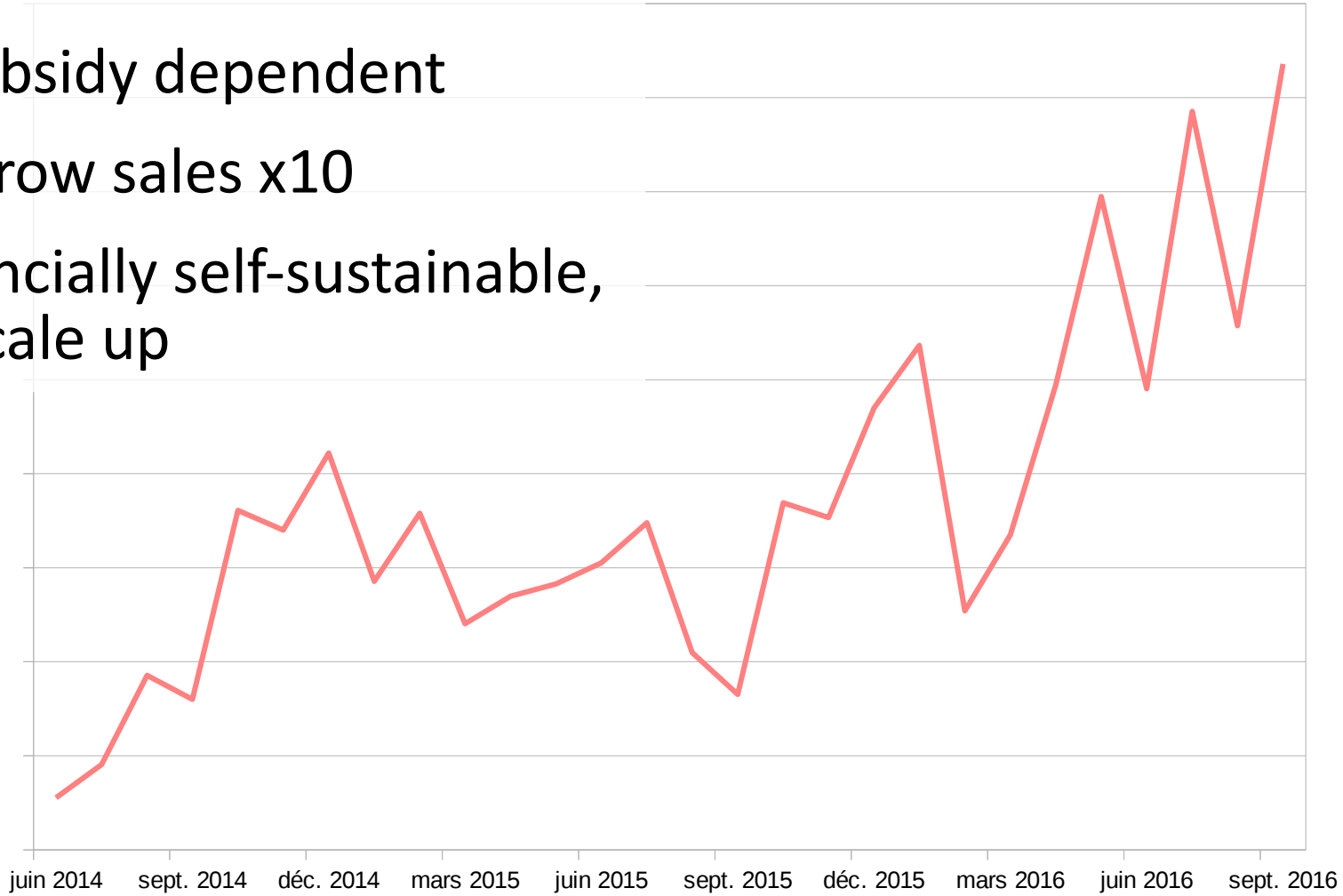


Sales Progress

Sahara Sahel Foods

Sahara Sahel Foods needs to achieve financial self-sustainability

- Founded in 2014
- We are subsidy dependent
- Need to grow sales x10
- Once financially self-sustainable, want to scale up



Sales Progress

Sahara Sahel Foods

Our type of foods are coming into fashion

Sahara Sahel Foods

Our type of foods are coming into fashion

- Growing interest from Nigerien customers in locally made, healthy and natural foods.

Sahara Sahel Foods

Our type of foods are coming into fashion

- Growing interest from Nigerien customers in locally made, healthy and natural foods.
- Many of these foods are great in preventing diabetes, cardiovascular diseases.

Sahara Sahel Foods

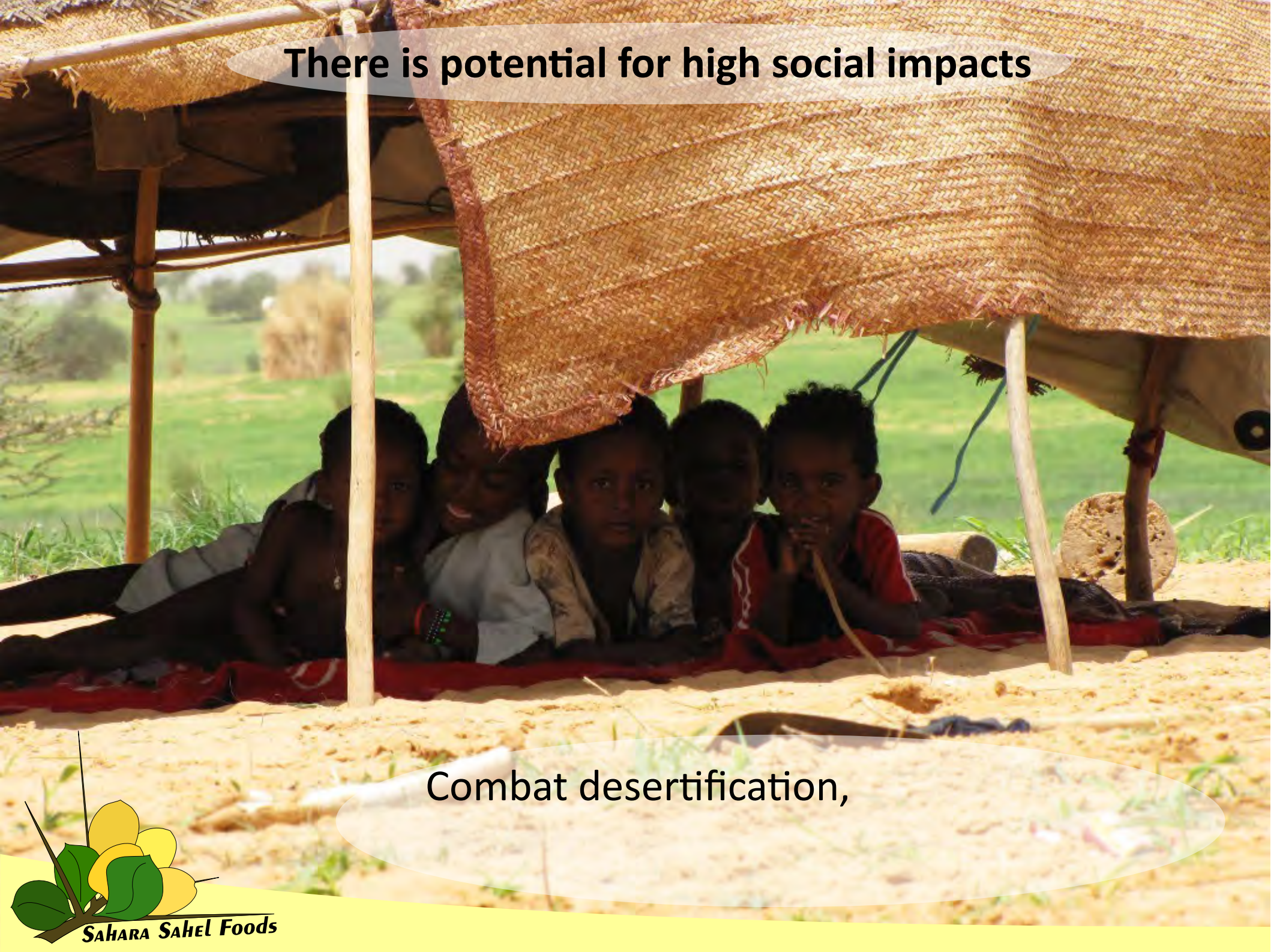
Our type of foods are coming into fashion

- Growing interest from Nigerien customers in locally made, healthy and natural foods.
- Many of these foods are great in preventing diabetes, cardiovascular diseases.
- Interest for our products in Europe - but EU regulations block novel foods.

Sahara Sahel Foods

There is potential for high social impacts

Sahara Sahel Foods



There is potential for high social impacts

Combat desertification,

Sahara Sahel Foods

There is potential for high social impacts

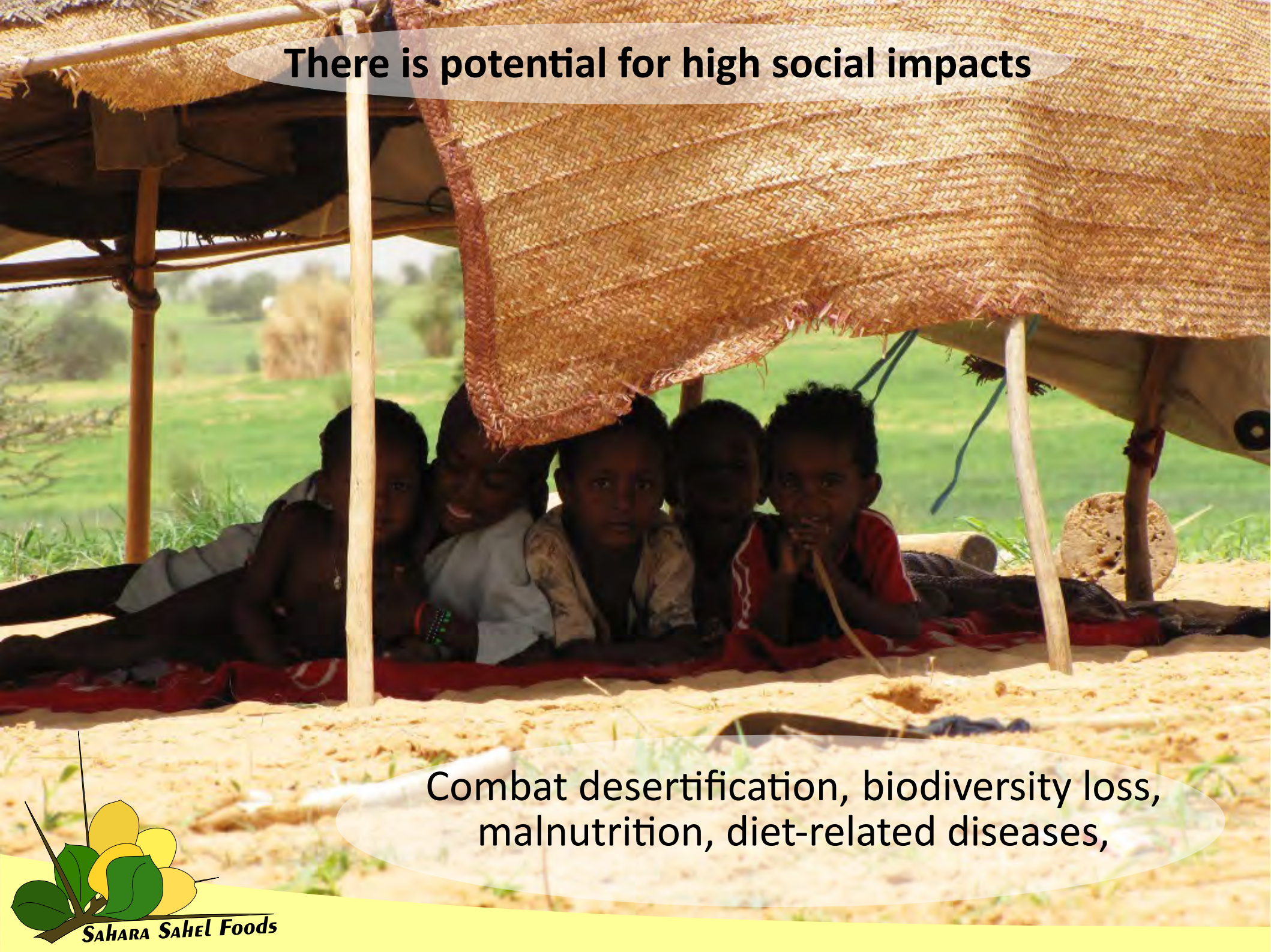
Combat desertification, biodiversity loss,

Sahara Sahel Foods

There is potential for high social impacts

Combat desertification, biodiversity loss, malnutrition,

Sahara Sahel Foods



There is potential for high social impacts

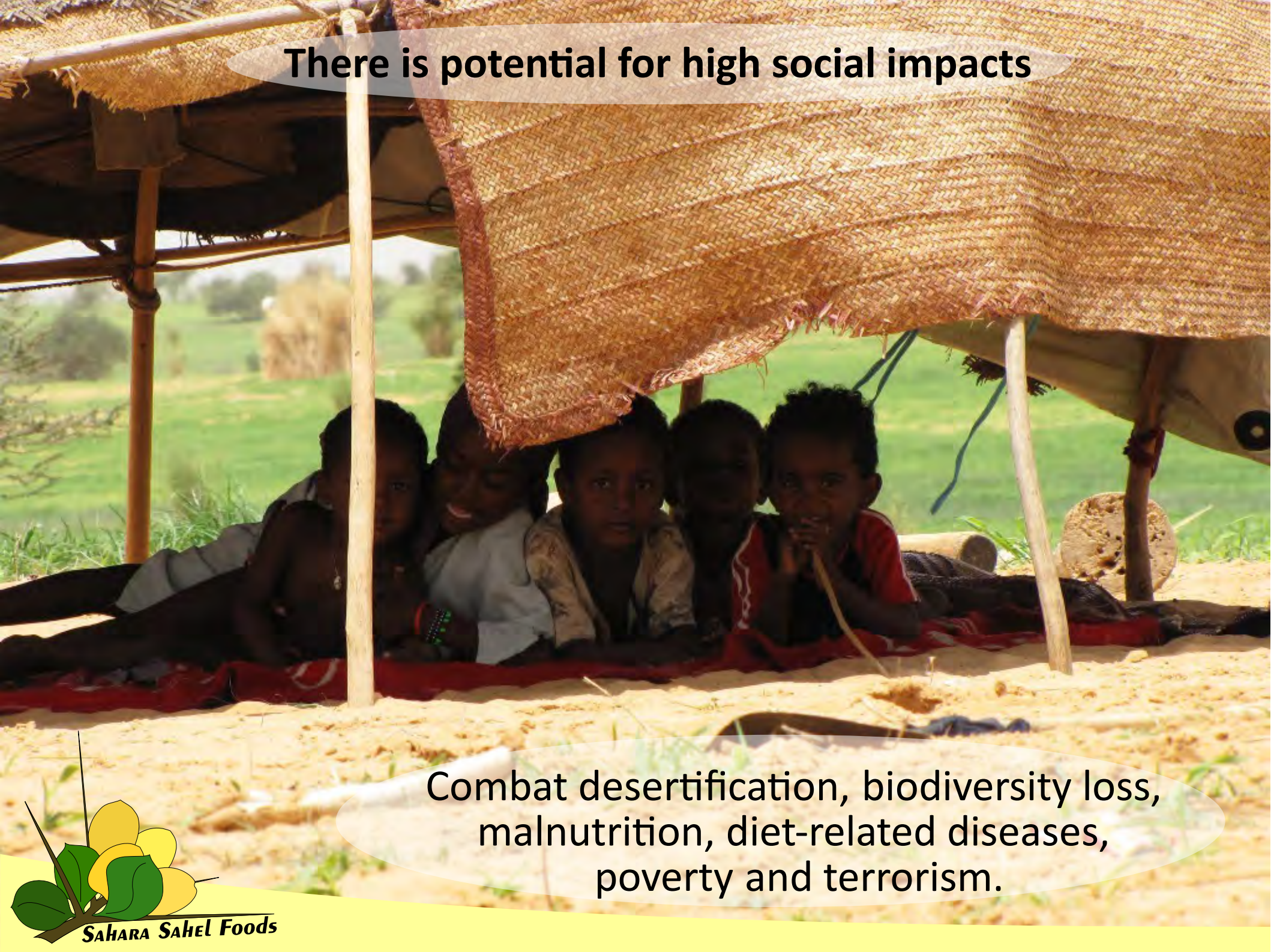
Combat desertification, biodiversity loss, malnutrition, diet-related diseases,

Sahara Sahel Foods

There is potential for high social impacts

Combat desertification, biodiversity loss, malnutrition, diet-related diseases, poverty

Sahara Sahel Foods



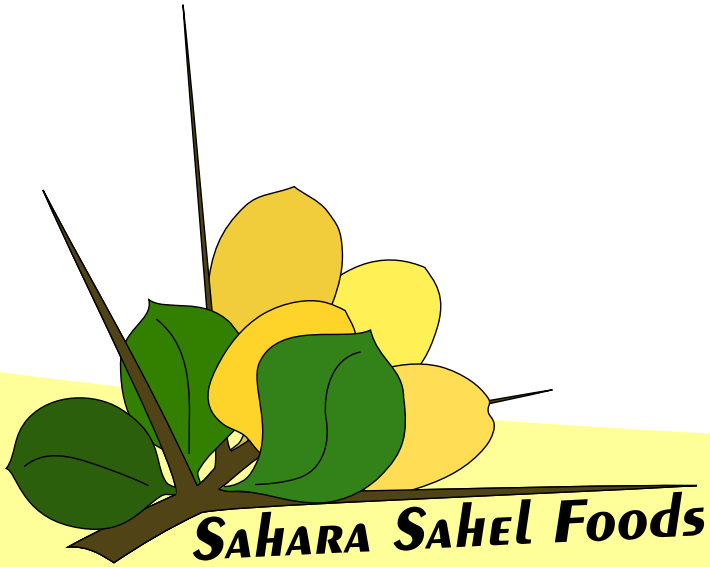
There is potential for high social impacts

Combat desertification, biodiversity loss, malnutrition, diet-related diseases, poverty and terrorism.

Sahara Sahel Foods

Thank you

In partnership with

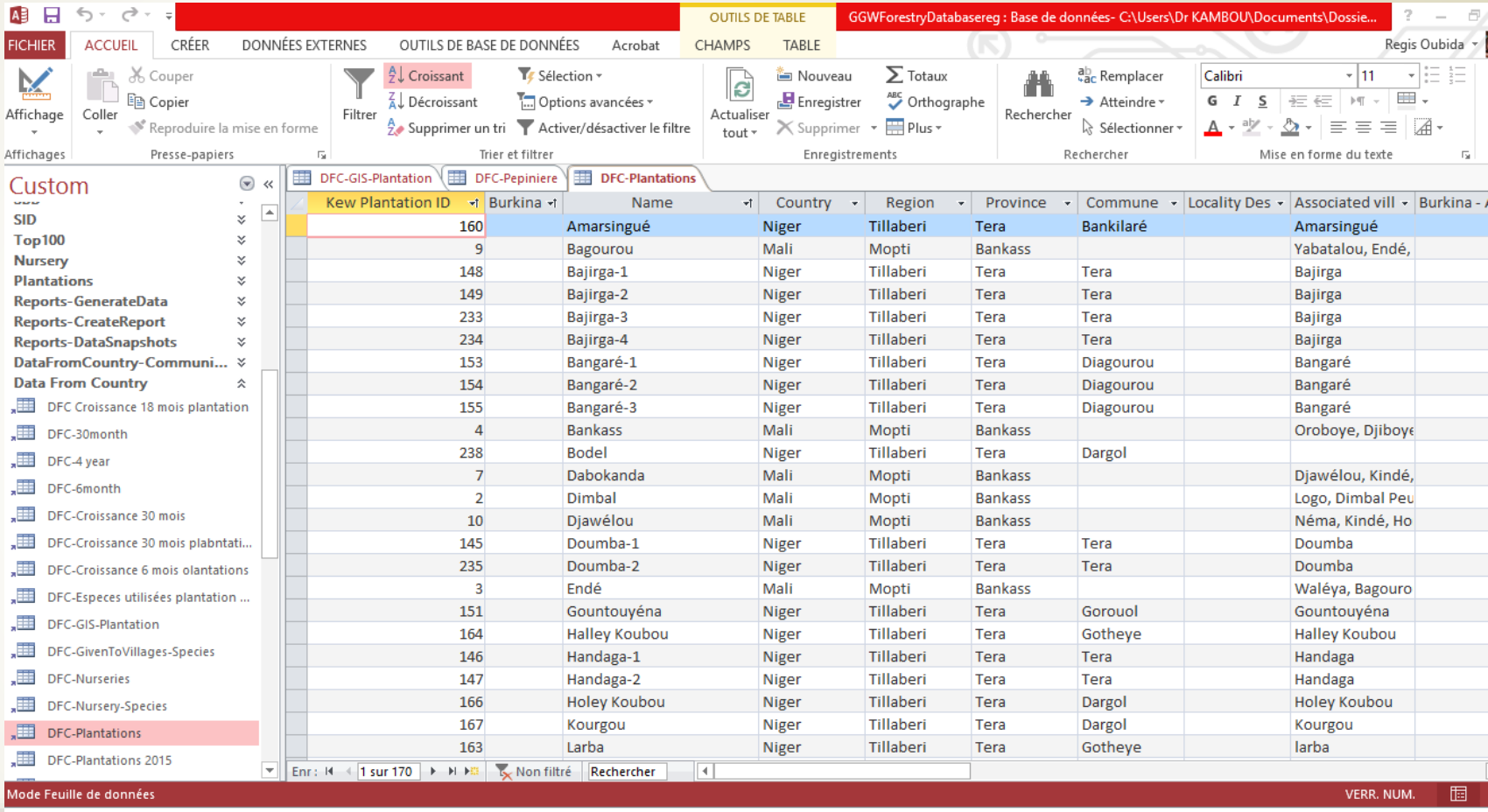


+227 - 20 51 26 07
info@saharasahelfoods.com

www.saharasahelfoods.com
fb.com/saharasahelfoods

Annexe 12A

Base de donnée Projet Transfrontalier GMV



Kew Plantation ID	Burkina	Name	Country	Region	Province	Commune	Locality Des	Associated vill	Burkina - A
160		Amarsingué	Niger	Tillaberi	Tera	Bankilaré		Amarsingué	
9		Bagourou	Mali	Mopti	Bankass			Yabatalou, Endé,	
148		Bajirga-1	Niger	Tillaberi	Tera	Tera		Bajirga	
149		Bajirga-2	Niger	Tillaberi	Tera	Tera		Bajirga	
233		Bajirga-3	Niger	Tillaberi	Tera	Tera		Bajirga	
234		Bajirga-4	Niger	Tillaberi	Tera	Tera		Bajirga	
153		Bangaré-1	Niger	Tillaberi	Tera	Diagourou		Bangaré	
154		Bangaré-2	Niger	Tillaberi	Tera	Diagourou		Bangaré	
155		Bangaré-3	Niger	Tillaberi	Tera	Diagourou		Bangaré	
4		Bankass	Mali	Mopti	Bankass			Oroboye, Djiboye	
238		Bodel	Niger	Tillaberi	Tera	Dargol			
7		Dabokanda	Mali	Mopti	Bankass			Djawélou, Kindé,	
2		Dimbal	Mali	Mopti	Bankass			Logo, Dimbal Peu	
10		Djawélou	Mali	Mopti	Bankass			Néma, Kindé, Ho	
145		Doumba-1	Niger	Tillaberi	Tera	Tera		Doumba	
235		Doumba-2	Niger	Tillaberi	Tera	Tera		Doumba	
3		Endé	Mali	Mopti	Bankass			Waléya, Bagouro	
151		Gountouyéna	Niger	Tillaberi	Tera	Gorouol		Gountouyéna	
164		Halley Koubou	Niger	Tillaberi	Tera	Gotheye		Halley Koubou	
146		Handaga-1	Niger	Tillaberi	Tera	Tera		Handaga	
147		Handaga-2	Niger	Tillaberi	Tera	Tera		Handaga	
166		Holey Koubou	Niger	Tillaberi	Tera	Dargol		Holey Koubou	
167		Kourgou	Niger	Tillaberi	Tera	Dargol		Kourgou	
163		Larba	Niger	Tillaberi	Tera	Gotheye		larba	

OUBIDA REGIS

Centre National de Semences Forestières

Mars 2017






Plan de la présentation

- Objectifs
- Structure de la base de donnée
- Système de collecte de données GMV
- Données des activités GMV
- Difficultés rencontrés
- Perspectives et conclusion

Objectifs

Rassembler les données générées par les activités du projet GMV de la récolte à l'utilisation des produits

Espèces

Produits exploités

villages

plantations

Formations

Actions de restauration

Récolte des semences

Pépinières et production des plants

Structure de la base de données

Données sur les espèces

- Taxonomie
- Etat de conservation
- Etat de la ressource
- Aire de distribution
- Utilisation

Base de donnée Microsoft Accès

- Données des activités GMV

- formation
- Récolte de semences
- Pépinières et production de plants
- Plantations
- Actions de restauration
- Exploitation des produits

Données des activités GMV

- **Fiches concues pour la collecte de données sur le terrain**

Date d'évaluation : ...../...../.....
Date Semis/Plantation : ...../...../.....

Fiche de renseignement sur les Plantations

Numéro Plantation : Superficie Semis/Plantation : ..... ha

Date Semis/Plantation : ...../...../..... Nom (si disponible)

Regarnissage (encercler) : Oui Non Si oui Date de regarnis

...../...../.....

Espèces plantées (Numéro):

1)	6)
2)	7)
3)	8)
4)	9)
5)	10)

Villages associés (avec numéro) :.....

.....

Région : .....

Province :.....

Description de la localité :

Coordonnées géographiques

Points (bords)	latitude (dd)	Longitude (d
1		
2		
3		
4		

Fiche d

Numéro Plantation :

Estimation de l'echantillonnage par rapport a la superficie tota

Methode d'echantillonnage :

Calcul du Taux de réussite toutes espèces confondues:

Nbre de trous échantillonnés : Nbre de plants r

Calcul du Taux de réussite pour chaque espèce

Nom de l'espèce	Nbre de trous échantillonnés

Fiche de rensei

Date (jj/mm/aaaa) : ...../....

Plantation :

Village :..... .F

Espèce exploitée :.....

Date de 1ere exploitation (jj/mm/

Type de produit : .....

Quantité (par ha /par an) : .....

Méthodologie pour l'estimation d

.....

.....

.....

Fiche de renseignement sur le

Espèces récoltée : .....

Date de récolte (JJ/MM/AAAA) : .....

Lieu de récolte : .....

.Région : .....

Quantité récoltée (kg) :.....

Coordonnées géographiques (dd) degrés décimaux :

Latitude :..... Longitude :.....

Fiche de renseignement sur les Pépinières

Numéro Pépinières: Village :.....

.Région : ..... Province

Commune:.....

Date Semis (jj/mm/aaaa) : ...../...../.....

N	Espece produite	Nombre	Date Semis
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			

Coordonnées géographiques (dd)

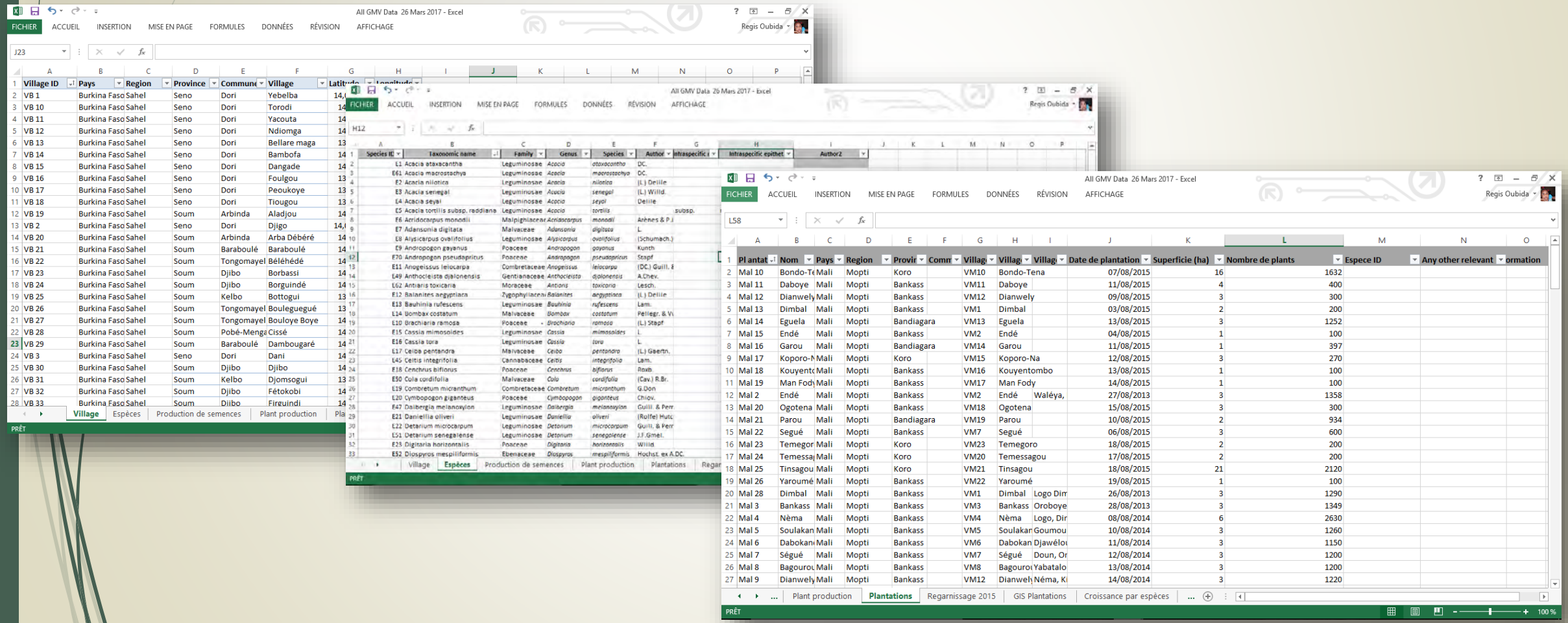
Latitude :..... Longitude :..... Elévation : .....m

Toute autre information pertinente

1

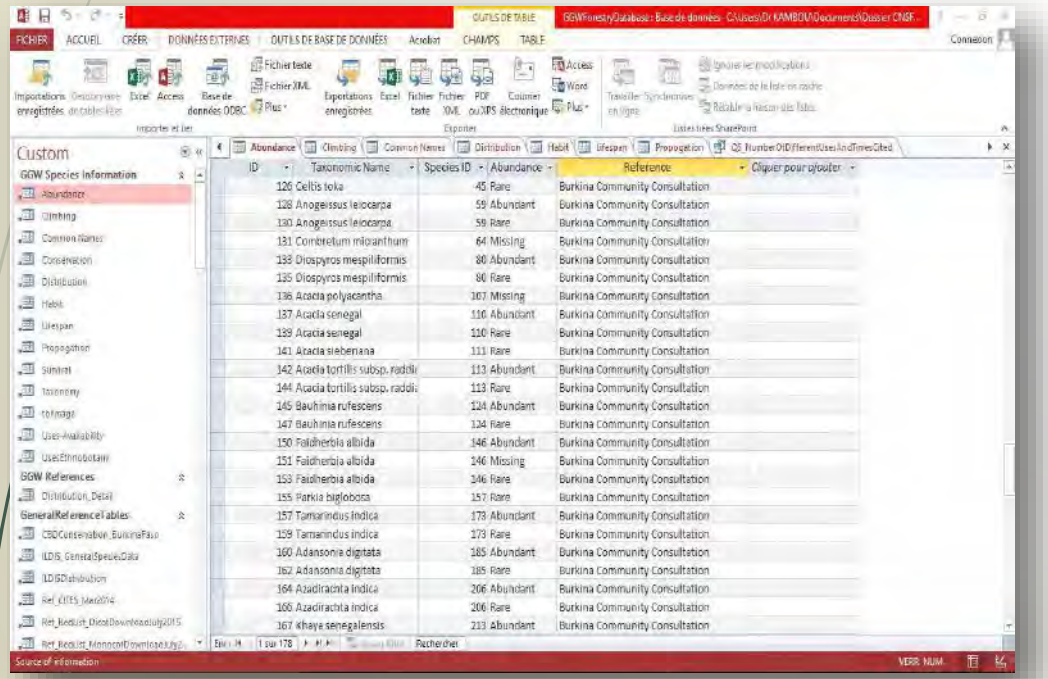
Données des activités GMV

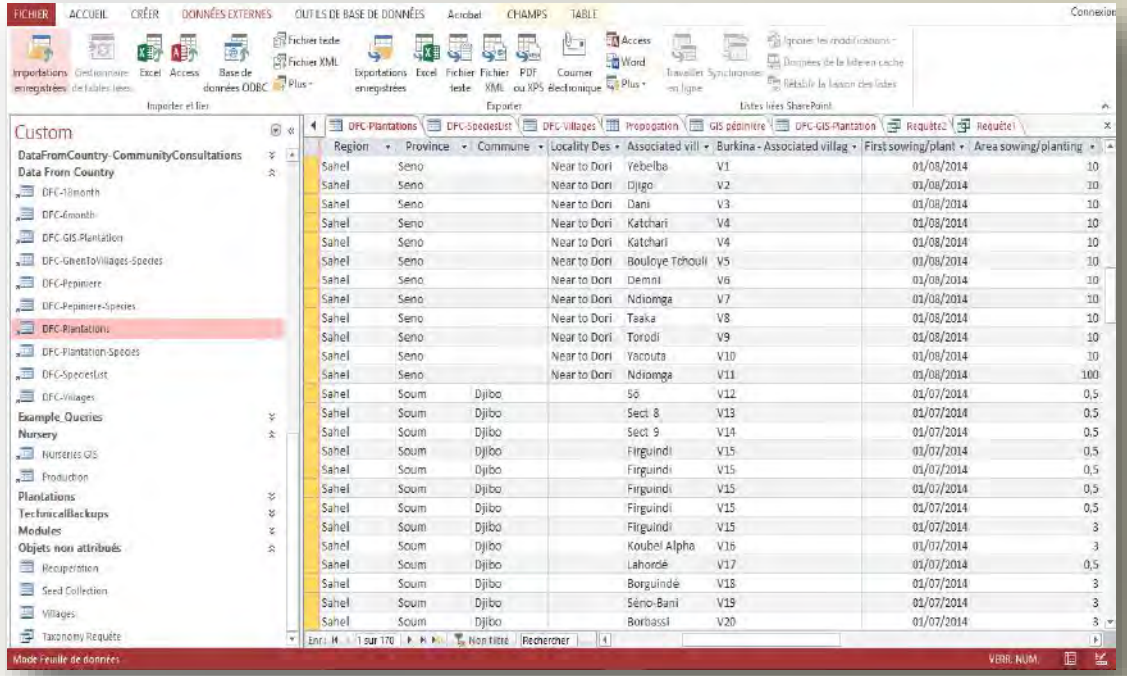
- **Maquettes de saisie excel élaborées**



Données des activités GMV

- **Tables Access**





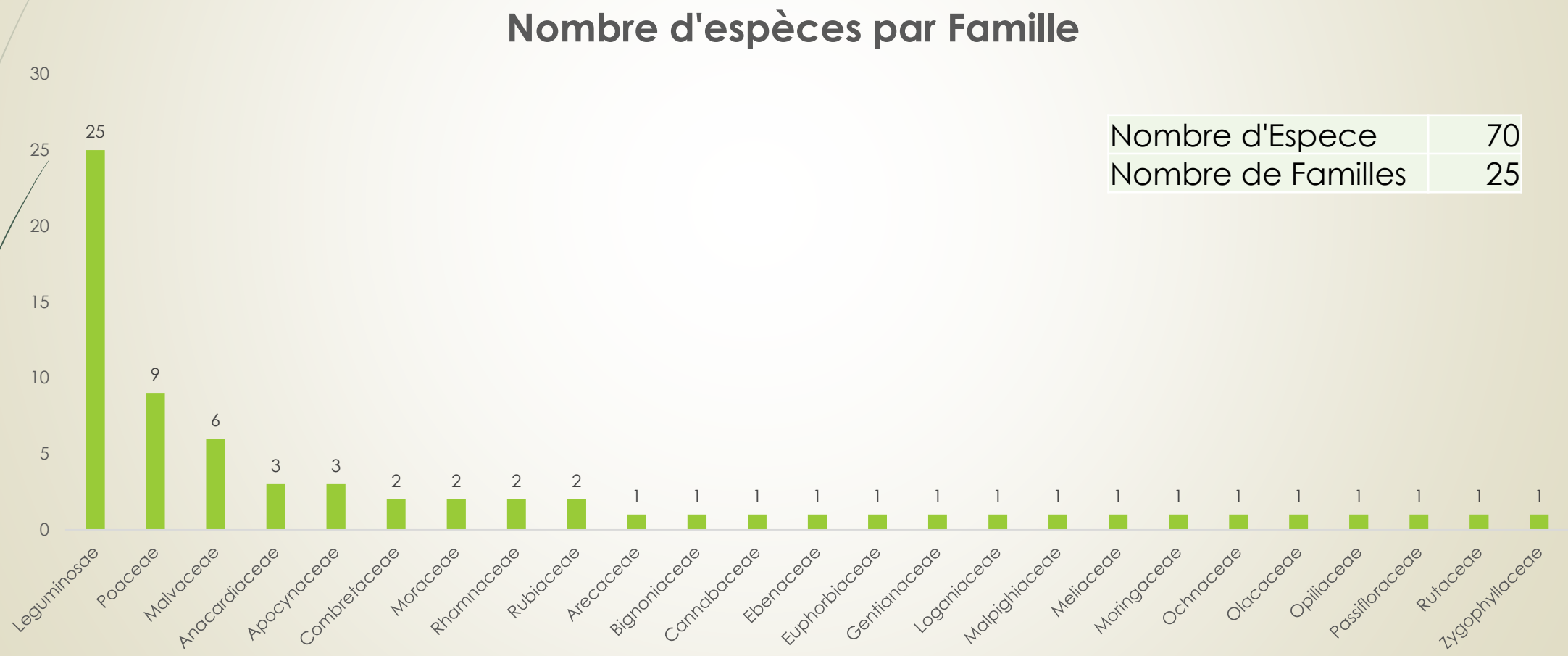
Données des activités GMV

- **Villages d'intervention du projet**

Pays	Provinces	Nombre de villages	
Burkina Faso	Seno	19	77
	Soum	58	
Mali	Bandiagara	3	30
	Bankass	20	
	Koro	7	
Niger	Tera	22	22
Total		**129**	**129**

Données des activités GMV

- **Espèces utilisées par le projet**



Nombre d'Espece	70
Nombre de Familles	25

Données des activités GMV

- **Production de plants par le projet**

pays	Année	Nombre de Plantation	Nbre de plants produits
Burkina Faso	2014	17	1044512
	2015	39	
	2016	26	
Mali	2015	10	62172
Niger	2014	4	93100
	2015	2	
Total			**1203784**

Espèce	Quantité produite
Acacia senegal	749055
Acacia nilotica	166400
Adansonia digitata	117136
Ziziphus mauritiana	69660
Balanites aegyptiaca	20943
Total	**1203784**

Données des activités GMV

- Plantations réalisées par le projet

Pays	Province	Année	Nombre de Plantations	Superficie (ha)
Burkina Faso	Seno	2014	12	20,5
		2015	12	71
	Soum	2014	53	305
		2015	60	197
Mali	Bandiagara	2014	3	1,5
	Bankass	2013	2	6
		2014	16	18
	Koro	2013	1	3
		2014	4	7
Niger	Tera	2014	30	422,87
		2015	8	205,46
Total	**6**		**201**	**1257,33**

Données des activités GMV

- Autres travaux de restauration

Pays	Province	Technique utilisée	Nombre de Sites	Superficie (ha)
Burkina Faso	Soum	ensemencement d'herbacées	11	99
Mali	Bankass	ensemencement d'herbacées	7	69
Mali	Bankass	Régénération Naturelle Assisté (RNA)	7	24
Niger	Téra	ensemencement d'herbacées	28	800
Total			**53**	**992**

Données des activités GMV

- Evaluation des plantations

  - Burkina Faso

Plantation	date de plantation	date d'évaluation
Bur 08	Aout 2015	mars-17
Bur 10	Aout 2015	mars-17
Bur 11	Aout 2015	mars-17
Bur 5	Aout 2015	mars-17

  - Mali

Plantation	date de plantation	date d'évaluation
Mal 1		Nov 2013, Nov 2014, Nov 2015 et Nov 2016
Mal 14	août-15	Nov 2015 et Nov 2017
Mal 15	août-15	Nov 2015 et Nov 2018
Mal 16	août-15	Nov 2015 et Nov 2019
Mal 17	août-15	Nov 2015 et Nov 2017
Mal 2	août-13	Nov 2013, Nov 2014, Nov 2015 et Nov 2016
Mal 24	août-13	Nov 2015 et Nov 2019
Mal 3	août-15	Nov 2013, Nov 2014, Nov 2015 et Nov 2016

  - Niger

Plantation	date de plantation	date d'évaluation
Nig 1	Aout 2014	Oct 2013 et Sept 2014
Nig 10	Aout 2014	sept-14
Nig 11	Aout 2014	sept-14
Nig 12	Aout 2014	Oct 2013 et Sept 2014
Nig 13	Aout 2014	sept-14
Nig 14	Aout 2014	sept-14
Nig 15	Aout 2014	Oct 2013 et Sept 2014
Nig 16	Aout 2014	sept-14
Nig 17	Aout 2014	sept-14
Nig 19	Aout 2014	oct-13
Nig 2	Aout 2014	Oct 2013 et Sept 2014
Nig 20	Aout 2014	Oct 2013 et Sept 2014
Nig 21	Aout 2014	Oct 2013 et Sept 2014
Nig 22	Aout 2014	Oct 2013 et Sept 2014
Nig 23	Aout 2014	sept-14
Nig 24	Aout 2014	Oct 2013 et Sept 2014
Nig 25	Aout 2014	Oct 2013 et Sept 2014
Nig 28	Aout 2014	sept-14
Nig 3	Aout 2014	Oct 2013 et Sept 2014
Nig 31	Aout 2014	sept-14
Nig 4	Aout 2014	Oct 2013 et Sept 2014
Nig 5	Aout 2014	sept-14
Nig 6	Aout 2014	sept-14
Nig 7	Aout 2014	sept-14
Nig 8	Aout 2014	Oct 2013 et Sept 2014

- ✓ Croissance : Hauteur moyenne et diamètre au collet
- ✓ Taux de survie

Données des activités GMV

- Exploitation des produits (Fourrage)

Plantation	Village	Espèces	Quantité/ha
Nig 38	Doumba	Alysicarpus ovalifolius	175
Nig 38	Doumba	Panicum laetum	263
Nig 38	Doumba	Cenchrus biflorus	394
Nig 38	Doumba	Eragrostis tremula	131
Nig 35	Handaga	Alysicarpus ovalifolius	519
Nig 35	Handaga	Cenchrus biflorus	562
Nig 8	Zindigori	Alysicarpus ovalifolius	204
Nig 9	Zindigori	Cenchrus biflorus	175
Nig 10	Zindigori	Eragrostis tremula	218
Nig 33	Bajirga	Alysicarpus ovalifolius	409
Nig 33	Bajirga	Pennisetum pedicellatum	233
Nig 19	Kourgou	Alysicarpus ovalifolius	394
Nig 19	Kourgou	Panicum laetum	223
Nig 19	Kourgou	Cenchrus biflorus	210

Ensemencement en 2015

Exploitation en 2016

Difficultés rencontrés

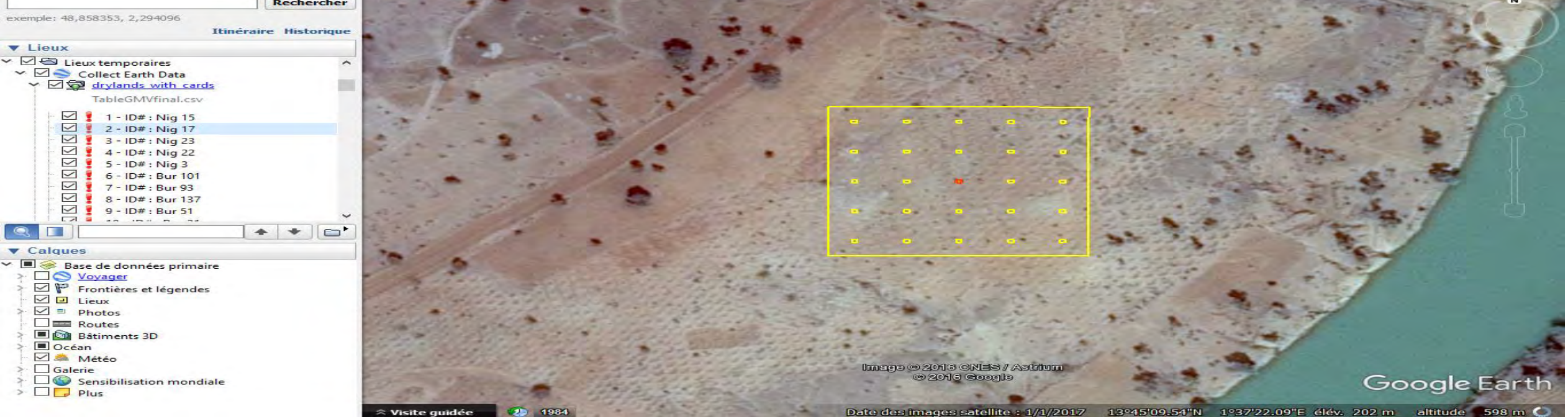
- Systeme de suivie évaluation non actif au début du projet,
- Informations souvant pas collectés suivant les fiches de collecte,

Perspectives et conclusion

- Continuer la collecte des données aupres des pays en 2017
- Completer les données manquantes des années precedents
- Exploiter les données pour des publications

Merci pour votre aimable attention

Annexe 12B



EVALUATION DE LA SITUATION BIOPHYSIQUE DES SITES D'INTERVENTION DU PROJET GMV AVEC L'OUTIL « COLLECT EARTH »

Régis OUBIDA
Centre National de Semences Forestières

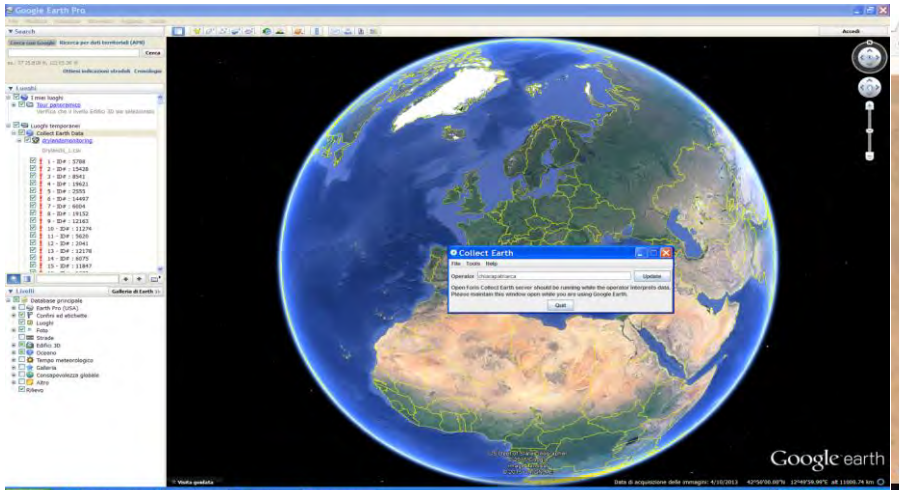
Mars 2017

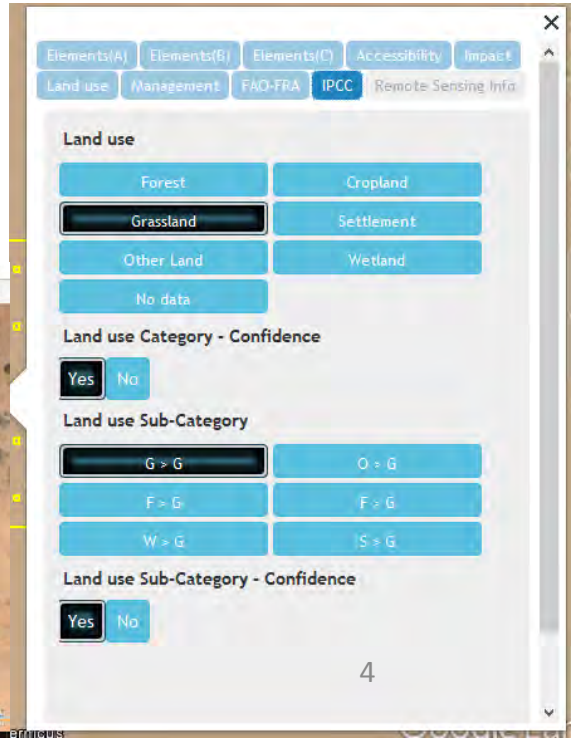
Plan

- Introduction
- Méthodologie
- Zone d’étude
- Résultats
- Difficultés

Introduction (Collect Earth)

- Logiciel libre « Open Foris » facile a utilisé basé sur la technologie standard Java,
- permet une évaluation biophysique des milieux à travers les images satellitaires disponibles sur Google earth, et d'autres serveurs comme Google engine, Bing map etc..
- Utilise Google Earth comme interface de collect de données





Outil Collect Earth

Evaluation de la réussite des programmes de restauration

4 Nov 2002 20 Fev 2006 7 Mars 2008 13 Juin 2012 22 Oct 2015

Introduction (Evaluation des plantations)

- le projet transfrontalier utilise différentes techniques de restauration des terres

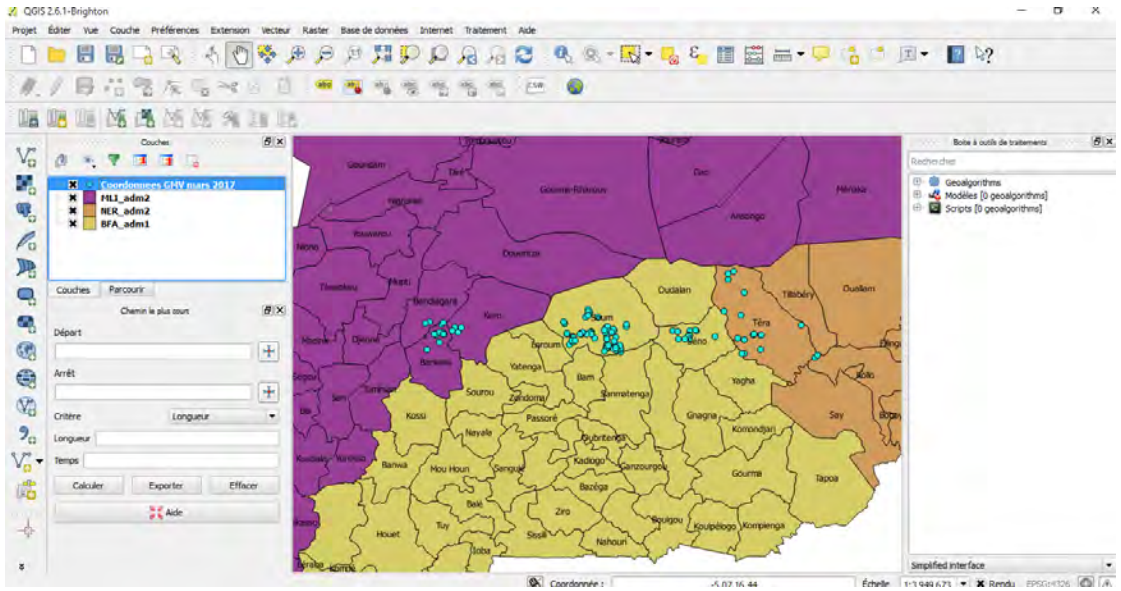
- 263 sites reparties dans les 3 pays concernés par le projet.

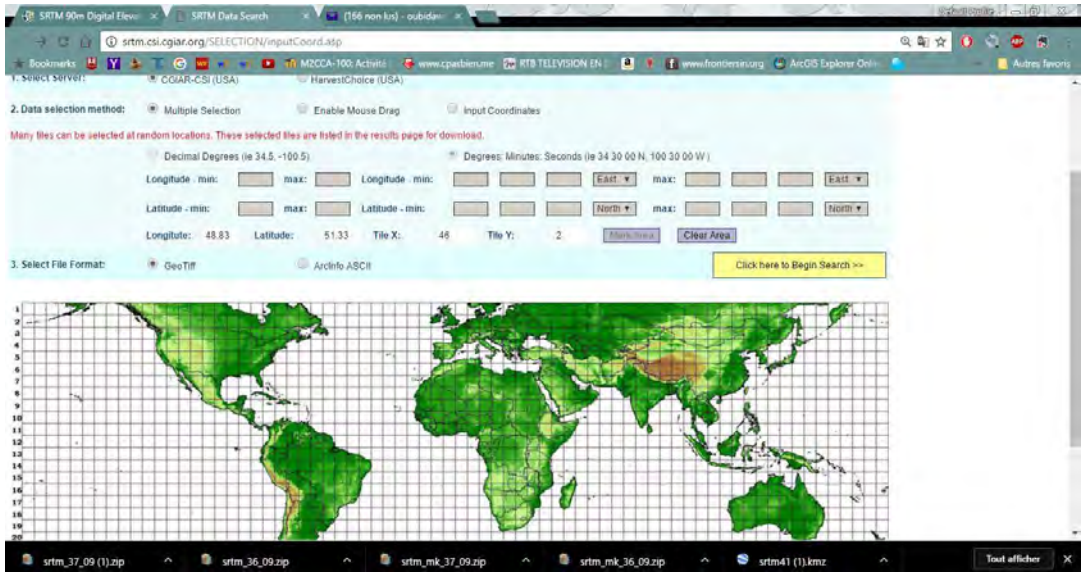
- Une évaluation des zones d’intervention du projet permettra le suivi des sites et d’avoir une idée sur la réussite des activités.

Méthodologie

QGIS

- Préparation des cartes
- déterminer les centres des polygones des sites.
- Les informations sur la pente, l'aspect et l'élévation des points ont été dérivées des données du « Shuttle Radar Topography Mission » (SRTM) de la NAZA.

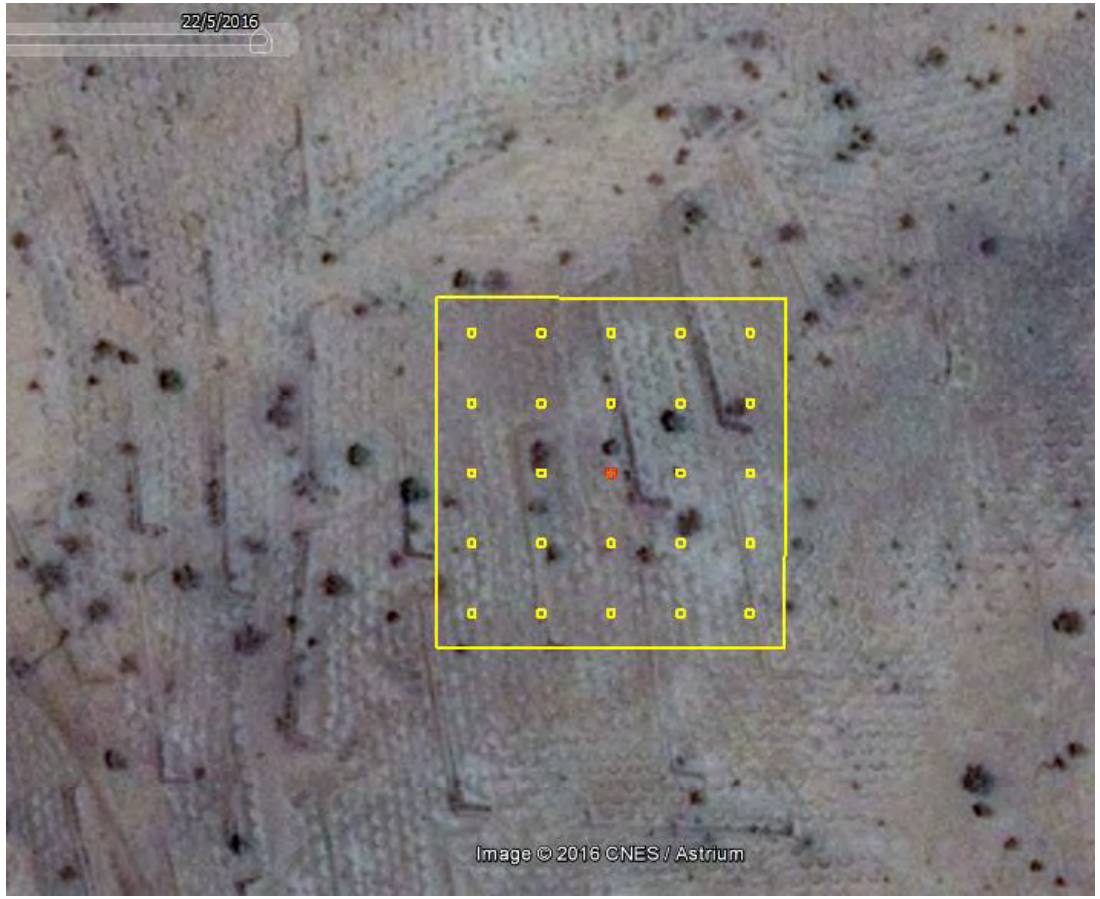




Méthodologie

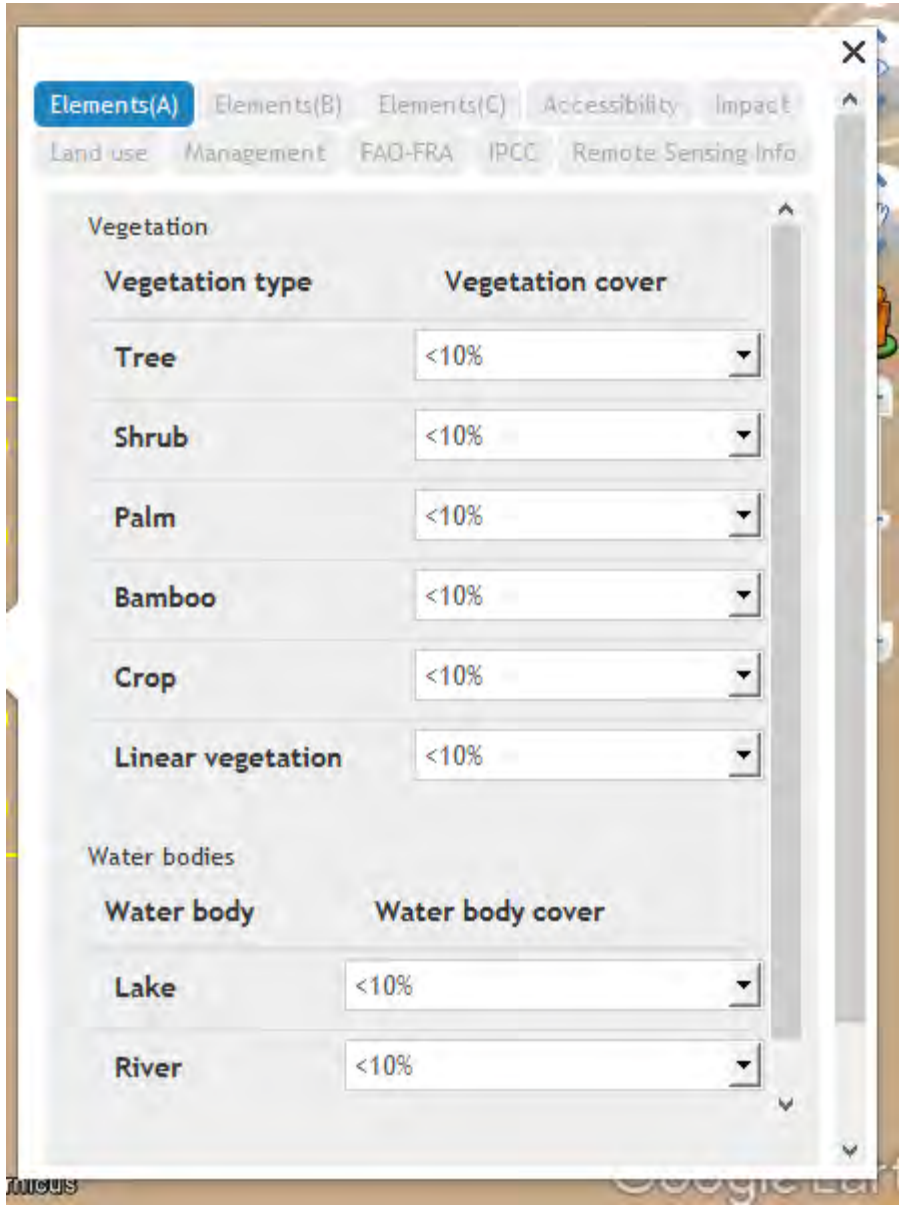
COLLECT-EARTH

- Définition des placette d'évaluation (carré de 1ha de superficie au centre des sites)
- Incorporation du formulaire d'évaluation aux placettes



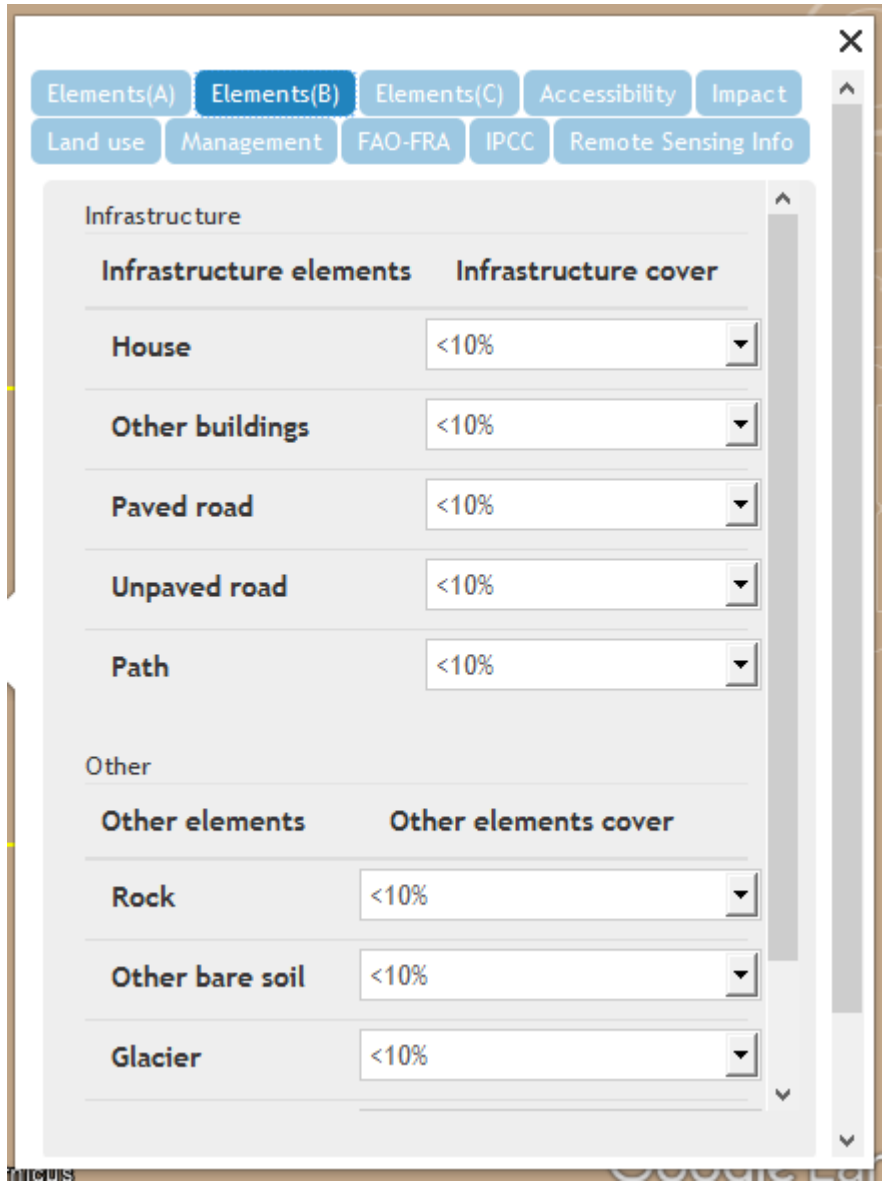
Formulaire d’évaluation

- Type de végétation dans la placette



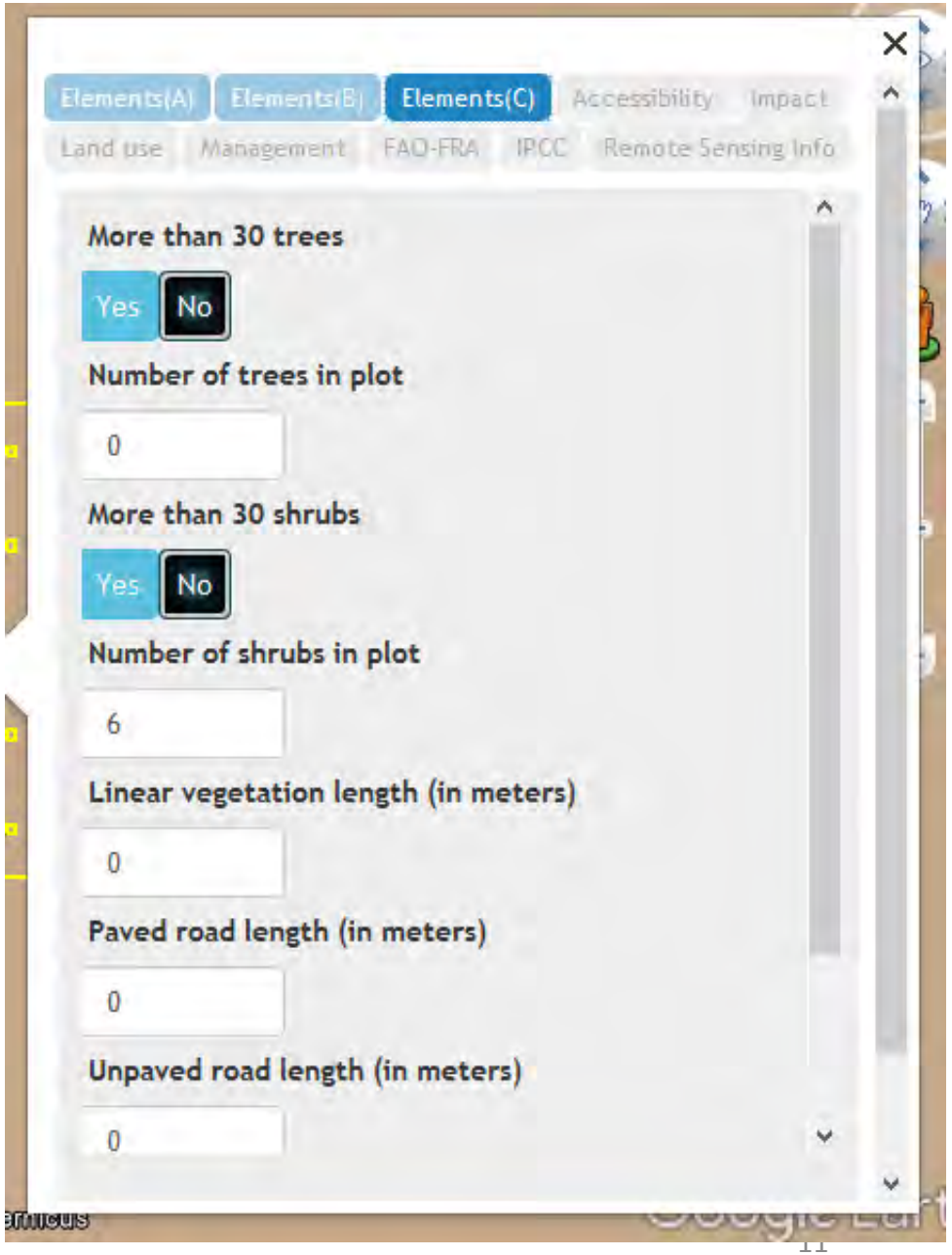
Formulaire d’évaluation

- Eléments d’infrastructure



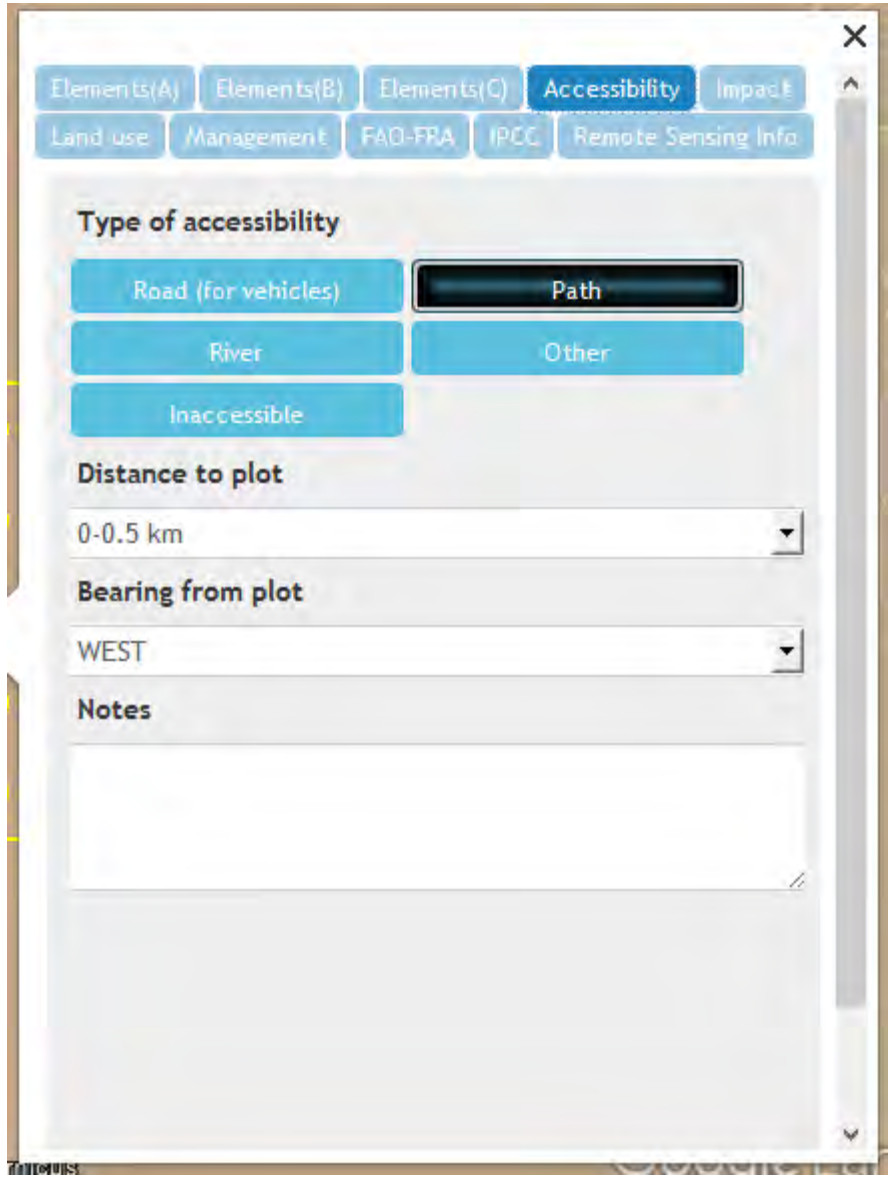
Formulaire d’évaluation

- Quantification des éléments dans la placette



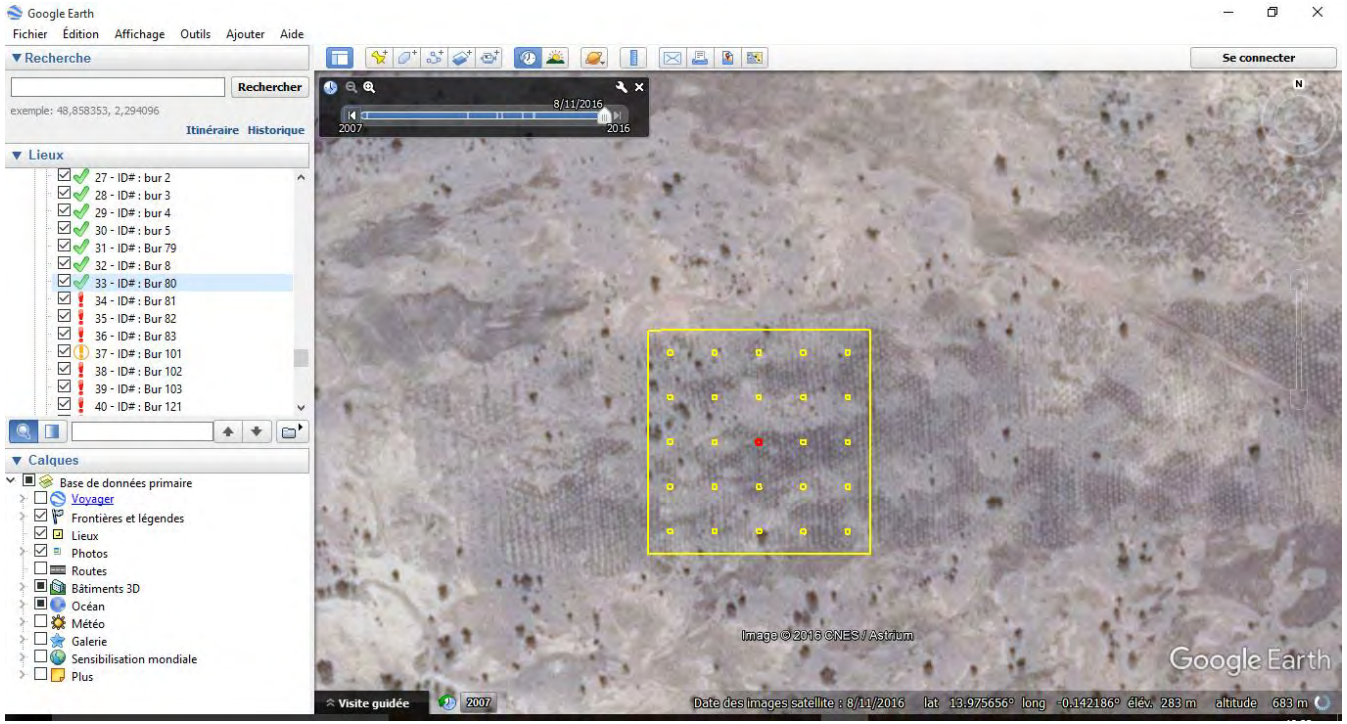
Formulaire d’évaluation

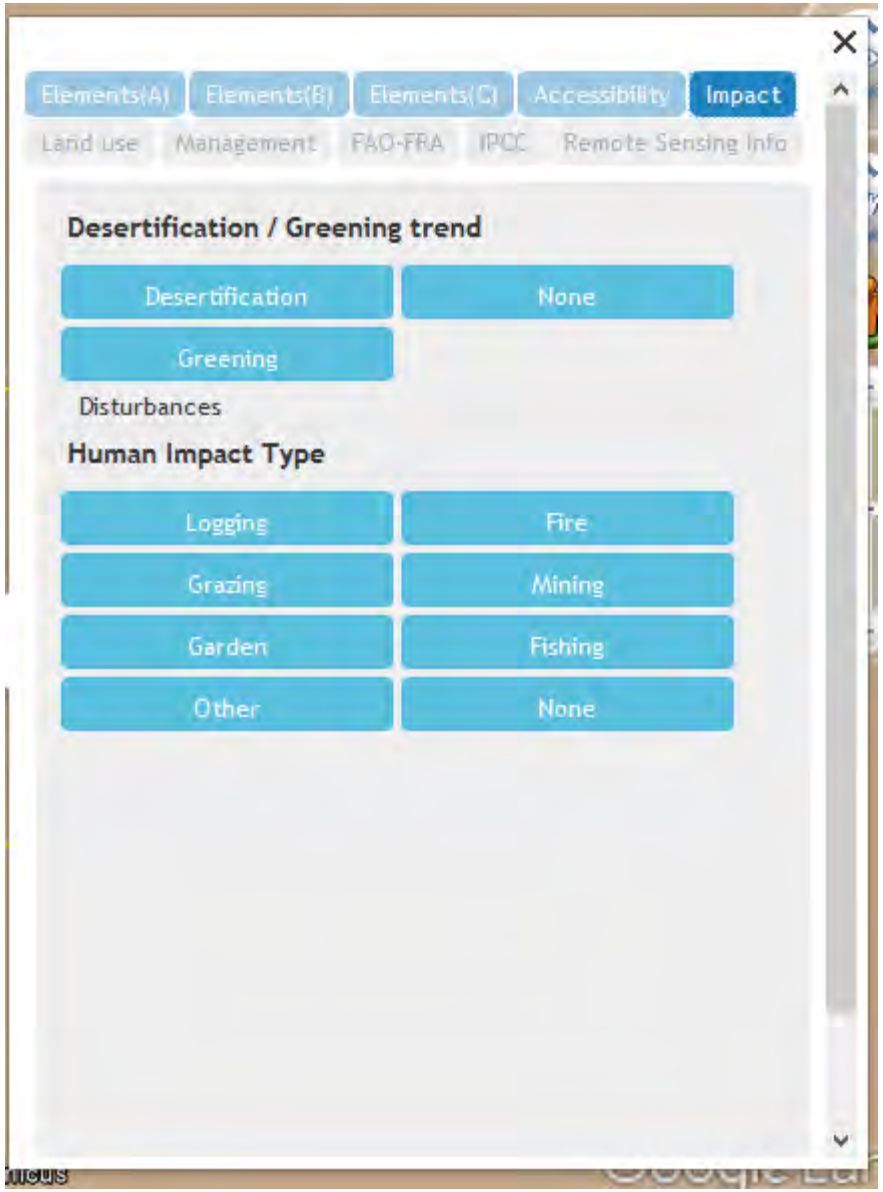
- Accessibilité de la placette



Formulaire d’évaluation

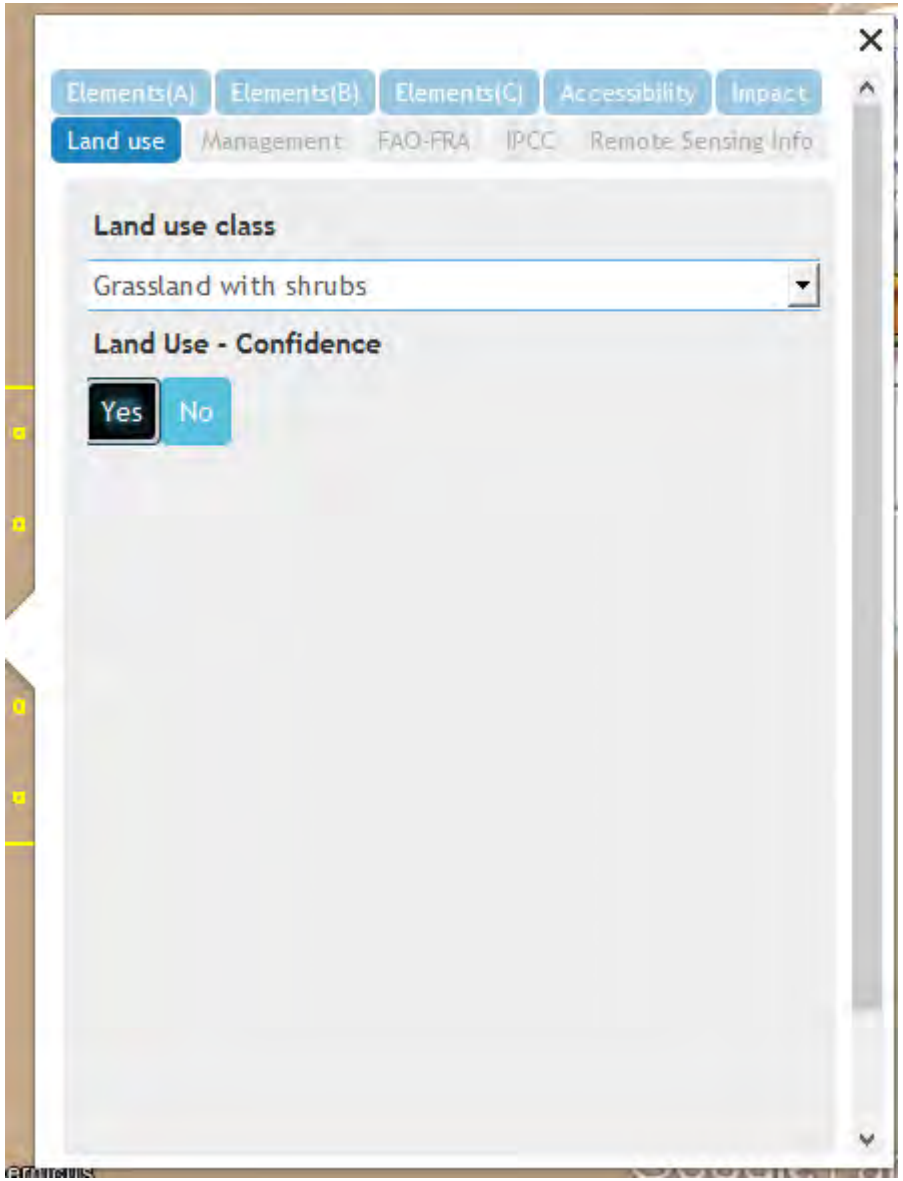
- Tendance au reverdissement/Désertification





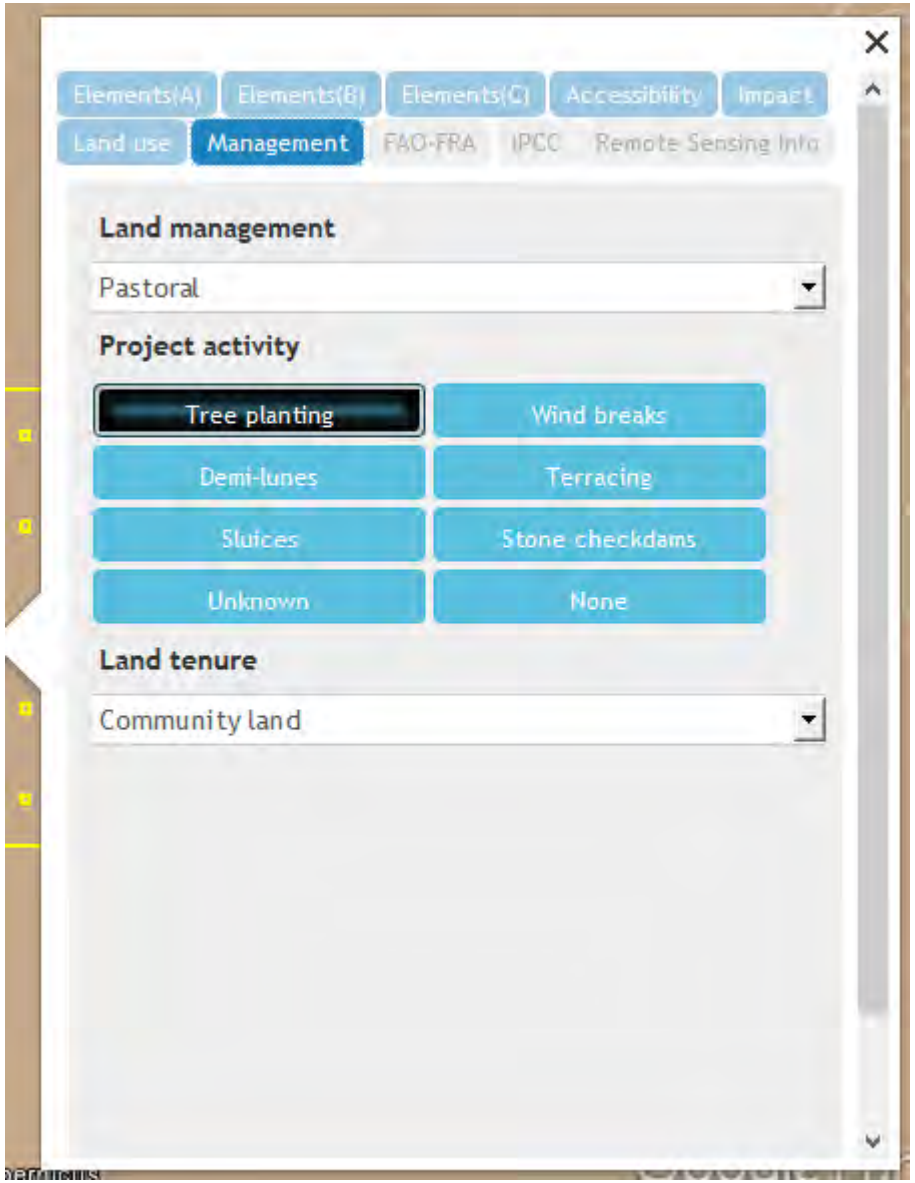
Formulaire d’évaluation

- Classe d’utilisation des terres



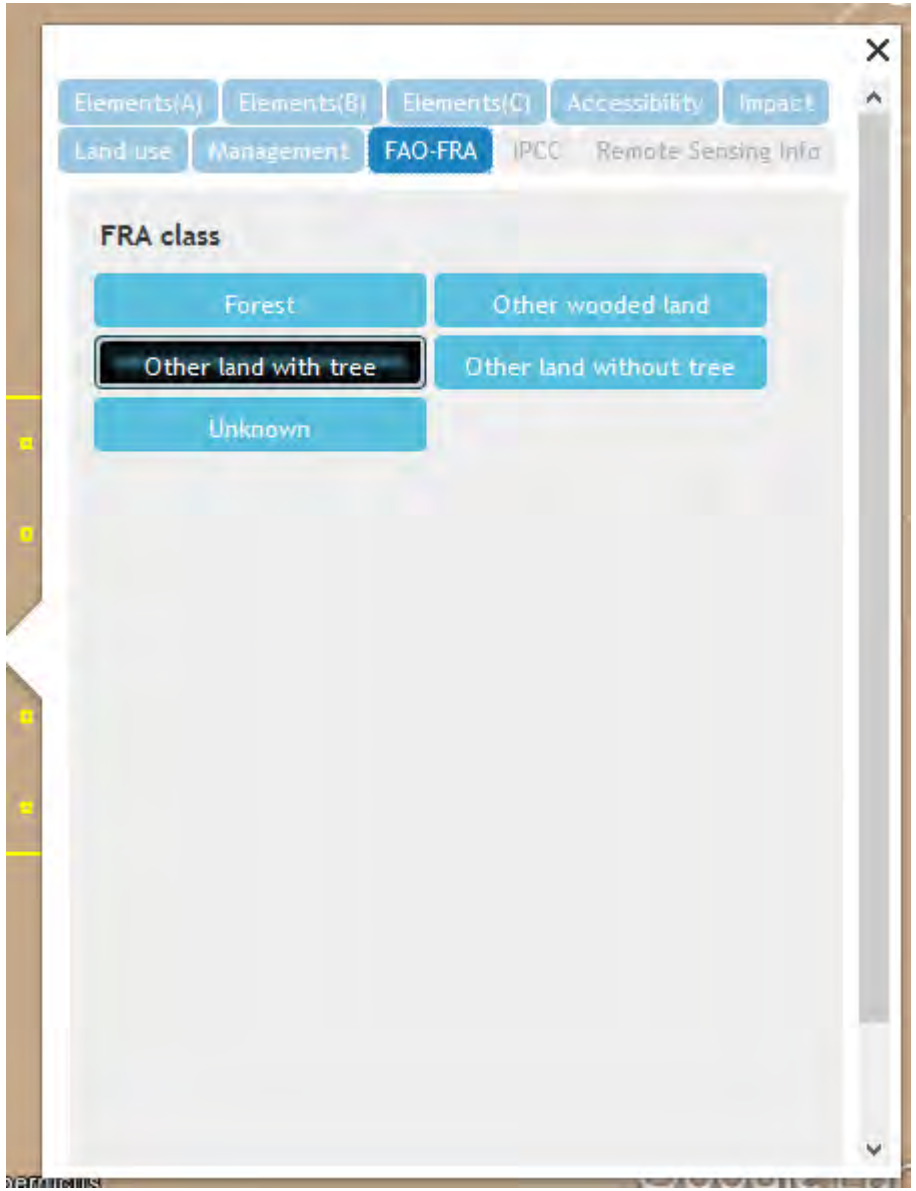
Formulaire d’évaluation

- Utilisation des terres



Formulaire d’évaluation

- Classe FRA FAO

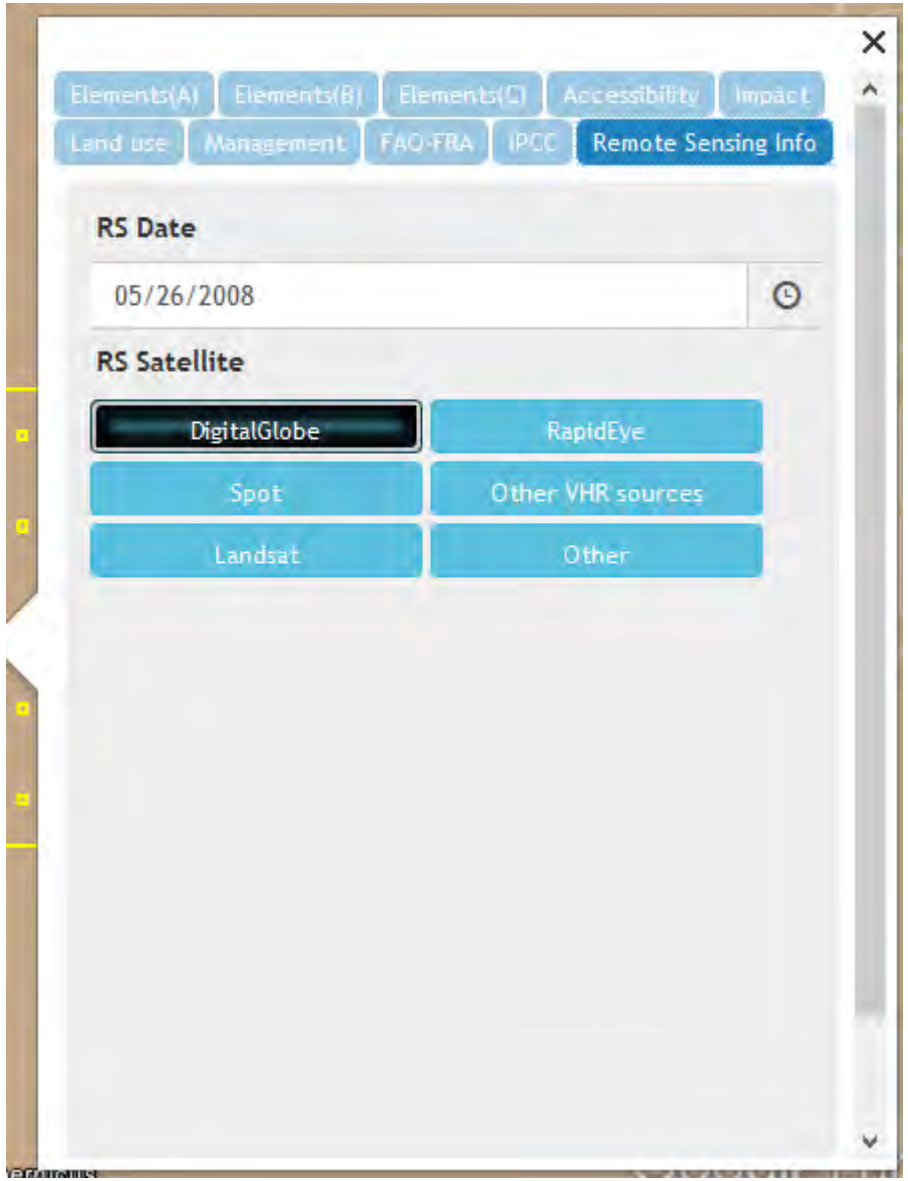


Formulaire d’évaluation

- Utilisation des terres IPCC

Formulaire d’évaluation

- Information sur les images satellitaires



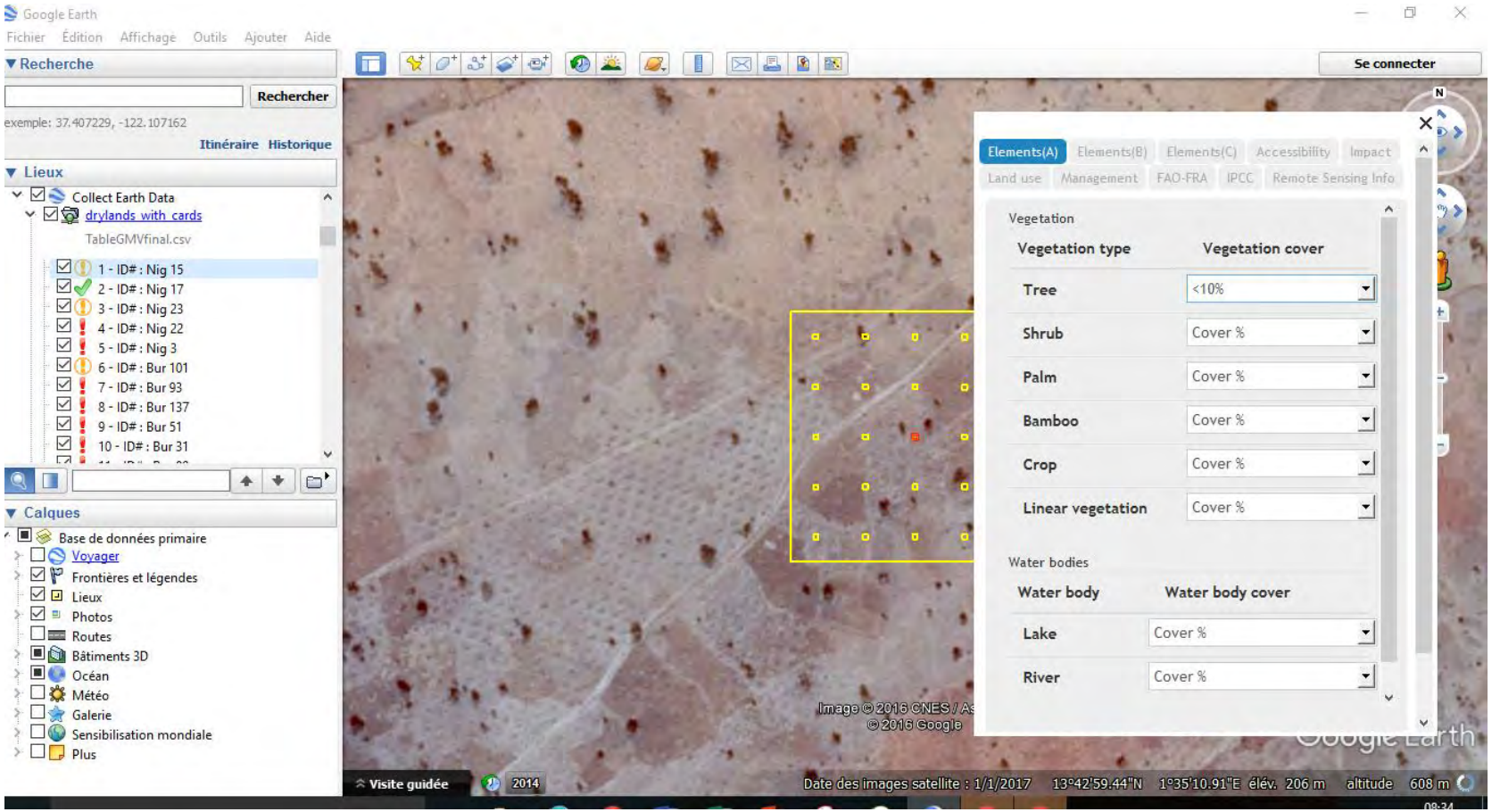
Méthodologie

Google engine

Bing map

GOOGLE-EARTH

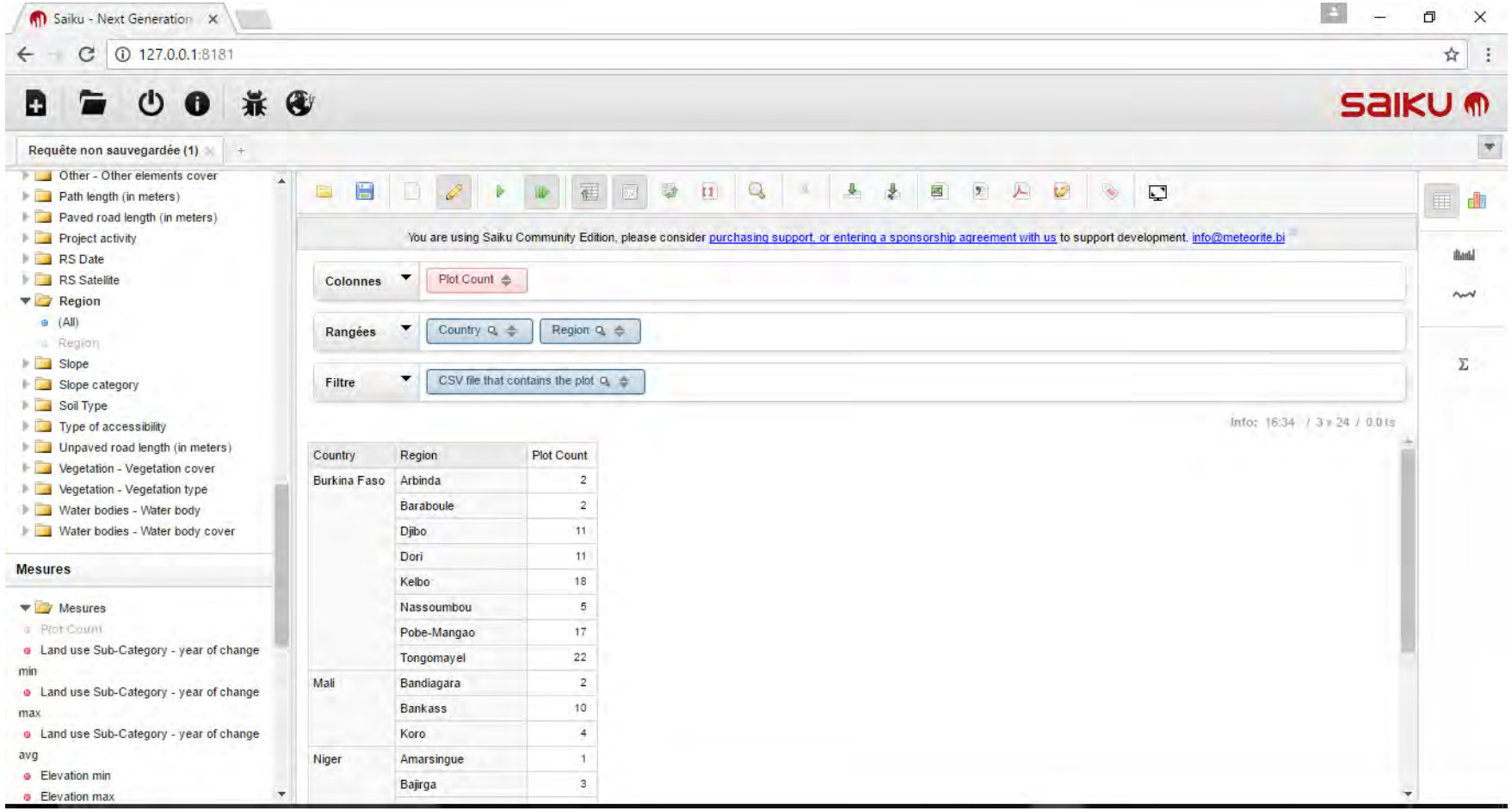
- Renseignement des différentes fenêtres de questionnaire pour chacune des placettes
- Evaluation des images satellitaires de différentes années



Méthodologie

SERVEUR SAIKU

Analyses des données



Zone d’étude

- sites ou le projet a menées des travaux de 2013 à 2016,

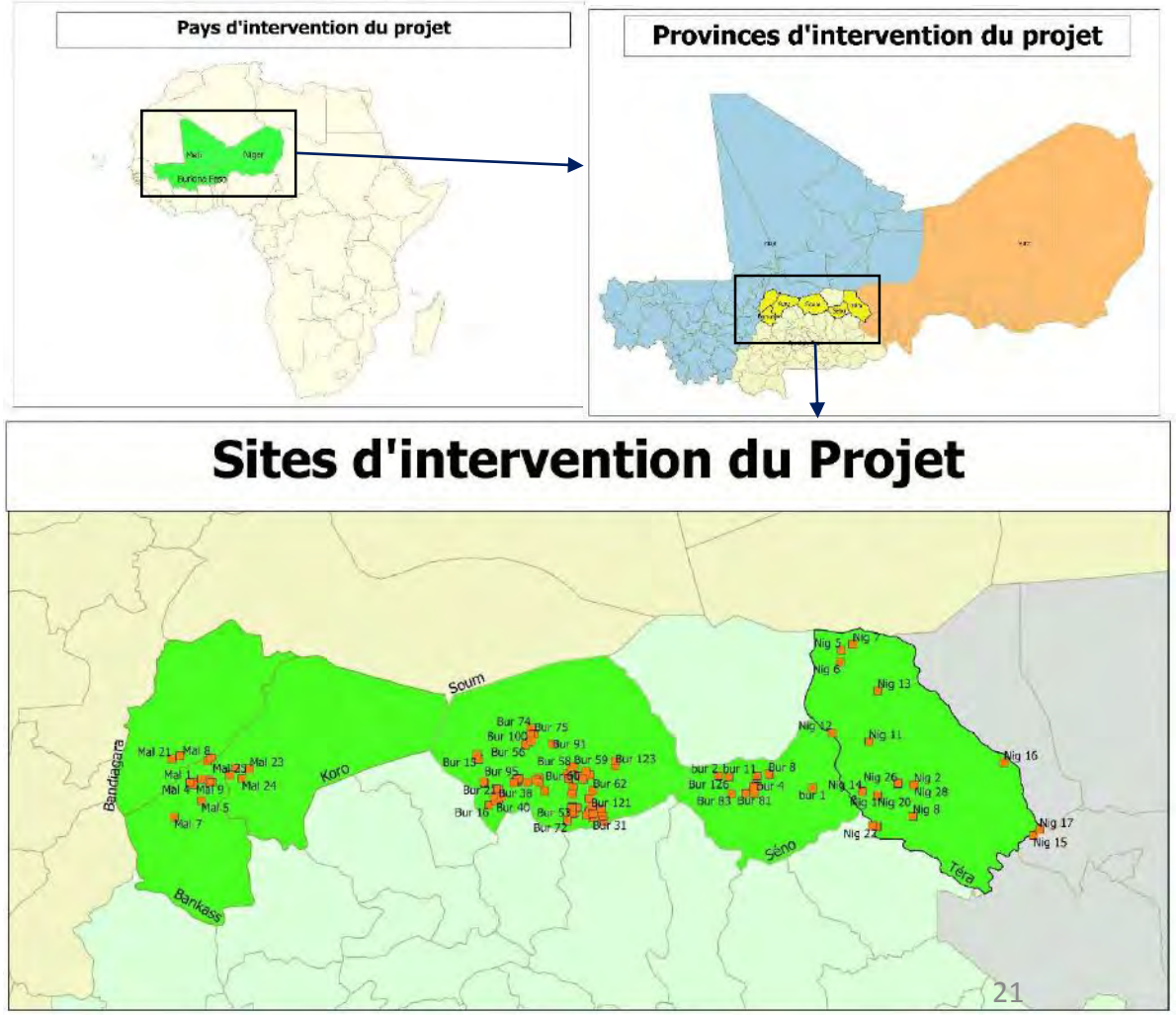
✓Plantations de ligneux

✓Ensemencements d’herbacées

✓Régénération Naturelle Assisté

- 120 sites parmi 254 sites

Measures Level	Burkina Faso	Mali	Niger	Total
Plot Count	88	16	16	120



Résultats

- Répartition des placettes par communes

Measures Level	Burkina Faso	Mali	Niger	Total
Plot Count	88	16	16	120

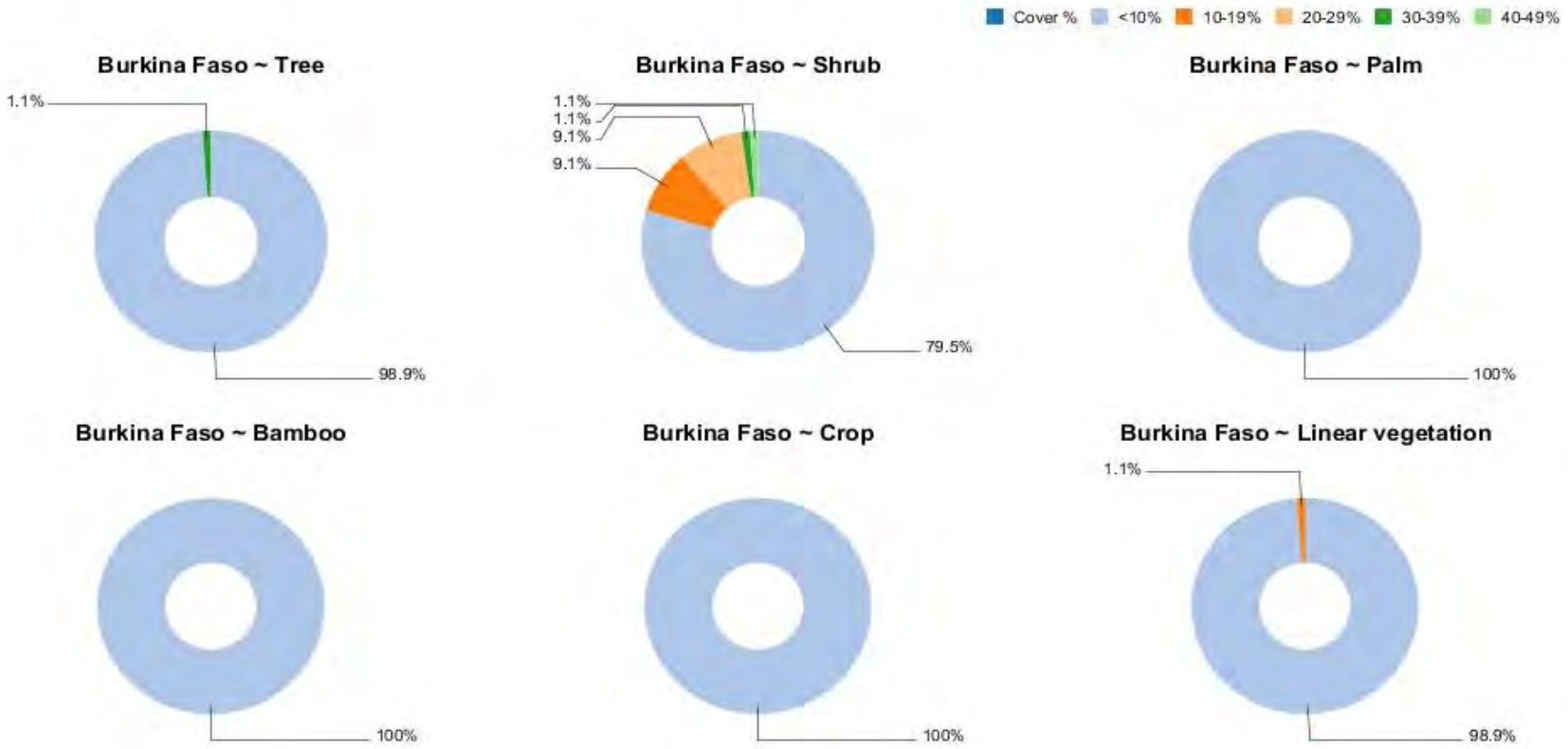
Country	Nombre de communes	Communes	Plot Count
Burkina Faso	8	Arbinda	2
		Baraboule	2
		Djibo	11
		Dori	11
		Kelbo	18
		Nassoumbou	5
		Pobe-Mangao	17
		Tongomayel	22
Mali	3	Bandiagara	2
		Bankass	10
		Koro	4
Niger	12	Amarsingue	1
		Bajirga	3
		Bangare	2
		Doumba	2
		Gountouyena	1
		Halley Koubou	1
		Handaga	1
		Sassarey	1
		Wanzarbe	1
		Wasseyga Touhounte	1
		Yatakala	1
		Zalengue	1
3	**23**	**23**	**120**

Résultats

- Couverture végétale

Burkina Faso

Country	Vegetation type	<10%	10-19%	20-29%	30-39%	40-49%
Burkina Faso	Tree	87,00			1,00	
Burkina Faso	Shrub	70,00	8,00	8,00	1,00	1,00
Burkina Faso	Palm	88,00				
Burkina Faso	Bamboo	88,00				
Burkina Faso	Crop	88,00				
Burkina Faso	Linear vegetation	87,00	1,00			

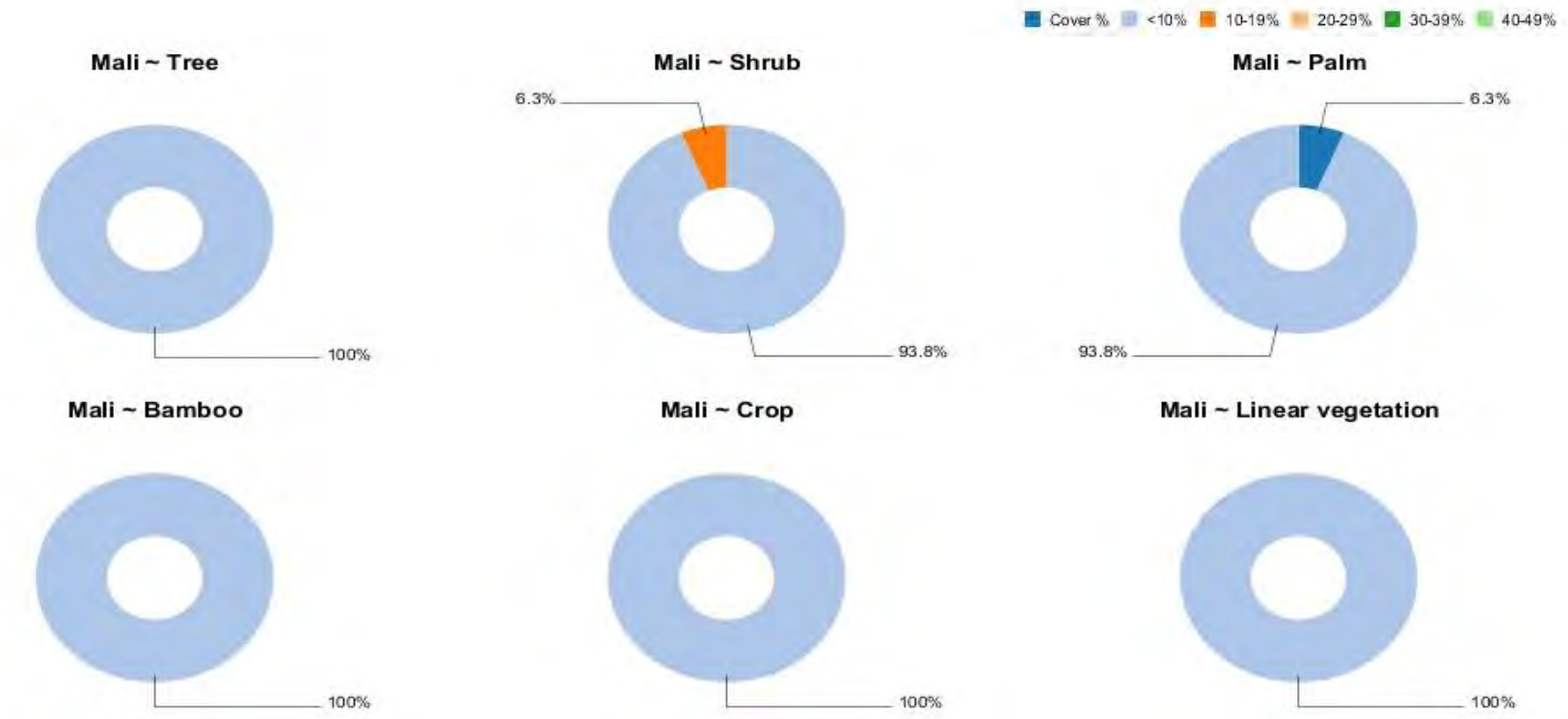


Résultats

- Couverture végétale

Mali

Country	Vegetation type	<10%	10-19%	20-29%	30-39%	40-49%
Mali	Tree	16,00				
Mali	Shrub	15,00	1,00			
Mali	Palm	15,00				
Mali	Bamboo	16,00				
Mali	Crop	16,00				
Mali	Linear vegetation	16,00				

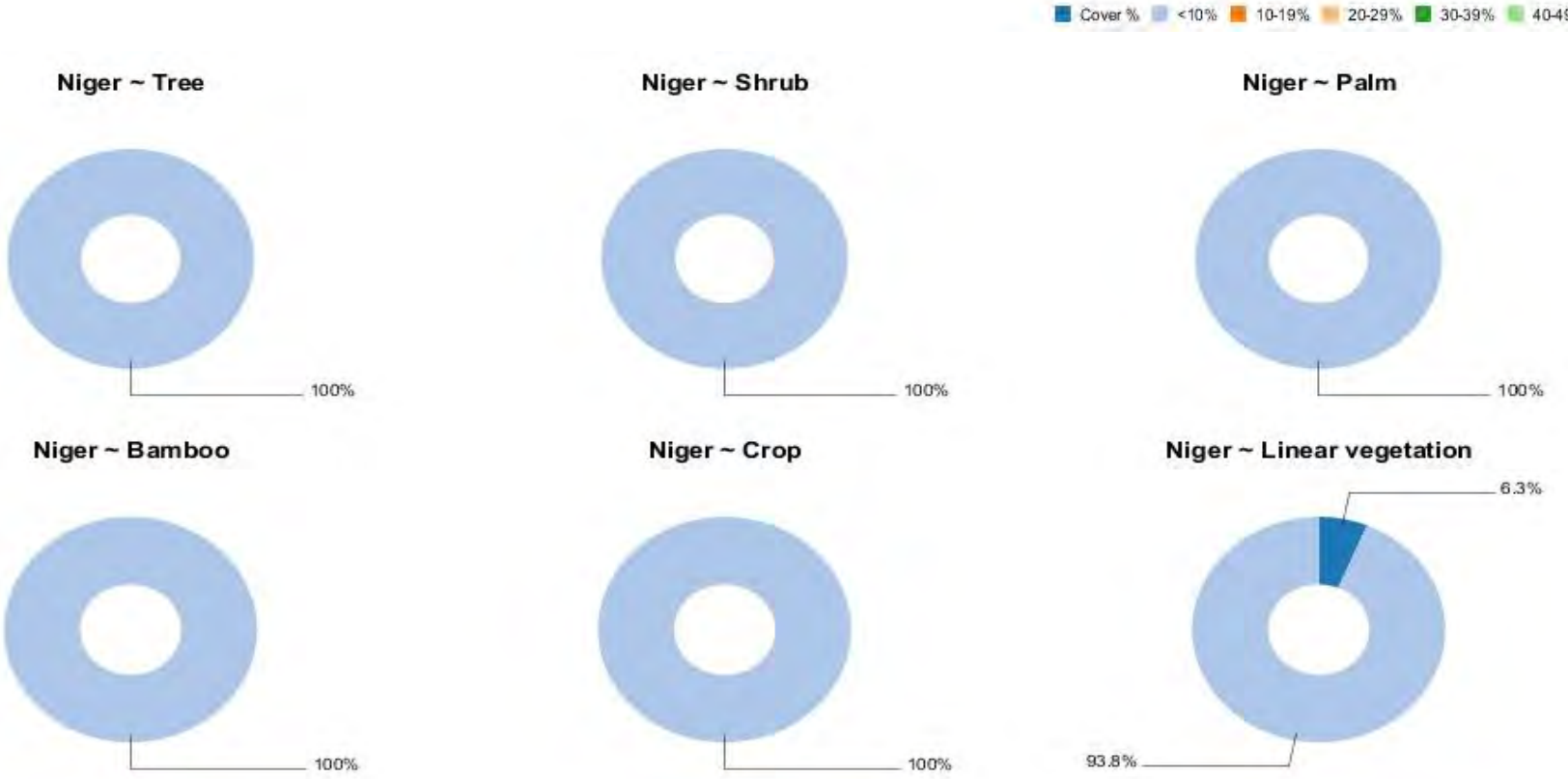


Résultats

- Couverture végétale

Niger

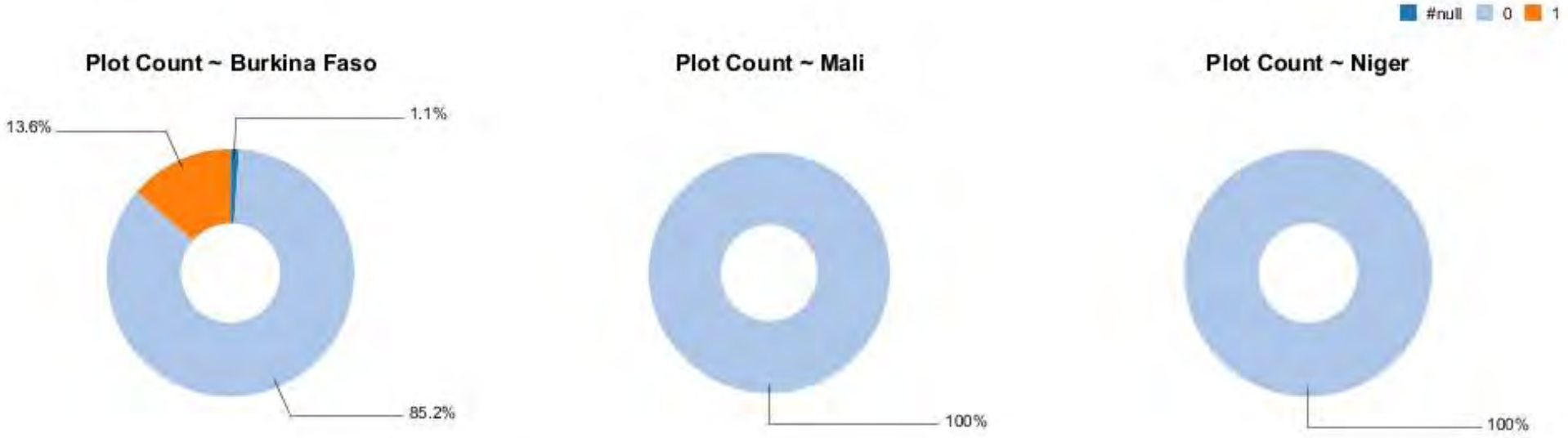
Country	Vegetation type	<10%	10-19%	20-29%	30-39%	40-49%
Niger	Tree	16,00				
Niger	Shrub	16,00				
Niger	Palm	16,00				
Niger	Bamboo	16,00				
Niger	Crop	16,00				
Niger	Linear vegetation	15,00				



Résultats

- Nombre de placette disposant d'un nombre d'arbustes supérieurs à 30 pieds à l'hectare

	Plot Count		
More than 30 shrubs	Burkina Faso	Mali	Niger
#null	1,00		
0	75,00	16,00	16,00
1	12,00		

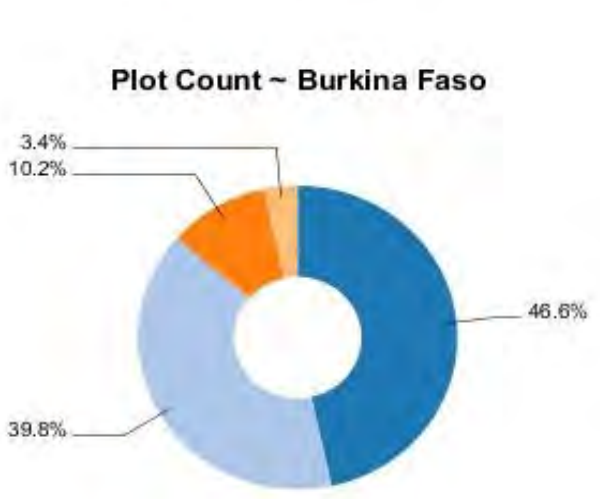


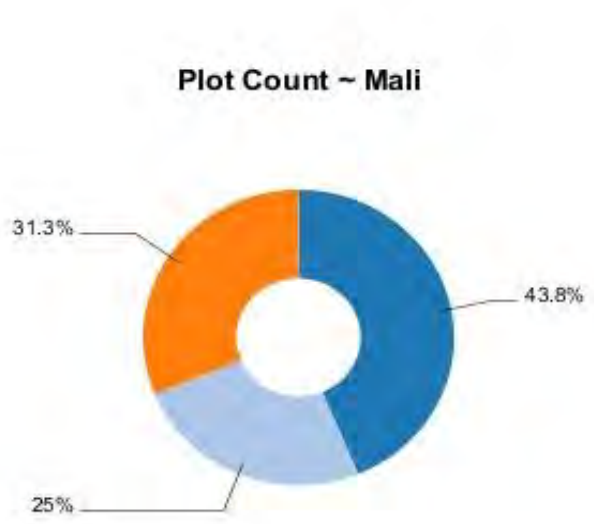
Résultats

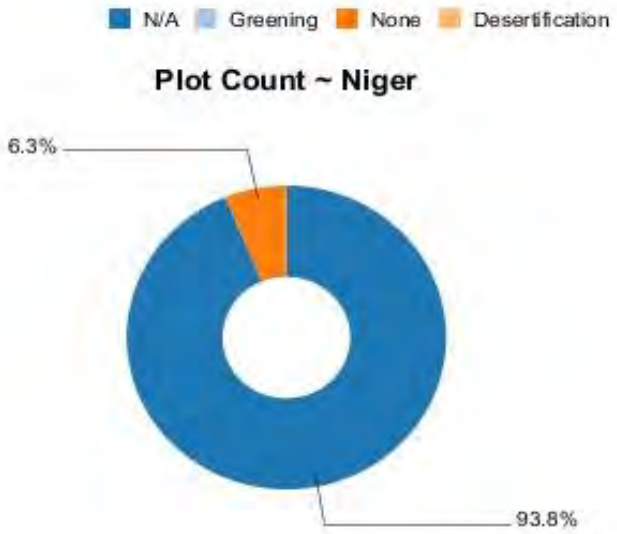
- Tendance à la désertification/Reverdissement

MeasuresLevel	N/A	Greening	None	Desertification
Plot Count	63,00	39,00	15,00	3,00

	Plot Count		
Desertification / Greening trend	Burkina Faso	Mali	Niger
N/A	41,00	7,00	15,00
Greening	35,00	4,00	
None	9,00	5,00	1,00
Desertification	3,00		



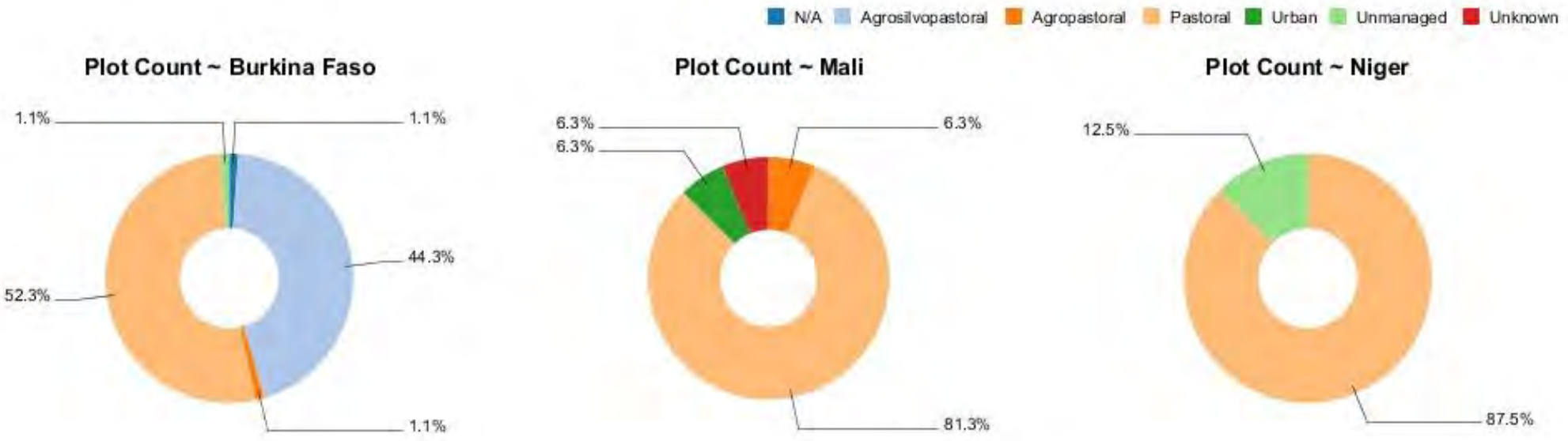




Résultats

- Gestion des terres

	Plot Count		
Land management	Burkina Faso	Mali	Niger
N/A	1,00		
Agrosilvopastoral	39,00		
Agropastoral	1,00	1,00	
Pastoral	46,00	13,00	14,00
Urban		1,00	
Unmanaged	1,00		2,00
Unknown		1,00	



Résultats

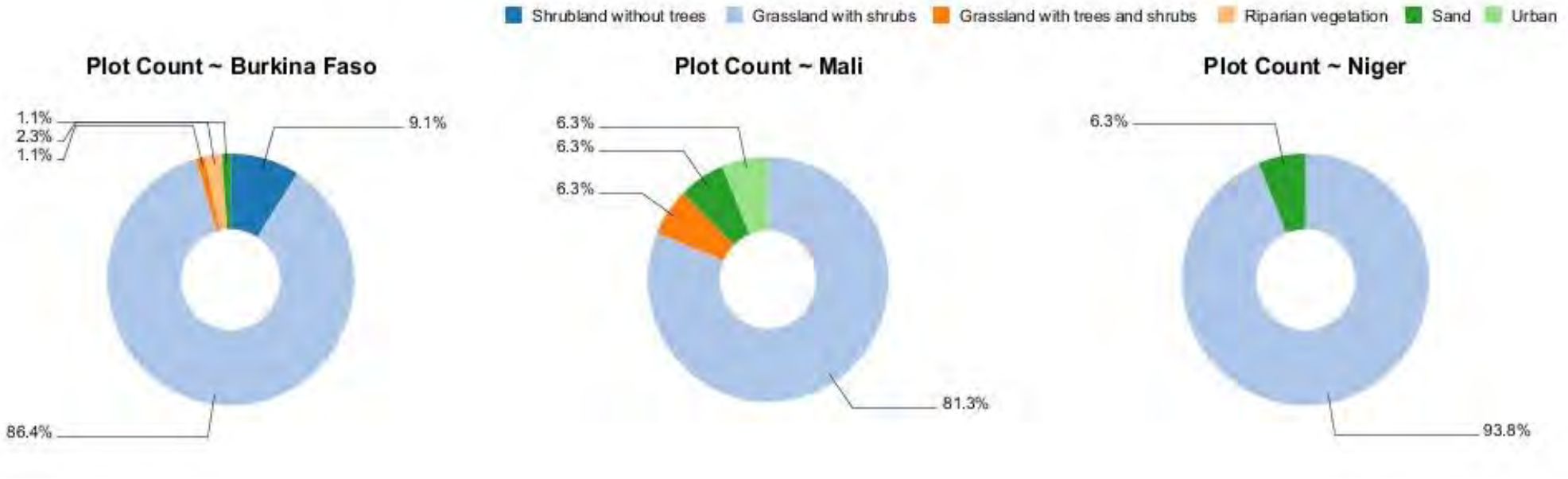
- Tenure foncière

	Plot Count		
Land tenure	Burkina Faso	Mali	Niger
N/A			5,00
Community land	46,00	14,00	11,00
Private	42,00	2,00	

Résultats

- Classe d'occupation des terres

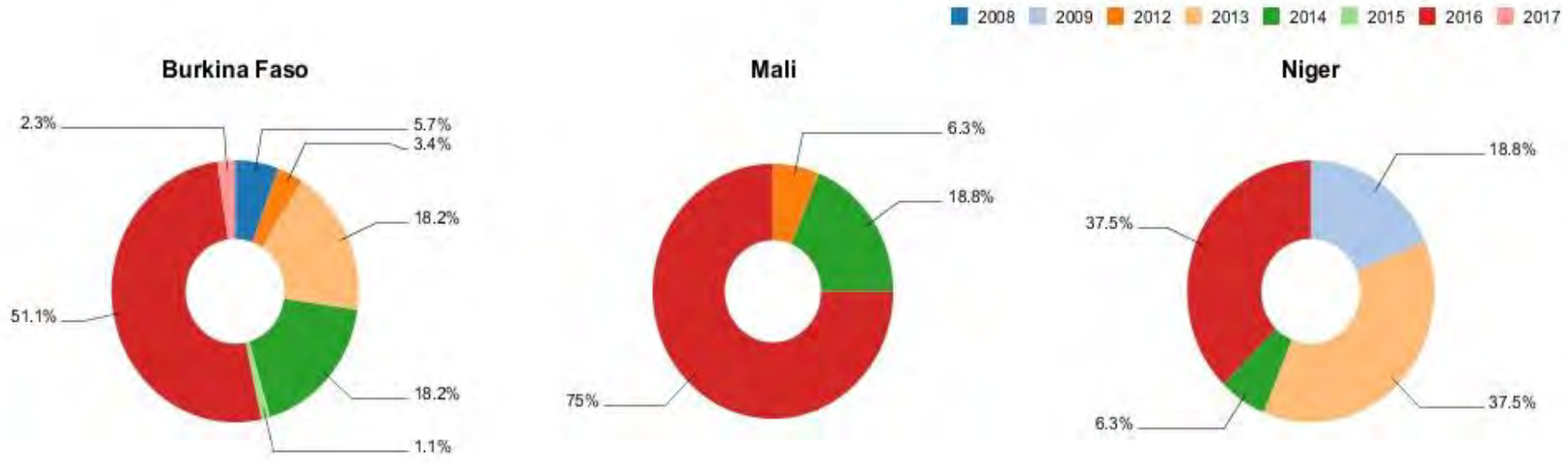
	Plot Count		
Land use class	Burkina Faso	Mali	Niger
Shrubland without trees	8,00		
Grassland with shrubs	76,00	13,00	15,00
Grassland with trees and shrubs	1,00	1,00	
Riparian vegetation	2,00		
Sand	1,00	1,00	1,00
Urban		1,00	



Résultats

- Année des images satellitaires utilisés

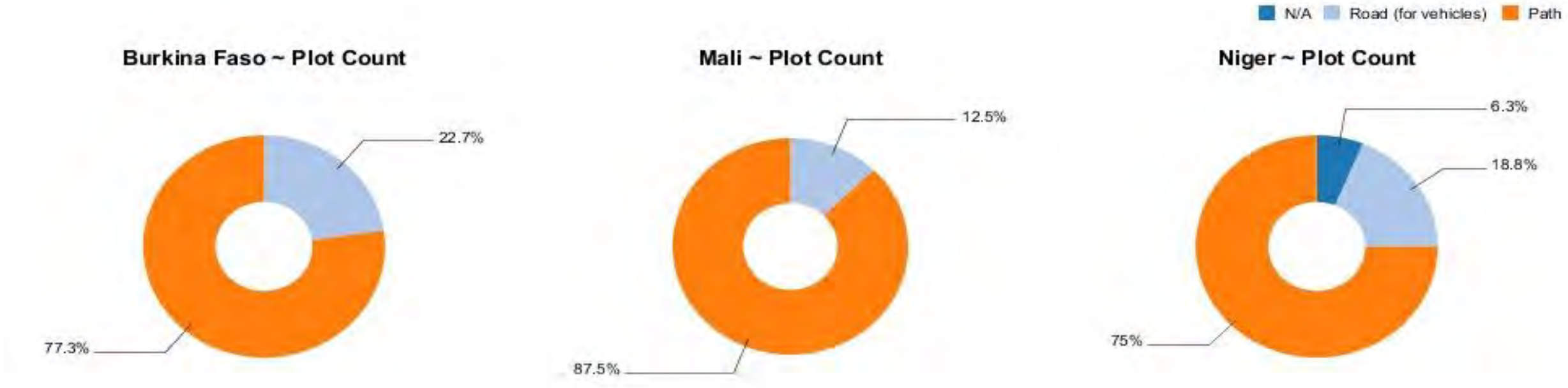
	Plot Count		
RS Date - Year	Burkina Faso	Mali	Niger
2008	5,00		
2009			3,00
2012	3,00	1,00	
2013	16,00		6,00
2014	16,00	3,00	1,00
2015	1,00		
2016	45,00	12,00	6,00
2017	2,00		



Résultats

- Exploitation des produits (Fourrage)

	Burkina Faso	Mali	Niger
Type of accessibility	Plot Count	Plot Count	Plot Count
N/A			1,00
Road (for vehicles)	20,00	2,00	3,00
Path	68,00	14,00	12,00



Résultats

Moyenne du nombre d'arbre/d'arbuste

Country	Number of trees in plot avg
Burkina Faso	0,30
Mali	0,19
Niger	0,00

Country	Number of shrubs in plot avg
Burkina Faso	9,23
Mali	11,75
Niger	5,27

Country	Region	Number of shrubs in plot avg
Burkina Faso	Arbinda	8,00
Burkina Faso	Djibo	9,78
Burkina Faso	Dori	6,18
Burkina Faso	Kelbo	7,85
Burkina Faso	Nassoumbou	9,00
Burkina Faso	Pobe-Mangao	11,12
Burkina Faso	Tongomayel	10,40
Mali	Bandiagara	5,50
Mali	Bankass	12,20
Mali	Koro	13,75
Niger	Amarsingue	3,00
Niger	Bajirga	9,67
Niger	Bangare	6,00
Niger	Doumba	3,00
Niger	Gountouyena	2,00
Niger	Halley Koubou	0,00
Niger	Handaga	2,00
Niger	Sassarey	7,00
Niger	Wanzarbe	4,00
Niger	Wasseyga Touhounte	5,00
Niger	Yatakala	9,00
Niger	Zalengue	6,00

Quelques images

Google Earth

Fichier Édition Affichage Outils Ajouter Aide

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▼ Recherche

Rechercher

exemple: 48,858353, 2,294096

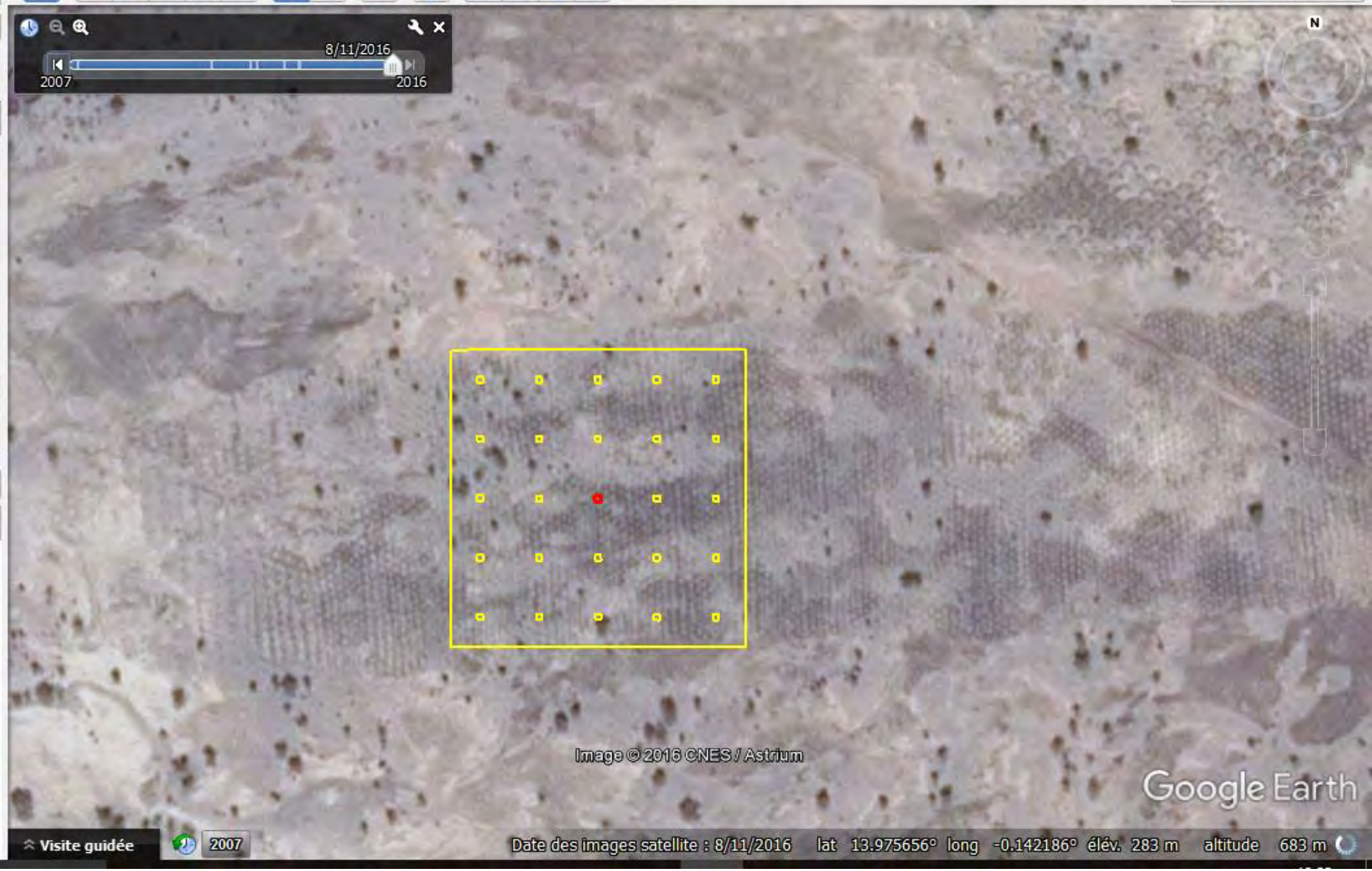
Itinéraire Historique

▼ Lieux

- 27 - ID# : bur 2
- 28 - ID# : bur 3
- 29 - ID# : bur 4
- 30 - ID# : bur 5
- 31 - ID# : Bur 79
- 32 - ID# : Bur 8
- 33 - ID# : Bur 80
- 34 - ID# : Bur 81
- 35 - ID# : Bur 82
- 36 - ID# : Bur 83
- 37 - ID# : Bur 101
- 38 - ID# : Bur 102
- 39 - ID# : Bur 103
- 40 - ID# : Bur 121

▼ Calques

- Base de données primaire
  - Voyager
  - Frontières et légendes
  - Lieux
  - Photos
  - Routes
  - Bâtiments 3D
  - Océan
  - Météo
  - Galerie
  - Sensibilisation mondiale
  - Plus



Visite guidée 2007

Date des images satellite : 8/11/2016 lat 13.975656° long -0.142186° élév. 283 m altitude 683 m

Google Earth

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▼ Recherche

Rechercher

exemple: Restaurant

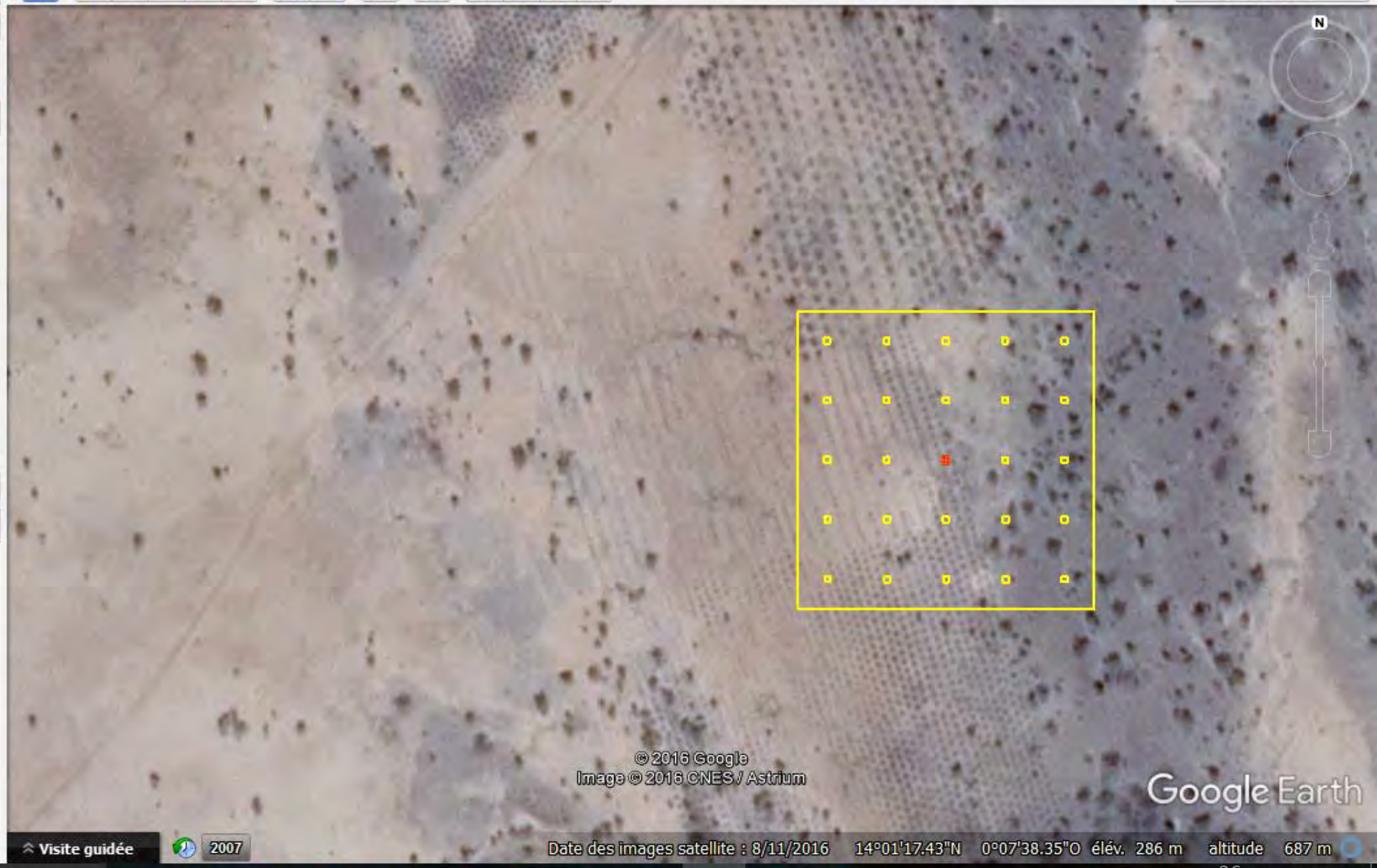
Itinéraire Historique

▼ Lieux

- 54 - ID# : Bur 129
- 55 - ID# : Bur 82
- 56 - ID# : Bur 115
- 57 - ID# : Nig 14
- 58 - ID# : Bur 132
- 59 - ID# : Bur 62
- 60 - ID# : Bur 117
- 61 - ID# : Bur 39
- 62 - ID# : Bur 105
- 63 - ID# : Bur 38
- 64 - ID# : bur 1
- 65 - ID# : Bur 80
- 66 - ID# : Bur 127
- 67 - ID# : bur 5

▼ Calques

- Base de données primaire
  - Voyager
  - Frontières et légendes
  - Lieux
  - Photos
  - Routes
  - Bâtiments 3D
  - Océan
  - Météo
  - Galerie
  - Sensibilisation mondiale
  - Plus



Visite guidée 2007 Date des images satellite : 8/11/2016 14°01'17.43"N 0°07'38.35"O élév. 286 m altitude 687 m

08:46

Google Earth

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▼ Recherche

Rechercher

exemple: Restaurant

Itinéraire Historique

▼ Lieux

- 105 - ID# : Bur 126
- 106 - ID# : Bur 73
- 107 - ID# : Bur 79
- 108 - ID# : Bur 24
- 109 - ID# : Bur 72
- 110 - ID# : Bur 60
- 111 - ID# : bur 11
- 112 - ID# : bur 2
- 113 - ID# : Mal 25
- 114 - ID# : Bur 63
- 115 - ID# : Bur 12
- 116 - ID# : Bur 14
- 117 - ID# : Bur 30
- 118 - ID# : Bur 8

▼ Calques

- Base de données primaire
  - Voyager
  - Frontières et légendes
  - Lieux
  - Photos
  - Routes
  - Bâtiments 3D
  - Océan
  - Météo
  - Galerie
  - Sensibilisation mondiale
  - Plus

Visite guidée 2011 Date des images satellite : 8/11/2016 14°05'07.99"N 0°07'42.91"O élév. 272 m altitude 672 m

Rechercher sur le web et dans Windows

FRA 09:21 02/03/2017

Google Earth

Fichier Édition Affichage Outils Ajouter Aide

Se connecter

▼ Recherche

Rechercher

exemple: Hôtels à proximité de l'aéroport Charles de Gaulle

Itinéraire Historique

▼ Lieux

- 64 - ID# : bur 1
- 65 - ID# : Bur 80
- 66 - ID# : Bur 127
- 67 - ID# : bur 5
- 68 - ID# : Bur 114
- 69 - ID# : bur 4
- 70 - ID# : bur 3
- 71 - ID# : Bur 106
- 72 - ID# : Nig 28
- 73 - ID# : Bur 112
- 74 - ID# : Nig 2
- 75 - ID# : Mal 15
- 76 - ID# : Nig 26
- 77 - ID# : Nig 4

▼ Calques

- Base de données primaire
  - Voyager
  - Frontières et légendes
  - Lieux
  - Photos
  - Routes
  - Bâtiments 3D
  - Océan
  - Météo
  - Galerie
  - Sensibilisation mondiale
  - Plus

22/5/2016

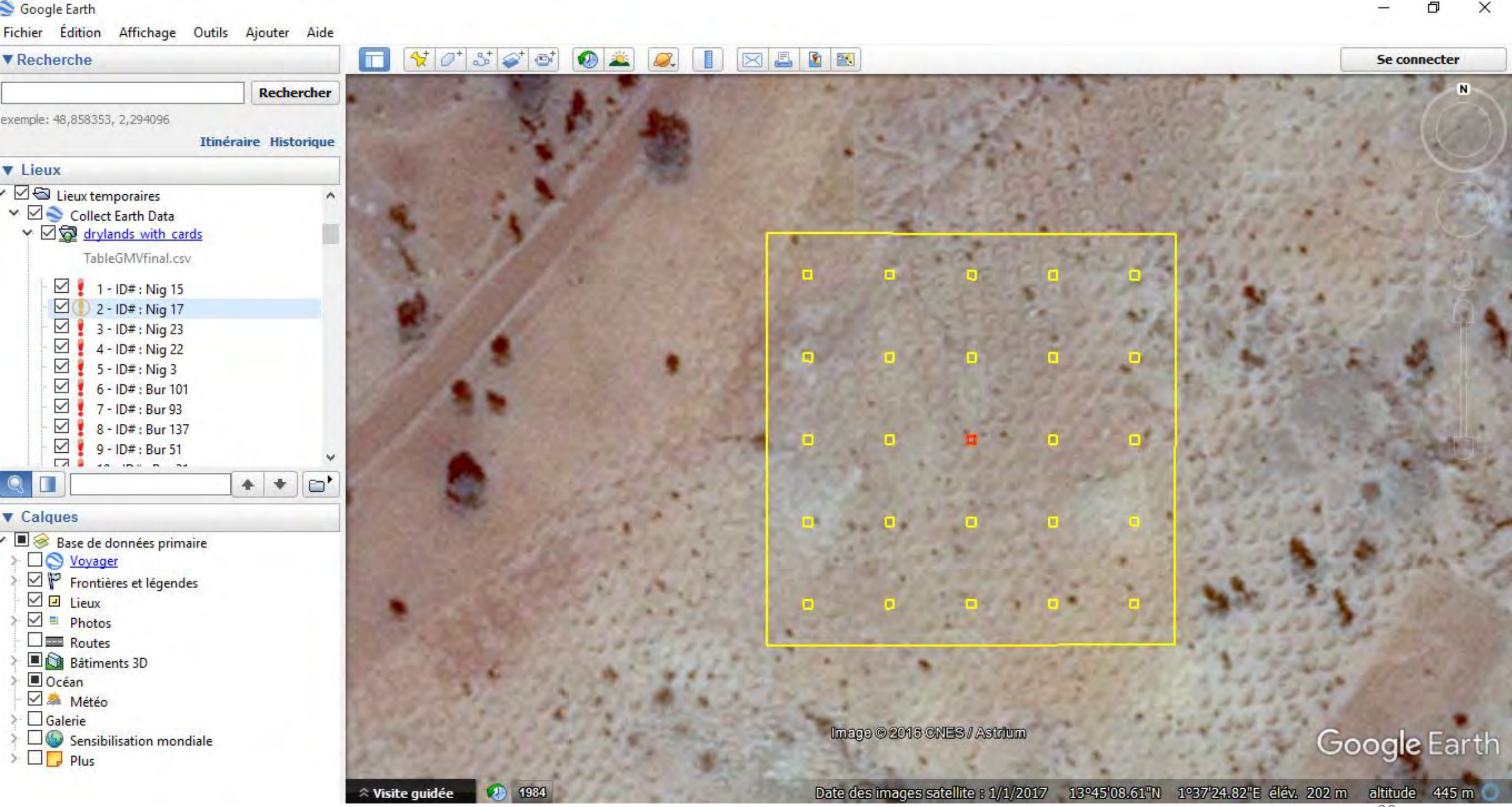
Image © 2016 CNES / Astrium

Google Earth

Visite guidée 2007

Date des images satellite : 22/5/2016 14°02'18.60"N 0°44'50.23"E élév. 252 m altitude 650 m

11:29


Google Earth
Fichier Édition Affichage Outils Ajouter Aide
Se connecter
Recherche
Rechercher
exemple: 48,858353, 2,294096
Itinéraire Historique
Lieux
Lieux temporaires
Collect Earth Data
drylands with cards
TableGMVfinal.csv
1 - ID# : Nig 15
2 - ID# : Nig 17
3 - ID# : Nig 23
4 - ID# : Nig 22
5 - ID# : Nig 3
6 - ID# : Bur 101
7 - ID# : Bur 93
8 - ID# : Bur 137
9 - ID# : Bur 51
Calques
Base de données primaire
Voyager
Frontières et légendes
Lieux
Photos
Routes
Bâtiments 3D
Océan
Météo
Galerie
Sensibilisation mondiale
Plus
Image © 2016 CNES / Astrium
Google Earth
Visite guidée
1984
Date des images satellite : 1/1/2017 13°45'08.61"N 1°37'24.82"E élév. 202 m altitude 445 m


Google Earth
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Recherche
Rechercher
exemple: Hôtels à proximité de l'aéroport Charles de Gaulle
Itinéraire Historique
Lieux
44 - ID# : Bur 111
45 - ID# : Bur 43
46 - ID# : Nig 1
47 - ID# : Nig 20
48 - ID# : Bur 110
49 - ID# : Bur 107
50 - ID# : Bur 130
51 - ID# : Bur 83
52 - ID# : Bur 81
53 - ID# : Bur 128
54 - ID# : Bur 129
55 - ID# : Bur 82
56 - ID# : Bur 115
57 - ID# : Nig 14
Calques
Base de données primaire
Voyager
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Lieux
Photos
Routes
Bâtiments 3D
Océan
Météo
Galerie
Sensibilisation mondiale
Plus
© 2016 Google
Image © 2016 DigitalGlobe
Google Earth
Visite guidée
2012
Date des images satellite : 13/3/2014 13°59'14.78"N 0°31'26.61"E élév. 266 m altitude 666 m

Google Earth

Fichier Édition Affichage Outils Ajouter Aide

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▼ Recherche

Rechercher

exemple : pizzeria près de New York

Itinéraire Historique

▼ Lieux

- 36 - ID# : Bur 83
- 37 - ID# : Bur 101
- 38 - ID# : Bur 102
- 39 - ID# : Bur 103
- 40 - ID# : Bur 121
- 41 - ID# : Bur 122
- 42 - ID# : Bur 135
- 43 - ID# : Bur 31
- 44 - ID# : Bur 32
- 45 - ID# : Bur 33
- 46 - ID# : Bur 34
- 47 - ID# : Bur 35
- 48 - ID# : Bur 51
- 49 - ID# : Bur 52

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- Base de données primaire
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  - Lieux
  - Photos
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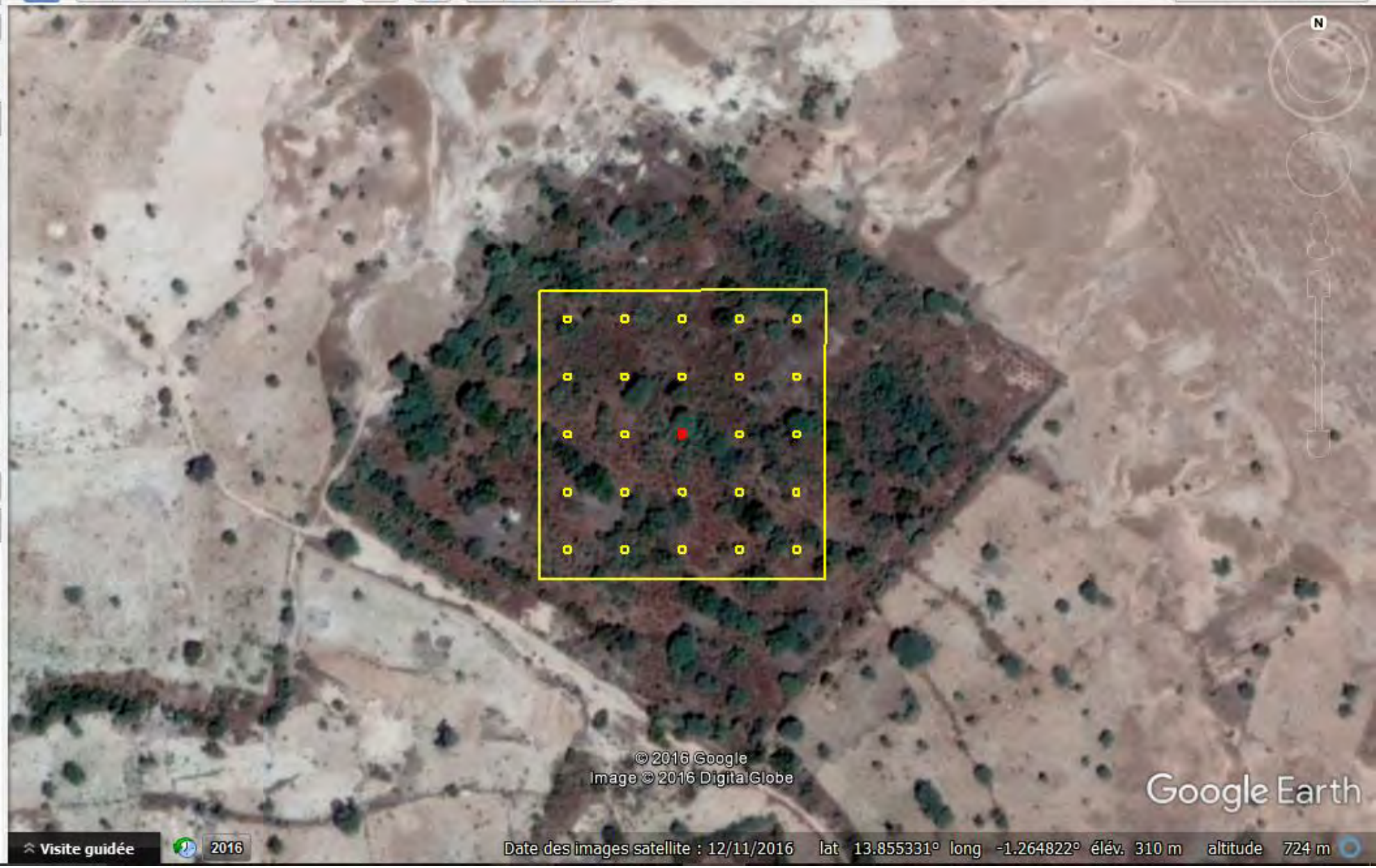
  - Bâtiments 3D
  - Océan
  - Météo
  - Galerie
  - Sensibilisation mondiale
  - Plus



Visite guidée 2016 Date des images satellite : 12/11/2016 lat 13.855331° long -1.264822° élév. 310 m altitude 724 m

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Rechercher

exemple : pizzeria près de New York

Itinéraire Historique

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35 - ID# : Bur 82
36 - ID# : Bur 83
37 - ID# : Bur 101
38 - ID# : Bur 102
39 - ID# : Bur 103
40 - ID# : Bur 121
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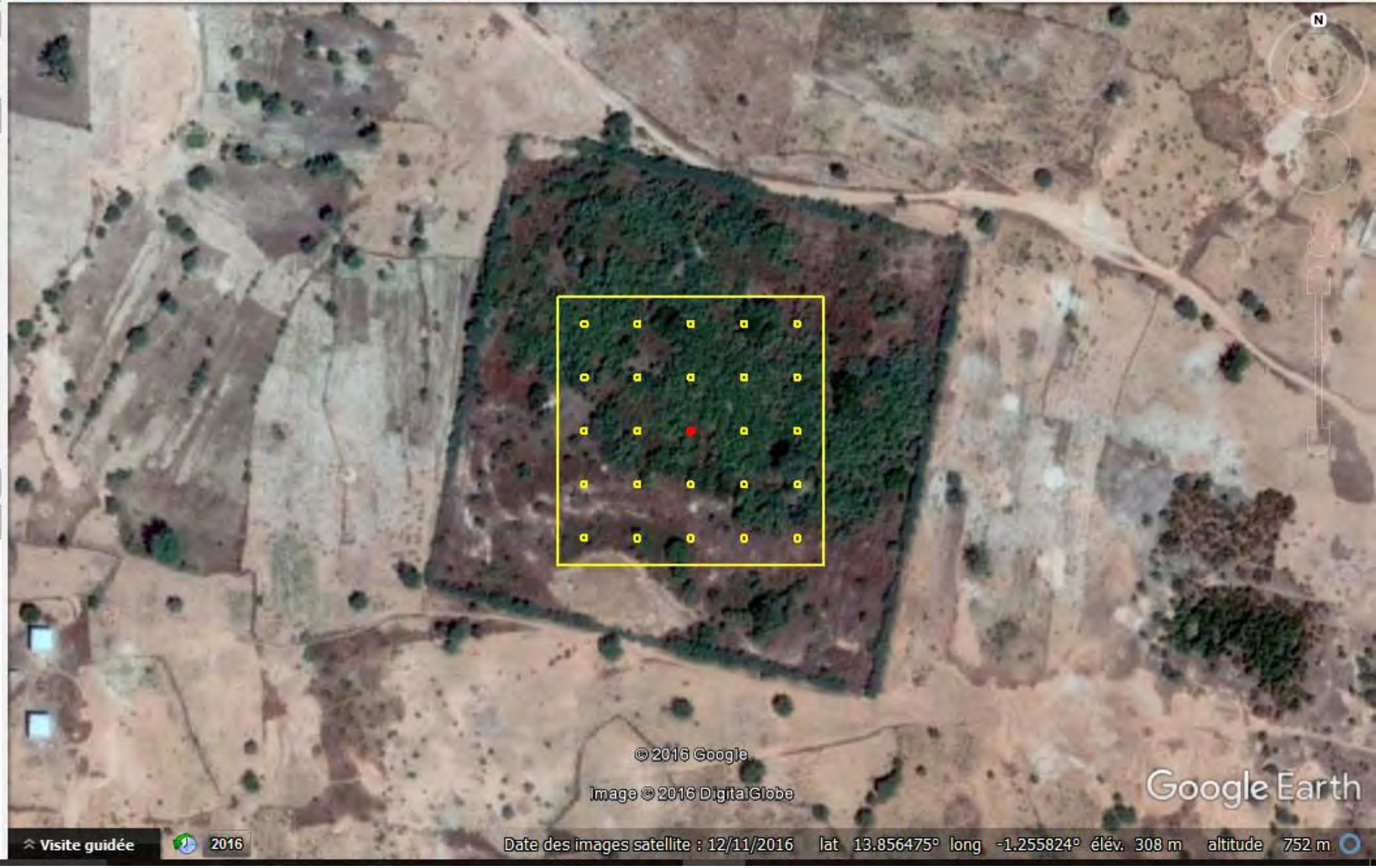

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Google Earth

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Rechercher

exemple: 37 25 19.1 N, 122 05 06 O

Itinéraire Historique

▼ Lieux

- 55 - ID# : Bur 87
- 56 - ID# : Bur 88
- 57 - ID# : Bur 89
- 58 - ID# : Bur 100
- 59 - ID# : Bur 56
- 60 - ID# : Bur 74
- 61 - ID# : Bur 75
- 62 - ID# : Bur 76
- 63 - ID# : Bur 77
- 64 - ID# : Bur 16
- 65 - ID# : Bur 18
- 66 - ID# : Bur 19
- 67 - ID# : Bur 20

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  - Frontières et légendes
  - Lieux
  - Photos
  - Routes
  - Bâtiments 3D
  - Océan
  - Météo
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Visite guidée 2001 Date des images satellite : 6/12/2010 lat 13.903445° long -1.784888° élév. 350 m altitude 755 m

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exemple: 37 25 19.1 N, 122 05 06 O

Itinéraire Historique

▼ Lieux

- 55 - ID# : Bur 87
- 56 - ID# : Bur 88
- 57 - ID# : Bur 89
- 58 - ID# : Bur 100
- 59 - ID# : Bur 56
- 60 - ID# : Bur 74
- 61 - ID# : Bur 75
- 62 - ID# : Bur 76
- 63 - ID# : Bur 77
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  - Bâtiments 3D
  - Océan
  - Météo
  - Gallery
  - Sensibilisation mondiale
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13/4/2016

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Visite guidée 2001

Date des images satellite : 26/12/2013 lat 13.944888° long -1.734584° élév. 314 m altitude 714 m

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▼ Recherche

Rechercher

exemple: Restaurant

Itinéraire Historique

▼ Lieux

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- 9 - ID# : Bur 136
- 10 - ID# : Bur 24
- 11 - ID# : Bur 43
- 12 - ID# : Bur 44
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- 14 - ID# : Bur 93
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- 19 - ID# : bur 1
- 20 - ID# : bur 11
- 21 - ID# : Bur 12

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  - Lieux
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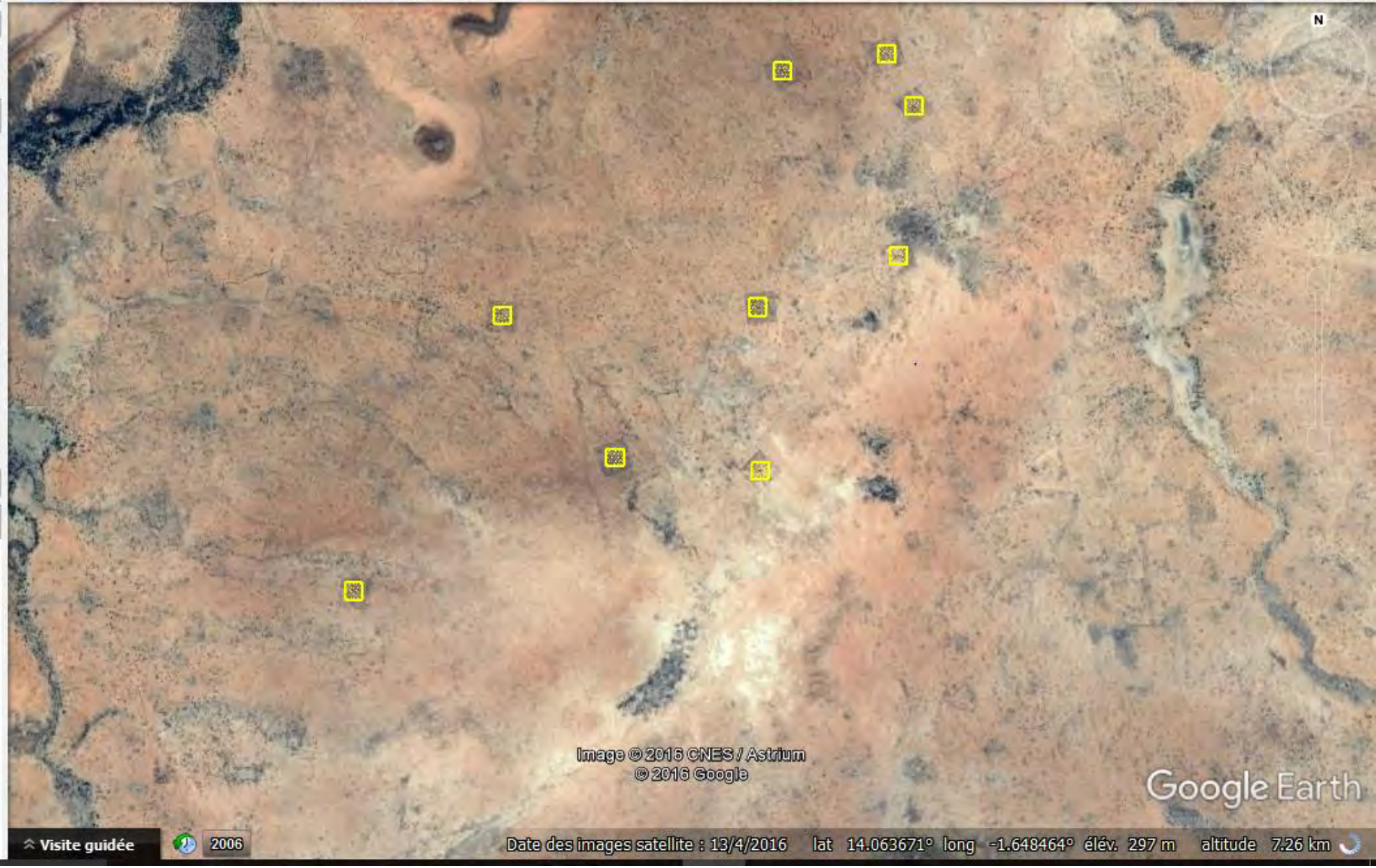

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Google Earth

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exemple: 37 25 19.1 N, 122 05 06 O

Itinéraire Historique

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  - Météo
  - Gallery
  - Sensibilisation mondiale
  - Plus

14/5/2001

2001 2016

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PowerPoint 2013 mages satellite : 14/5/2001 lat 13.944993° long -1.734778° élév. 314 m altitude 714 m

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exemple: 37 25 19.1 N, 122 05 06 O

Itinéraire Historique

▼ Lieux

- 55 - ID# : Bur 87
- 56 - ID# : Bur 88
- 57 - ID# : Bur 89
- 58 - ID# : Bur 100
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  - Voyager
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  - Lieux
  - Photos
  - Routes
  - Bâtiments 3D
  - Océan
  - Météo
  - Gallery
  - Sensibilisation mondiale
  - Plus

13/4/2016

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Visite guidée 2001

Date des images satellite : 26/12/2013 lat 13.946146° long -1.736648° élév. 317 m altitude 714 m

Difficultés

- Connexion internet limité
- Formulaire collect earth pas assez adapté aux zone sahéliennes
- Coordonnées GPS de certain sites erronées
- Indisponibilité d’images récentes pour certains sites

Merci pour votre aimable attention

Annexe 13

ENSCONET

European Commission's 6th Framework Programme
European Native Seed Conservation Network
(**ENSCONET**) 2004-2009
and its Consortium (2010-ongoing)

Structure and evolution

31 project partners from 20 European countries have built a strong community of cooperation and collaboration through which ENSCONET flourishes today.
Funding ran out in October 2009, **Consortium since 2010**.

3 main objectives

1. Improve **co-ordination of action at national and international level**.
Preparation of a detailed, co-ordinated and prioritised **seed collection programme** for the European native flora which **maximises the genetic diversity** (effectiveness) and longevity of collected seed material

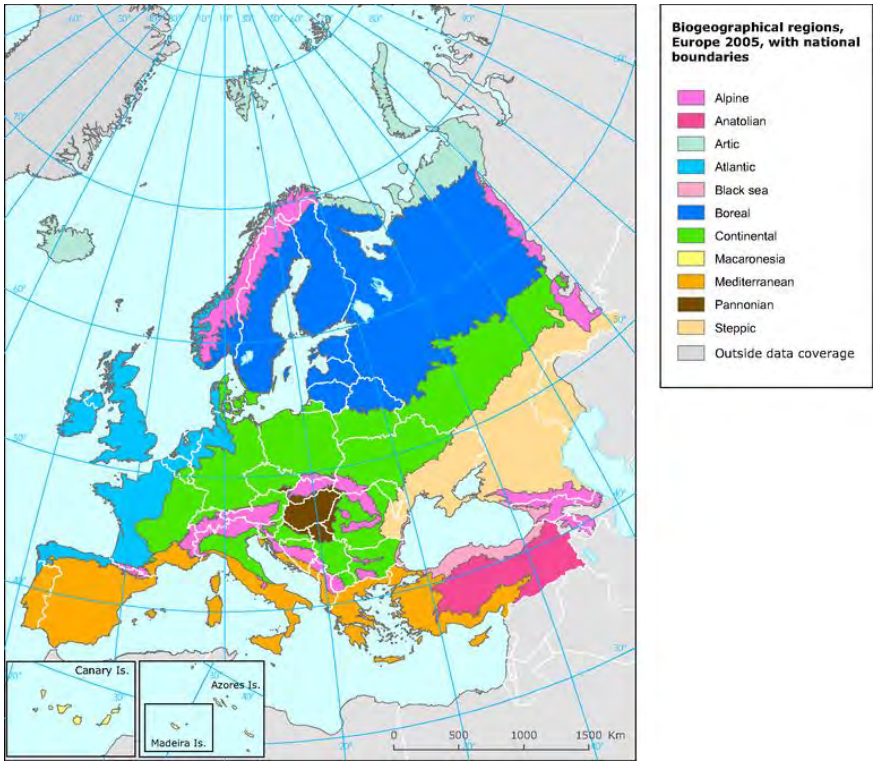
3 main objectives

2. Establishment of **common protocols and standards for seed collecting** of European native plants.

3 main objectives

3. **Contribute to the targets of the Global Strategy for Plant Conservation (GSPC)** and to the objectives of the **European Commission's Sixth Biodiversity Action Plan.**

Europe-wide collecting innovative approach



Bio-geographical regions (as defined by the European Environment Agency) used in the co-ordination between individual plans

Reflects the nature of species' boundaries much better than political borders (i.e. country-by-country approach)

Seed collecting protocol

Documents **best practices for collecting seed from Europe's native plant species** including:

- planning collecting expeditions
- sampling
- collecting techniques
- identification
- care of collections
- data collection

Includes a **data passport** form which helps to ensure that accurate and detailed data is collected in the field

GCPC targets 8 and 9

- **Target 8:** At least 75% of threatened plant species in *ex situ* collections […] and at least 20% available for recovery and restoration programmes
- **Target 9:** 70% of the genetic diversity of crops including their wild relatives and other socio-economically valuable plant species conserved […]

Analysis of ENSCOBASE, the ENSCONET database

ENSCOBASE: the ENSCONET Virtual Seed Bank

Data analysis | Help

Taxonomy | Georeference | Germination | Conservation | Advanced search | Individual projects

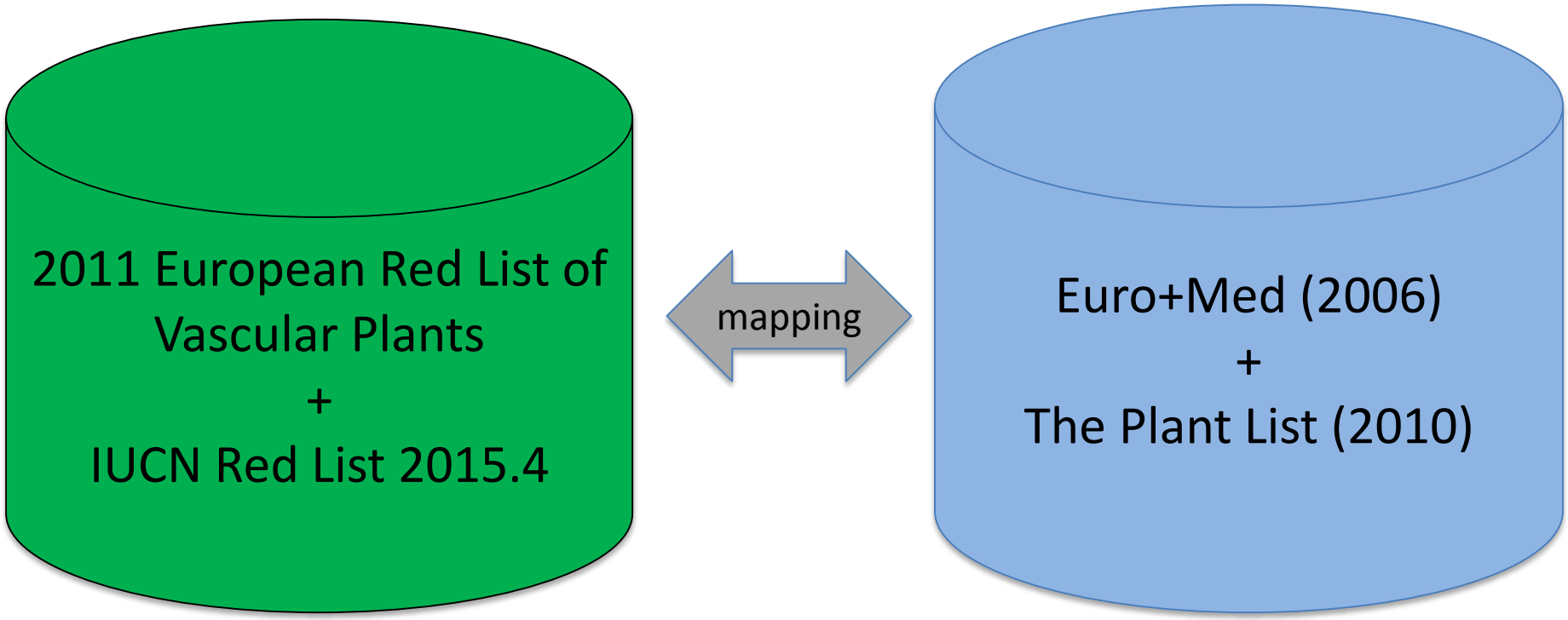
Conservation Queries

GSPC target 8a: "At least 75% of threatened plant species stored in *ex-situ* collections, preferably in the country of origin."

Mapping ENSCONET *ex-situ* taxa vs. European Red List of Vascular Plants

IUCN taxon name	Taxonomic status in EPM (Euro+Med) or TPL (The Plant List)	(If synonym) Accepted name in EPM (Euro+Med) or TPL (The Plant List)	Taxa conserved *ex-situ* by ENSCONET	Number of accessions conserved *ex-situ* by ENSCONET
Abies nebrodensis	Accepted EPM		✘	0
Abies pectinata var. nebrodensis	Synonym EPM	***Abies nebrodensis***	✘	0
Abies pinsapo	Accepted EPM		✔	5
Abies pinsapo var. pinsapo	Synonym TPL	***Abies pinsapo***	✔	5
Acis nicaeensis	Accepted EPM		✘	0
Aconitum corsicum	Synonym TPL	***Aconitum napellus subsp. corsicum***	✔	2
Aconitum napellus subsp. corsicum	Accepted TPL		✔	2
Actinocarpus damasonium	Synonym TPL	***Damasonium alisma***	✔	25
Adenocarpus ombriosus	Accepted EPM		✔	9
Aeonium balsamiferum	Accepted EPM		✘	0
Aeonium gomerense	Accepted EPM		✔	7
Aeonium saundersii	Accepted EPM		✔	2
Aethionema retsina	Accepted EPM		✔	2
Aichryson dumosum	Accepted EPM		✘	0
Aldrovanda generalis	Synonym TPL	***Aldrovanda vesiculosa***	✘	0
Aldrovanda verticillata	Synonym TPL	***Aldrovanda vesiculosa***	✘	0
Aldrovanda vesiculosa	Accepted TPL		✘	0
Alisma damasonium	Synonym EPM	***Damasonium alisma***	✔	25
Alisma stellatum	Synonym TPL	***Damasonium alisma***	✔	25
Alisma wahlenbergii	Accepted EPM		✘	0
Allium ampeloprasum subsp. pardoi	Synonym EPM		✘	0
Allium corsicum	Accepted EPM		✘	0
Allium pardoi	Accepted EPM		✘	0
Allium pyrenaicum	Accepted EPM		✘	0
Allium schmitzii	Accepted EPM		✔	1
Alyssum pyrenaicum	Accepted EPM		✘	0

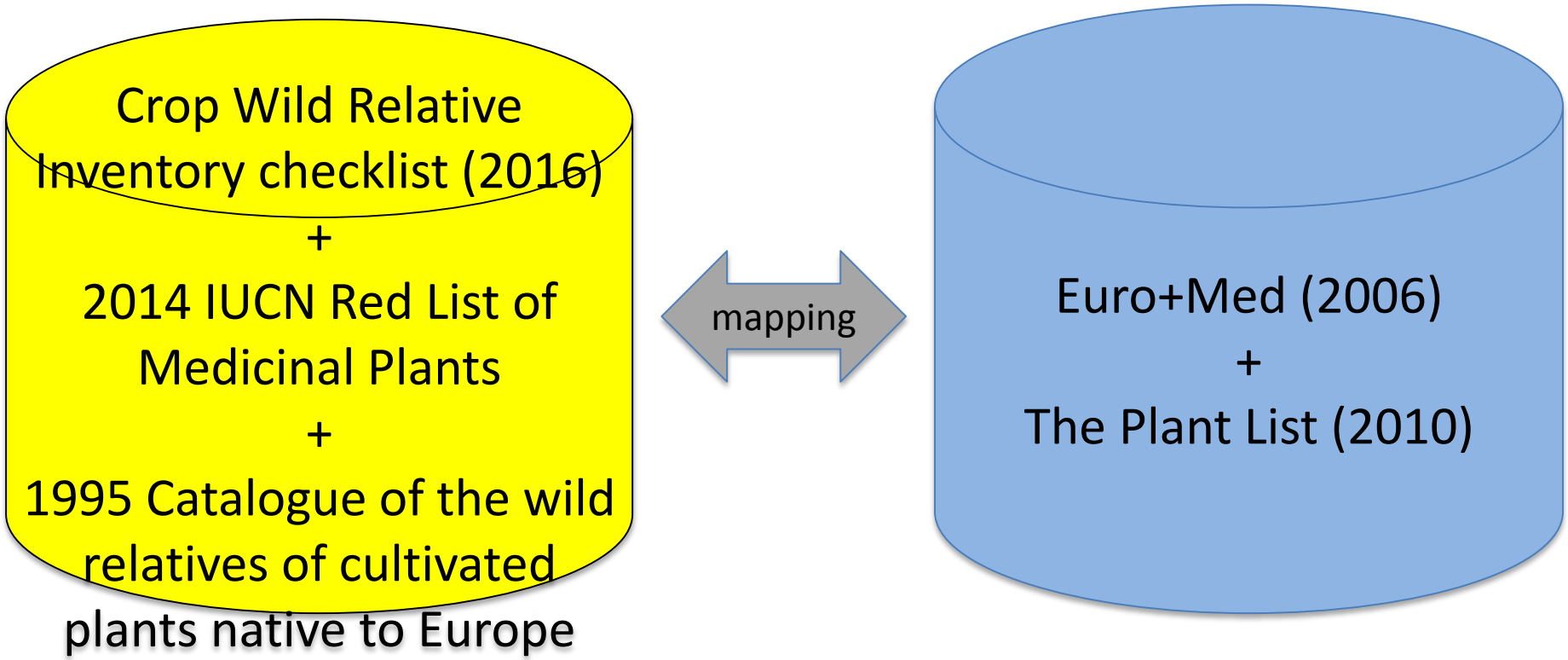
2011-2020 GSPC target 8: method



Baseline checklist of threatened species

Taxonomic referential

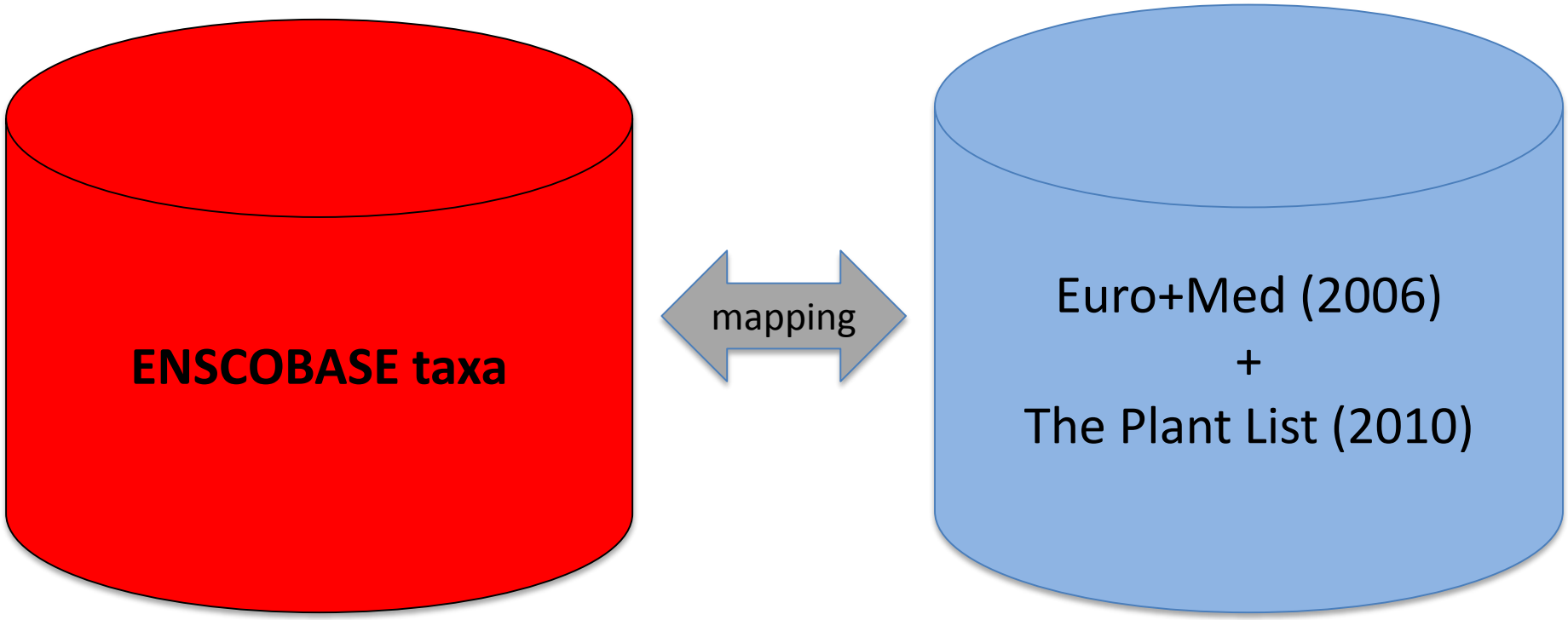
2011-2020 GSPC target 9: method



Baseline checklist of useful species

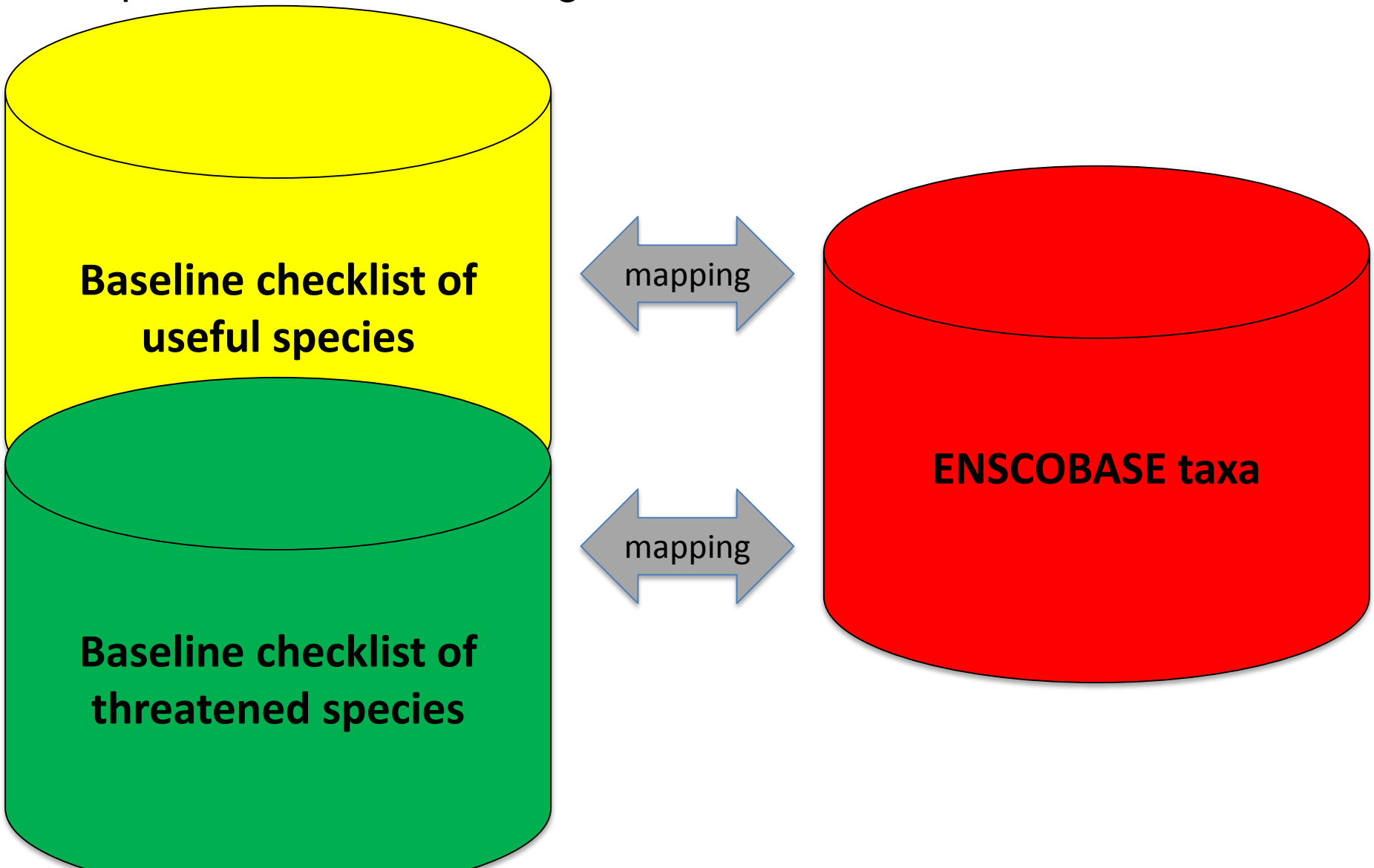
Taxonomic referential

Map ENSCOBASE holdings to same referential

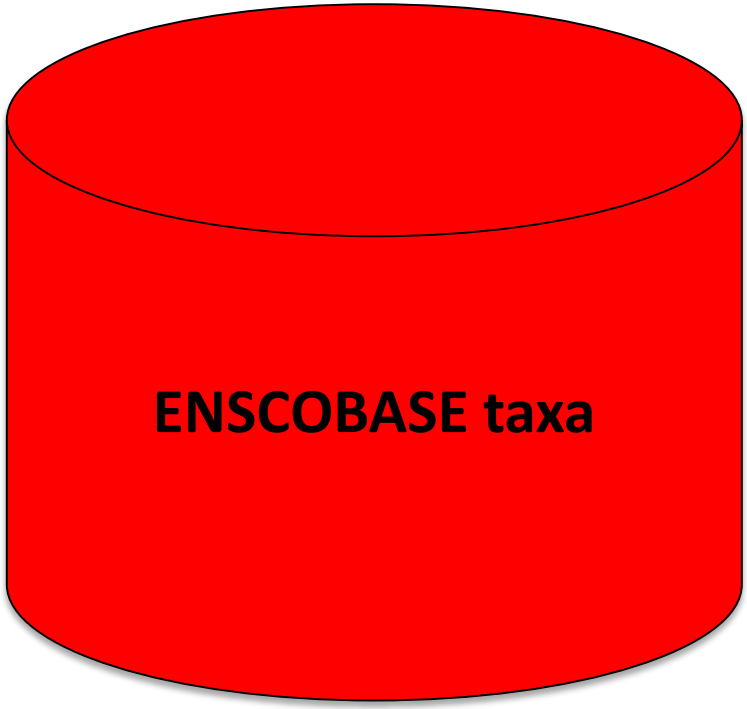


Taxonomic referential

Map ENSCOBASE holdings to checklists



Result: total number of holdings in ENSCOBASE



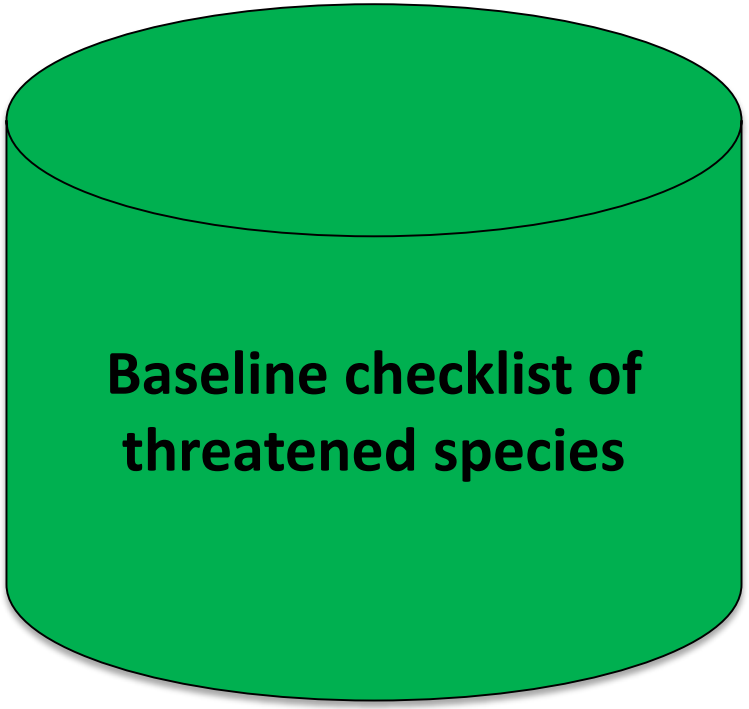
Total number of native accessions conserved *ex situ* by seed banks across Europe:

63,582 accessions

11,515 accepted taxa

167 families

Result: coverage of GSPC target 8a



"At least 75% of threatened plant species in *ex situ* collections":

337/ 562 IUCN Red List species:

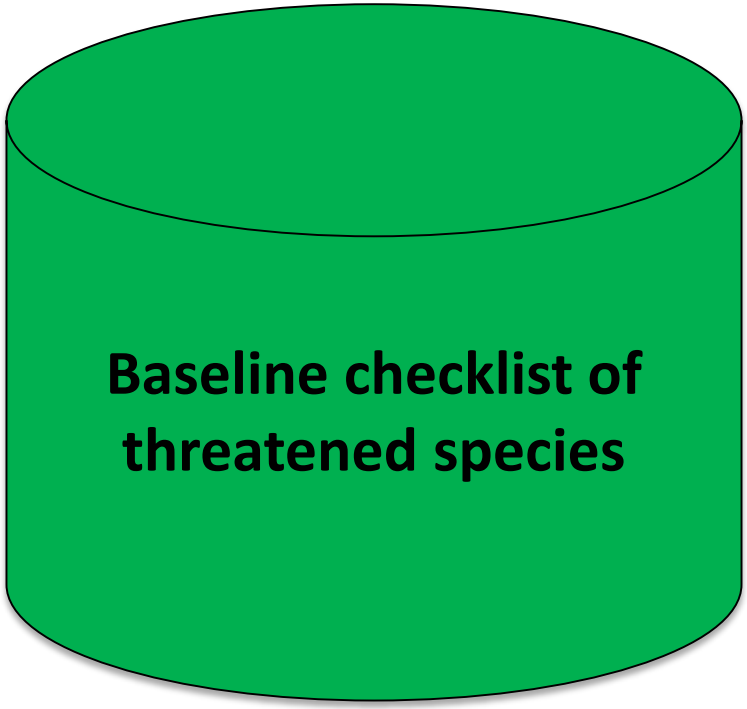
59.96%

Target not met:

In order to reach the 422 species

Required, extra 85 additional species by 2020

Result: coverage of GSPC target 8b

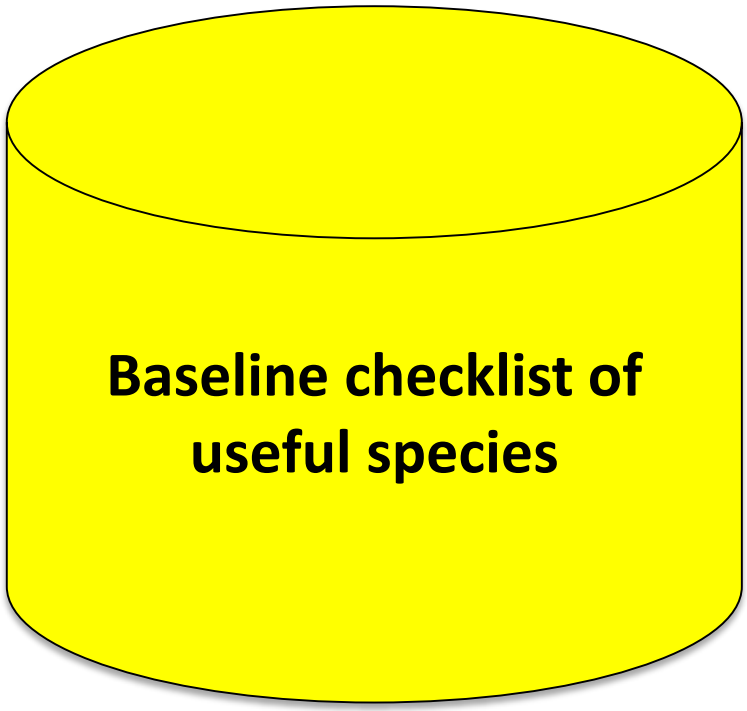


"at least 20% of threatened plant species available for recovery and restoration programmes":

258 / 562 IUCN Red List species:
45.91%

Target met!

Result: coverage of GSPC target 9



"70% of the genetic diversity of crops including their wild relatives and other socio-economically valuable plant species conserved"

687 / 936 species:
73.40%

Target met!

Infra-specific diversity

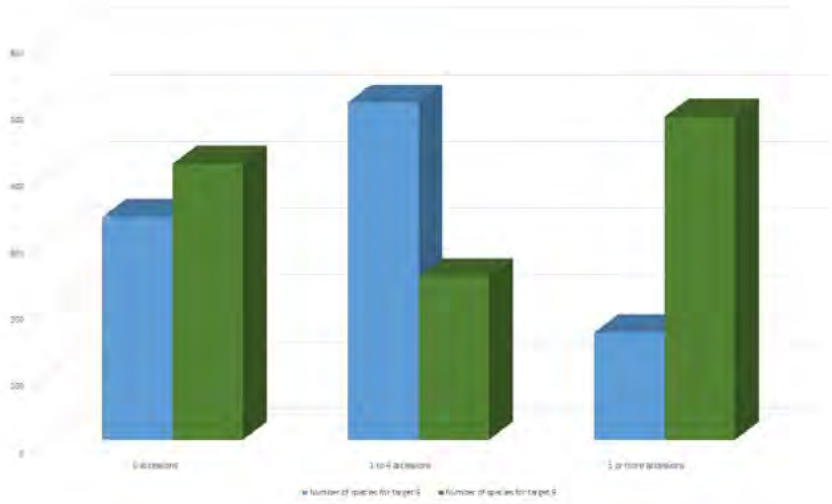
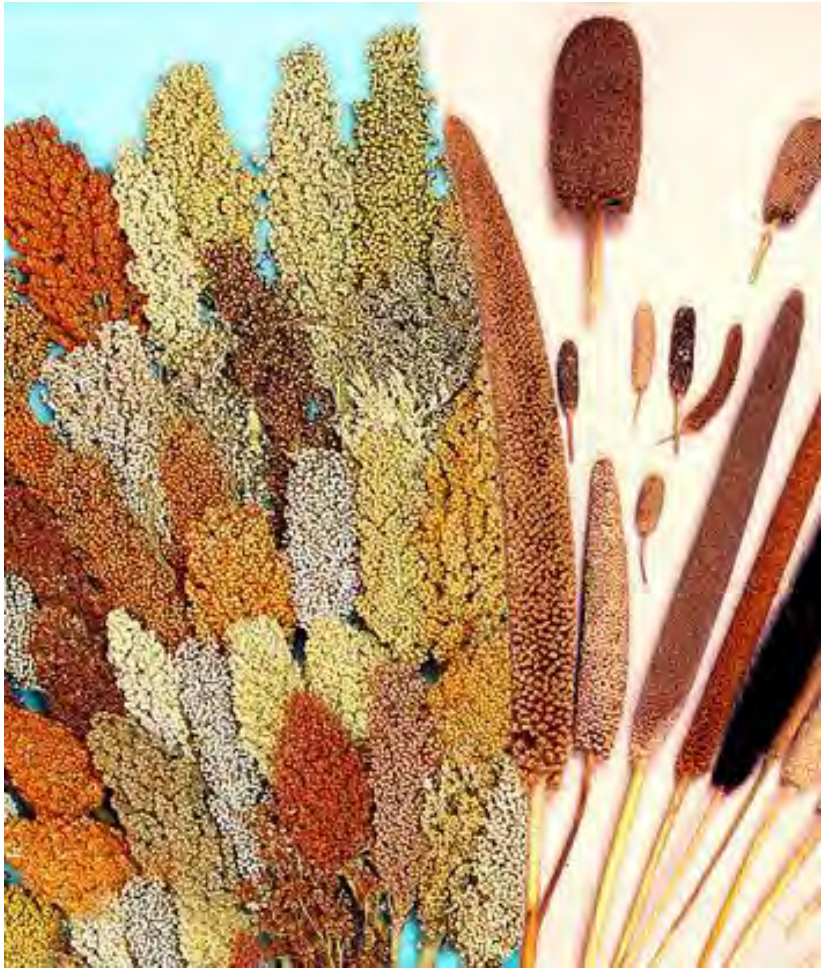


Figure 1: Break-down of species considered for targets 8 and 9 per number of accessions stored in European seed banks (0, 1-4 and 5 or more).

338x190mm (96 x 96 DPI)

Threshold number of **5 accessions** as described in Godefroid et al. (2011) and recommended in Brown and Briggs (1991) to ensure a **good representation of genetic diversity found within and among populations *in situ***

Infra-specific diversity



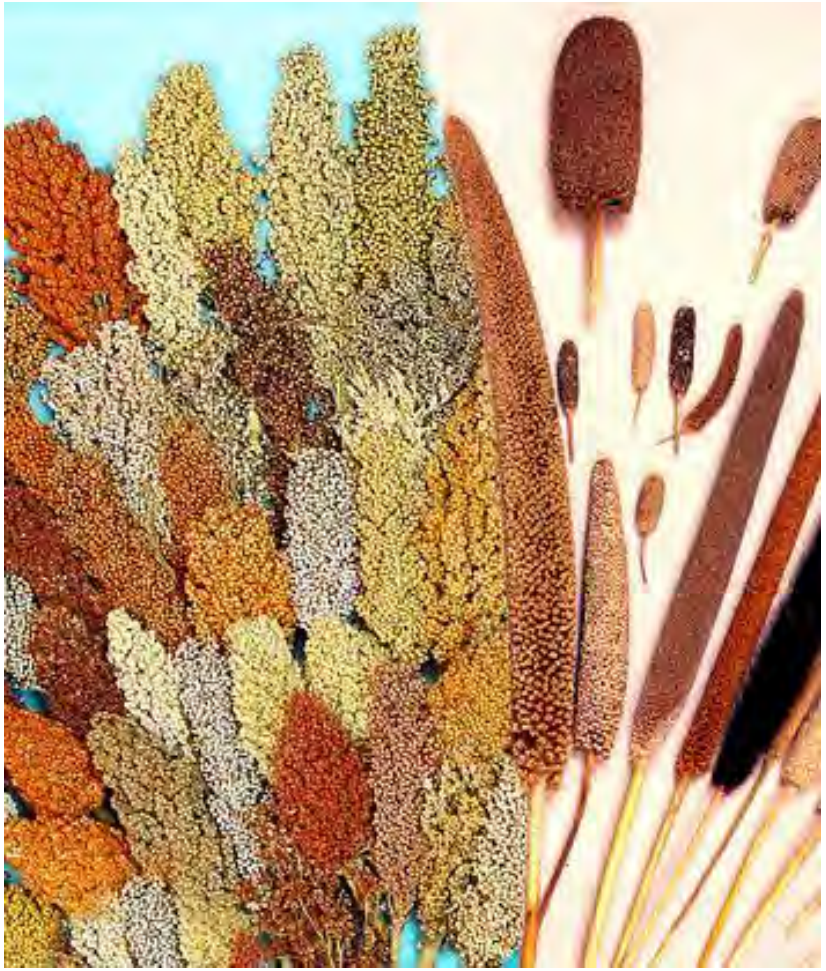
Target 8:

334 species: 0 accessions

506 species: 1-4 accessions

61 species >= 5 accessions

Infra-specific diversity



Target 9:

414 species: 0 accessions

245 species: 1-4 accessions

484 species >= 5

GGW database analysis for Aichi target 15?

Target 15: By 2020, ecosystem resilience and the contribution of biodiversity to carbon stocks have been enhanced, through conservation and restoration, including restoration of at least 15% of degraded ecosystems, thereby contributing to climate change mitigation and adaptation and to combating desertification.

How to qualify a degraded ecosystem?

How to qualify a restored ecosystem?

How to quantify restored ecosystems?

Annexe 14

Bioversity International

CGIAR
Science for a food secure future

Genetic aspects in forest restoration: research and case studies

Agadir, 28 March 2017

Barbara Vinceti, Riina Jalonen, Evert Thomas (Bioversity International)

Outline

- Initiatives related to forest restoration implemented by Bioversity, with focus on genetic aspects, in various regions
- Project on forest restoration coordinate by Bioversity in Burkina Faso (started in August 2016)

Why genetic considerations are important for forest restoration success

- Within species genetic diversity is crucial for site adaptation, viability and productivity of plantings
- At subspecies level, dramatic differences in adaptedness of germplasm (typically tested in GxE experiments).

Maladapted germplasm can result in:

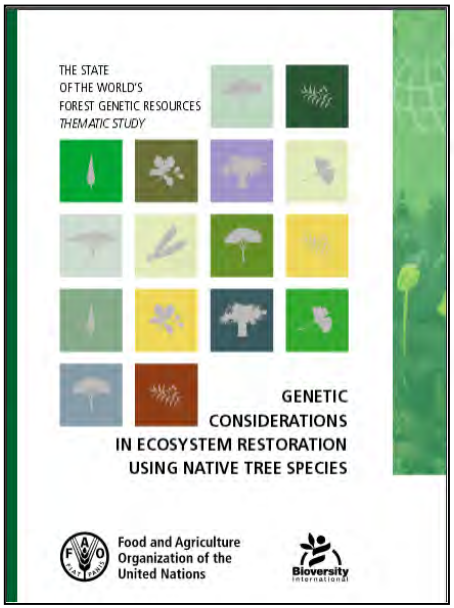
- early mortality
- slow or bad growth
- delayed mortality (eg. due to acute or chronic climate change effects)

Key questions with regard to genetic aspects

- Use **of local versus non-local** seed (native vs exotic spp., local vs non-local): how local should be a seed source? what is the scale of local adaptation?
- How to incorporate climate change considerations into the selection of germplasm. Will trees **adapt fast enough** to future conditions, when drastically different from today?
- Local seed sources may not produce quality seed. What are the **effects of fragmentation**? Benefits of using larger but more distant seed sources.
- Adoption of best practices in collection protocols (diversity).
- Understanding the role of nurseries in supply of forest reproductive material
- Role of restored populations as future sources of forest reproductive material

Review of wide range of ecosystem restoration activities involving trees

- Considerations of genetic aspects (eg suitability of germplasm to the site, quality and quantity of the genetic pool used and regeneration potential) <u>are often neglected</u>
- Emerging evidence that current threats to maintenance of genetic diversity in forest restoration come principally from <u>poor practice in seed collection</u>



Editors

Michele Bozzano,[1] Riina Jalonen,[1] Evert Thomas,[1] David Boshier,[1,2] Leonardo Gallo,[1,3] Stephen Cavers,[4] Sándor Bordács,[5] Paul Smith[6] and Judy Loo[1]

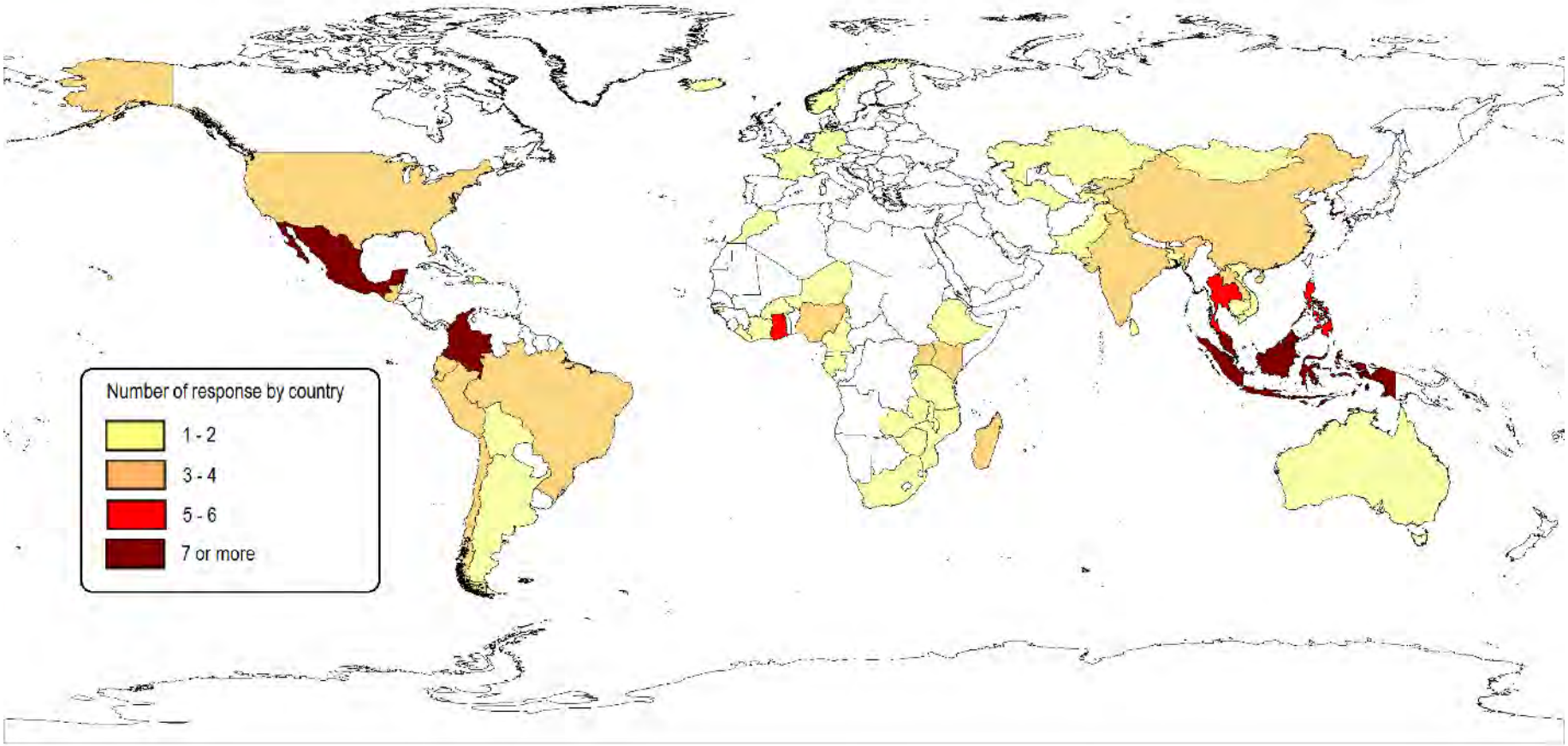
[1] Bioversity International, Italy
[2] Department of Plant Sciences, University of Oxford, United Kingdom
[3] Unidad de Genética Ecológica y Mejoramiento Forestal, INTA Bariloche, Argentina
[4] Centre for Ecology and Hydrology, Natural Environment Research Council, United Kingdom
[5] Central Agricultural Office, Department of Forest and Biomass Reproductive Material, Hungary
[6] Seed Conservation Department, Royal Botanic Gardens, Kew, United Kingdom

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS

Rome, 2014

http://www.bioversityinternational.org/fileadmin/_migrated/uploads/tx_news/Genetic_considerations_in_ecosystem_restoration_using_native_tree_species_1791.pdf

Global survey on seed sourcing practices in restoration



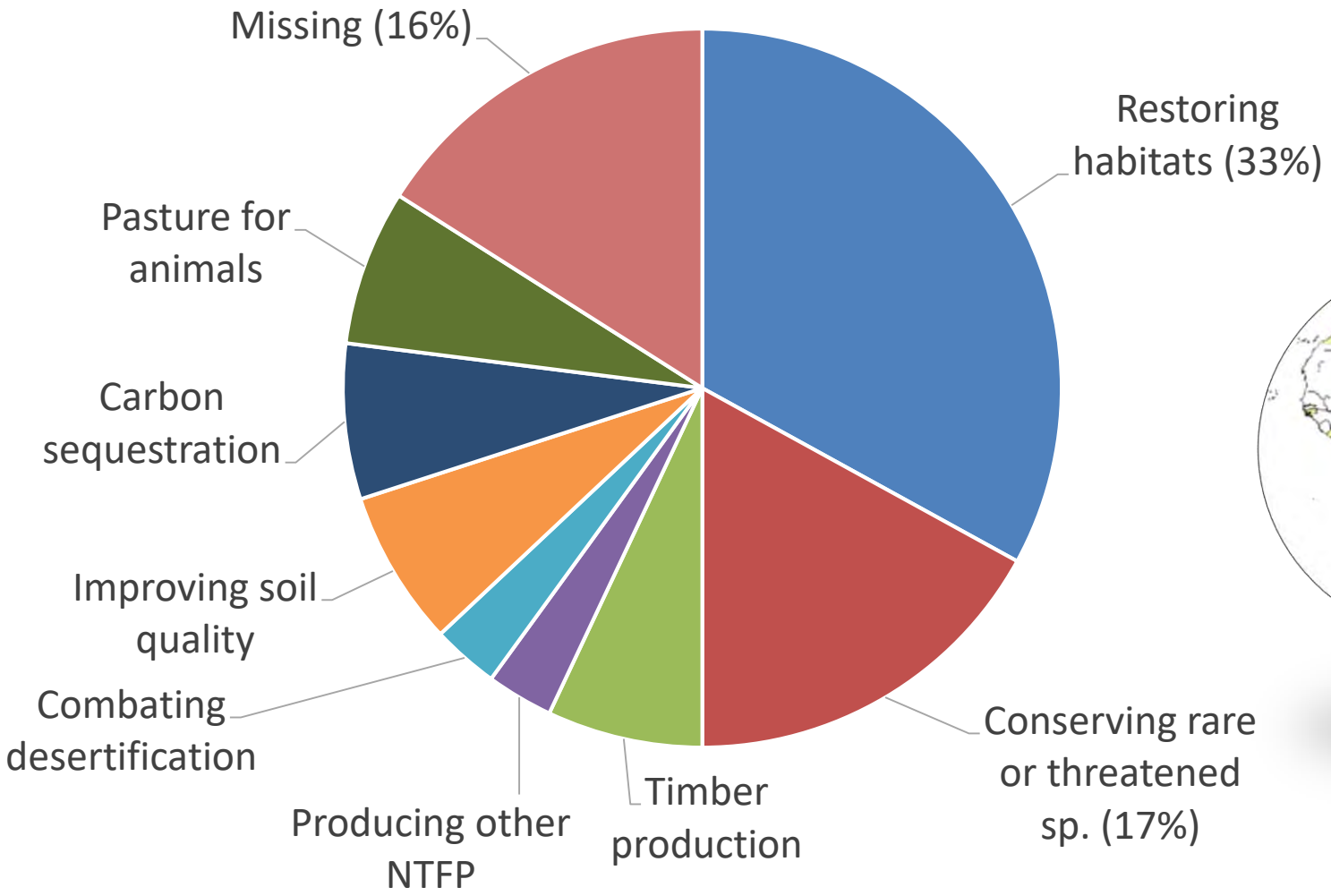
139 responses from 57 countries globally (30 in Africa)

Each respondent was asked to describe seed sourcing in the latest project they worked on (139 projects)

Variation in inception date, area, project leaders, seed souring strategies

Bioversity International

Main project purpose:
30 forest and landscape restoration projects in Africa



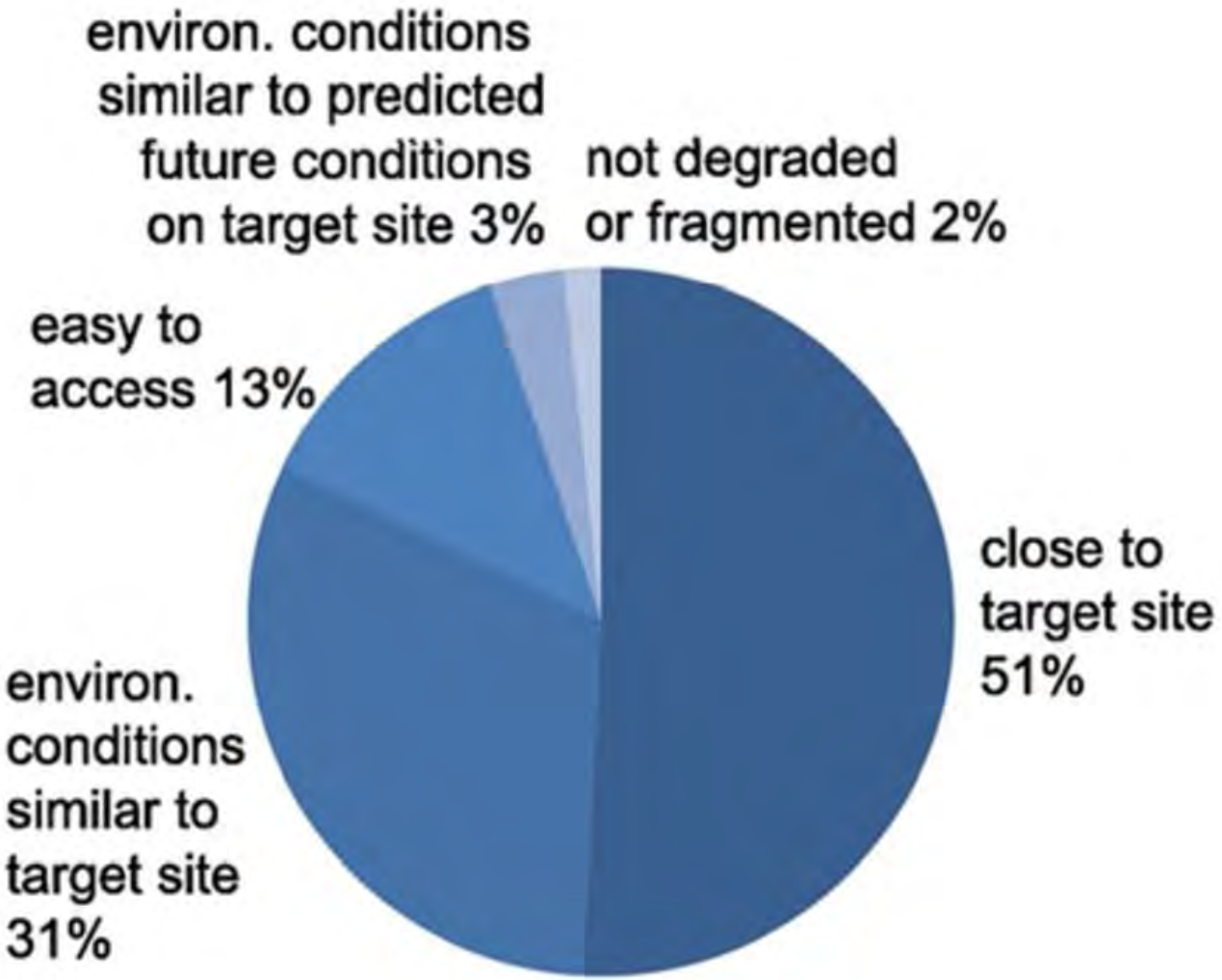
Common problems in seed sourcing for restoration

Seed origin: overemphasis on “local” seed sources

Seed source quality: population viability rarely considered

Seed source selection: lack of criteria, few parent trees

Seed origin: large emphasis on “local” seed sources*

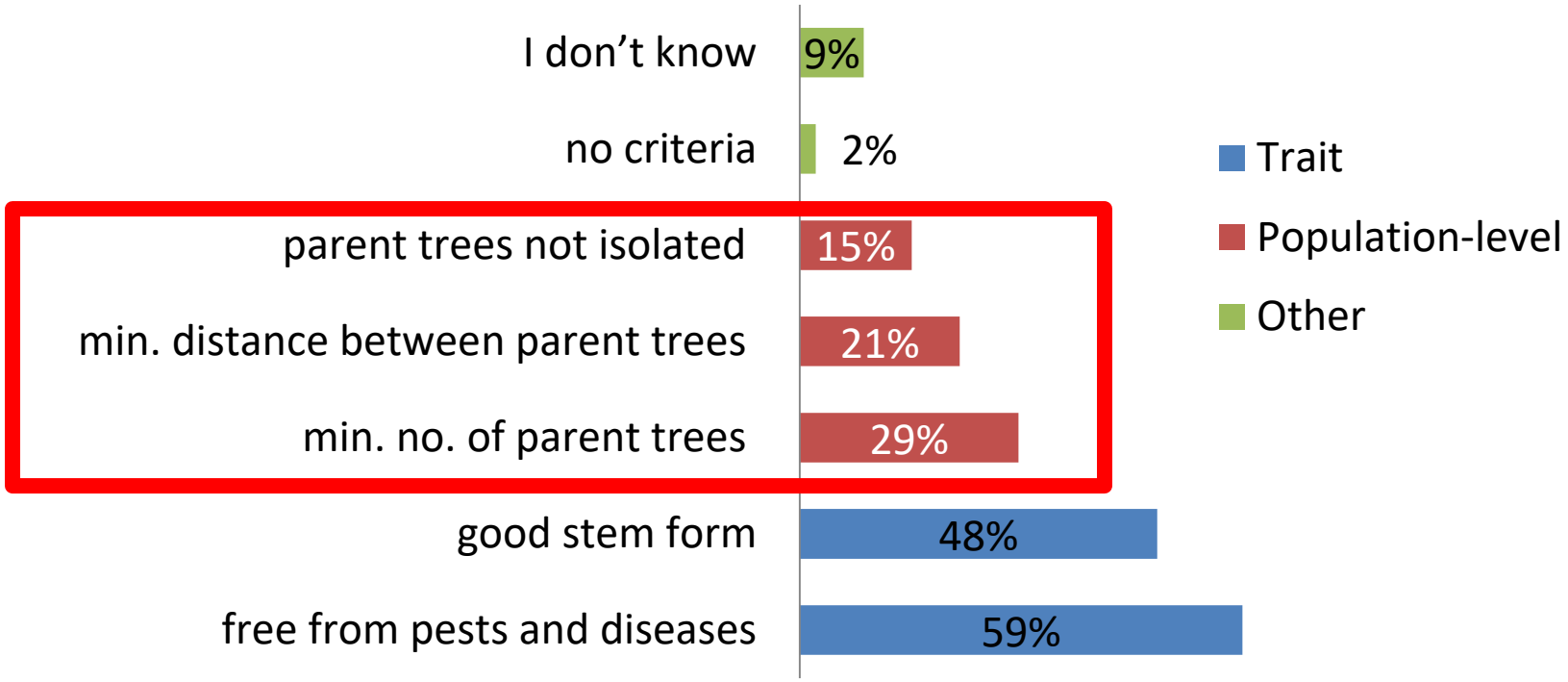


Seed source quality: population viability seldom considered

- In 40% of projects, seed sources were often degraded or fragmented
- In only 9% of project, population viability an important criterion in source selection
- In 50% of projects seed is obtained from restored forests

Bioversity International

Seed selection: few criteria, few parent trees

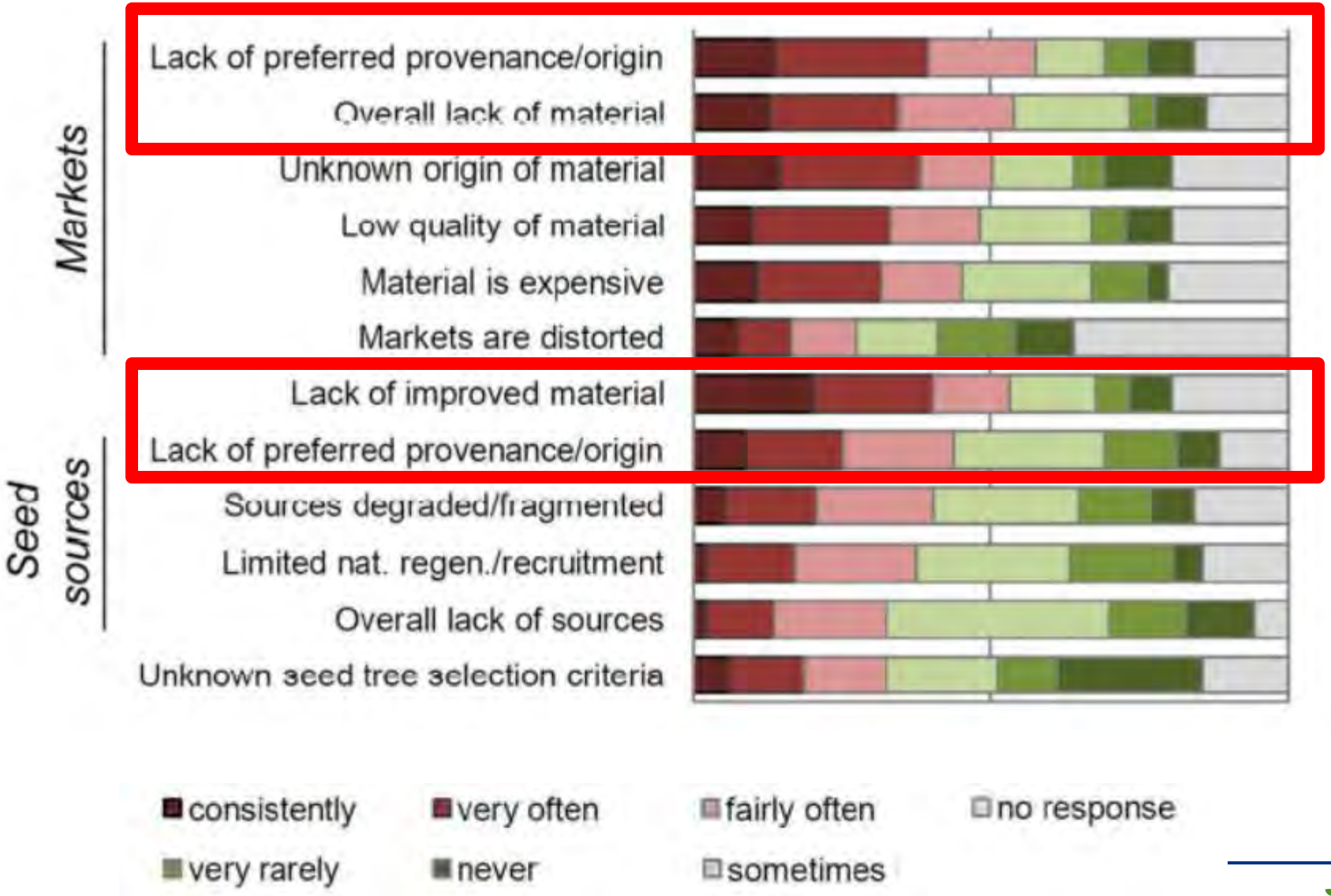


From how many trees per species is the propagation material usually from, if known?

unknown	45%
Among those who knew:	
Five or less trees	35%
5<trees≤15	13%
More than 15 trees*	52%

**Recommended minimum for completely outcrossing species (Rogers & Montalvo 2004)*

Issues identified in sourcing propagation material?



Restool – A decision support tool to guide the selection of species and seed sources for the restoration of Colombian tropical dry forest

Evert Thomas, Carolina Alcazar, Luis Gonzalo Moscoso H., Luis Fernando Osorio, Beatriz Salgado-Negret, Mailyn Gonzalez, Mauricio Parra-Quijano, Wilson Ramirez

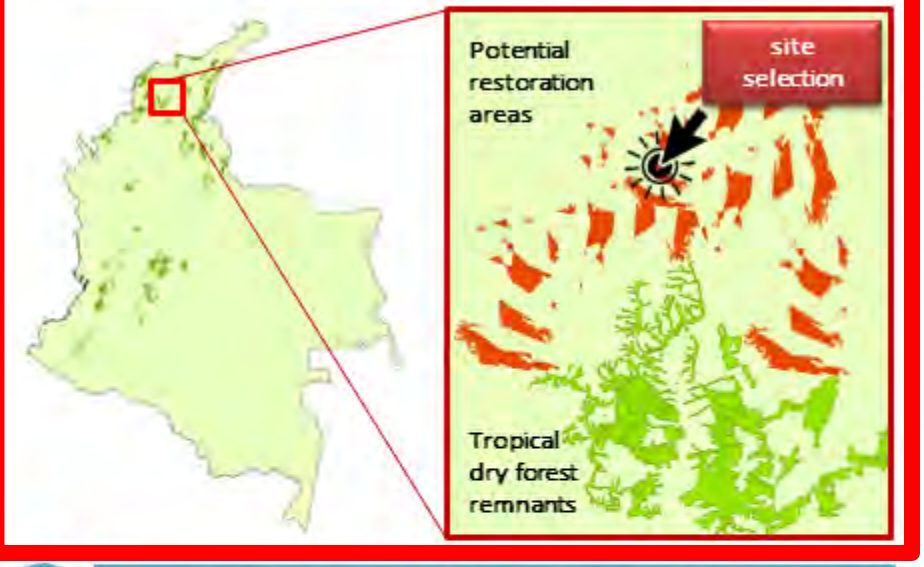
Evert Thomas: e.thomas@cgiar.org

- Use functional traits for **aligning species choice with restoration objectives** and **enhance resistance against stress** factors
- Ensure to use germplasm that is **adapted to the restoration site** (now and in the future)

RESTORATION DECISION-SUPPORT TOOL FOR THE SELECTION OF MOST APPROPRIATE TREE PLANTING MATERIAL

Colombian tropical dry forest as a model

1 Suitability modeling to assess species' adaptive potential under current and future climate conditions



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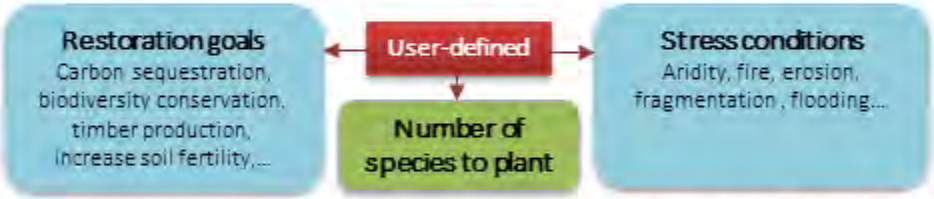

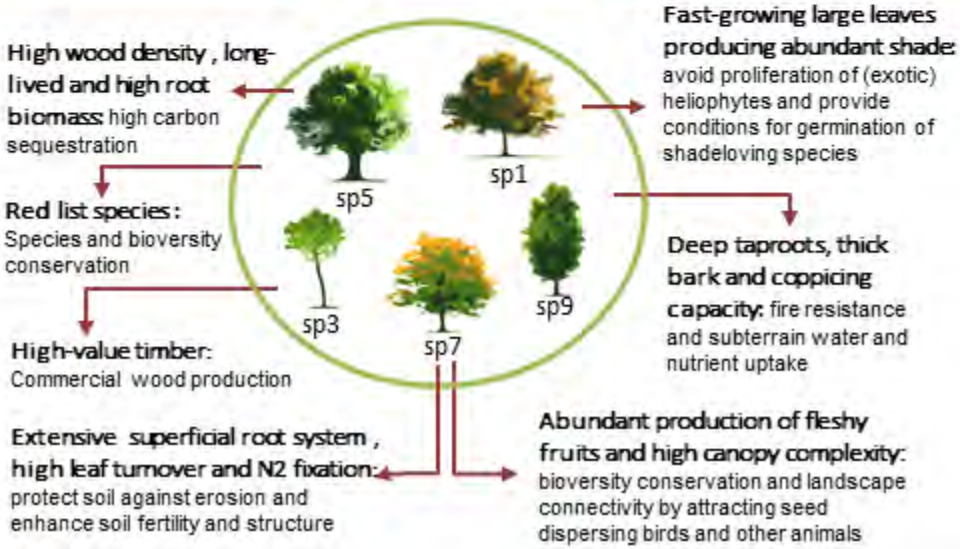

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3.1. Promote site adaptability of planting material, particularly in light of climate change

3.2. Ensure genetic diversity: of planting material: source populations should be large, and seeds should be obtained from a high number of (>30-60) mother trees

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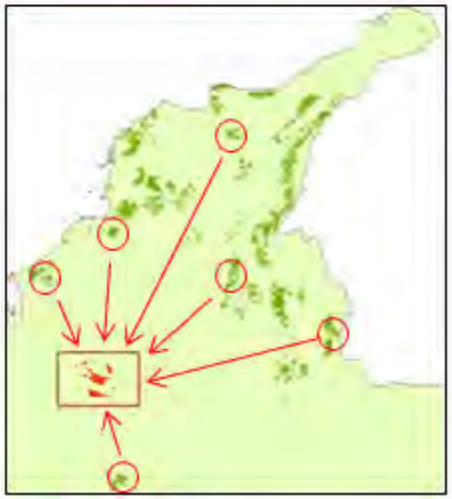

RESTORATION DECISION-SUPPORT TOOL FOR THE SELECTION OF MOST APPROPRIATE TREE PLANTING MATERIAL

Colombian tropical dry forest as a model

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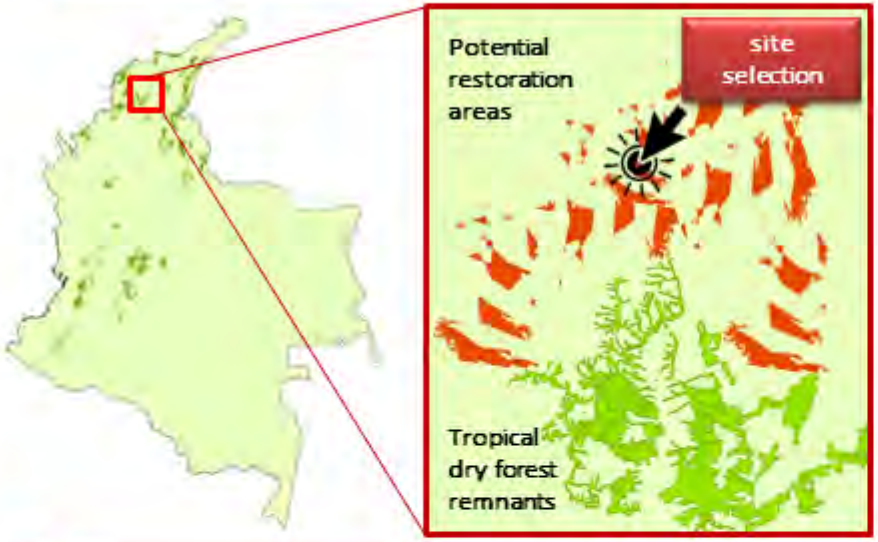

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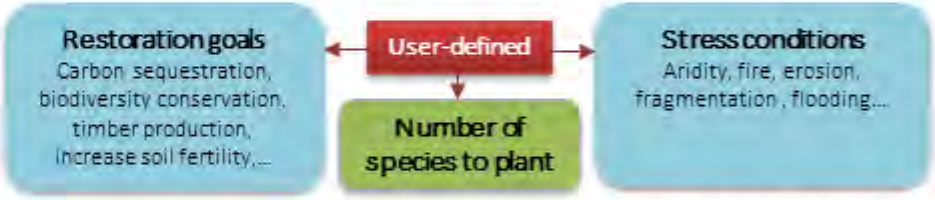

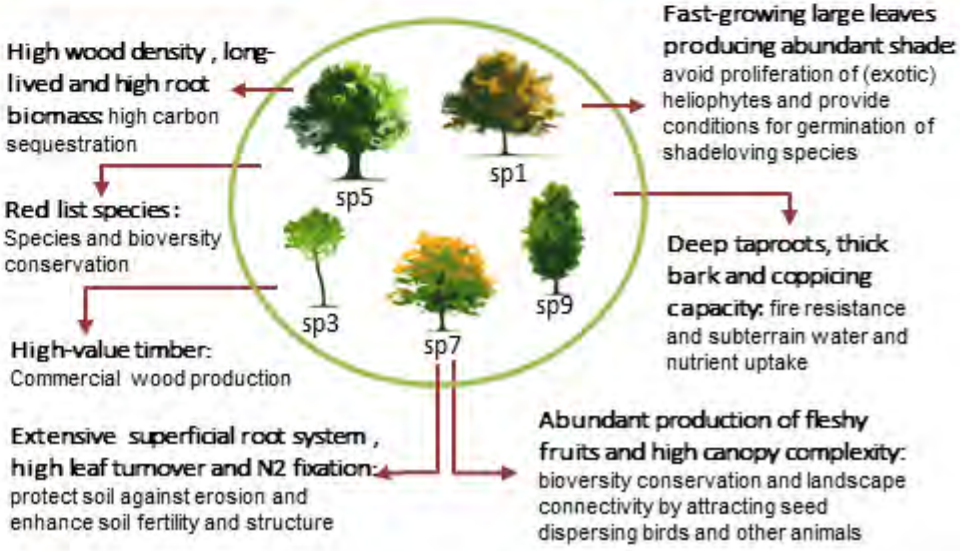

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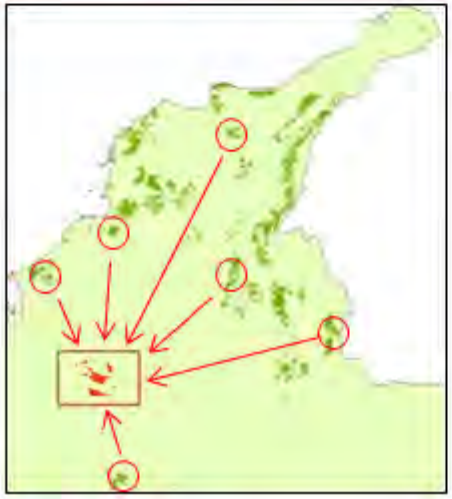

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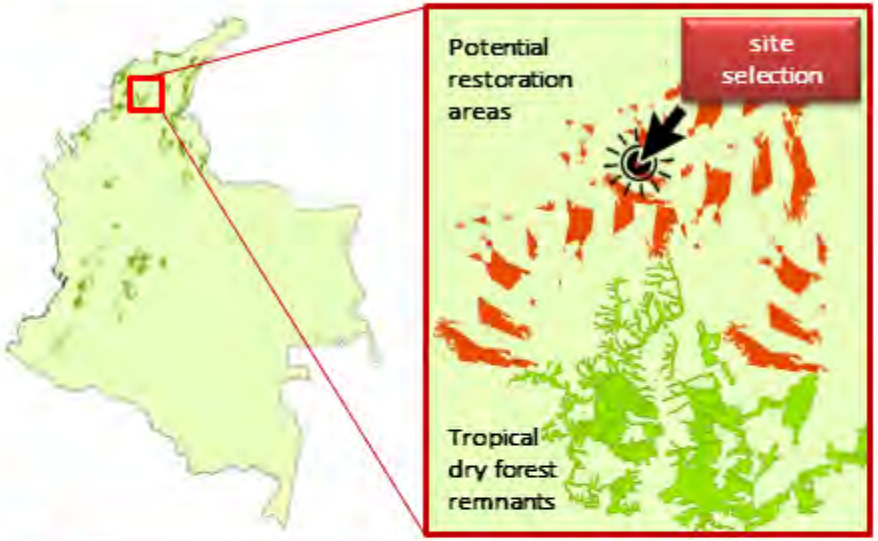

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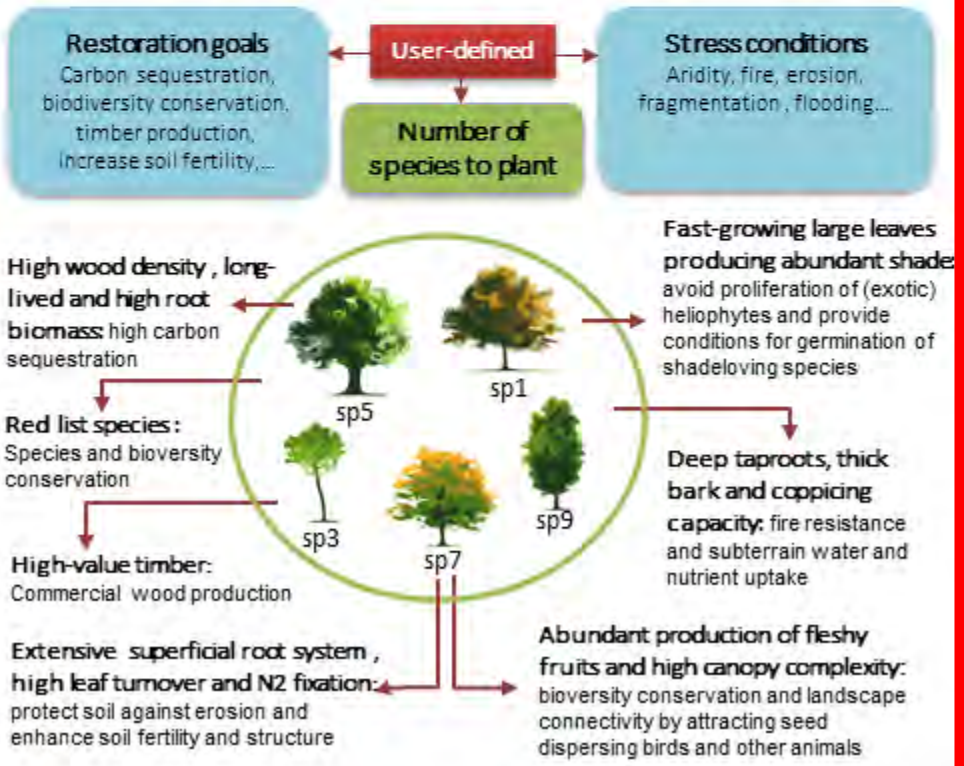

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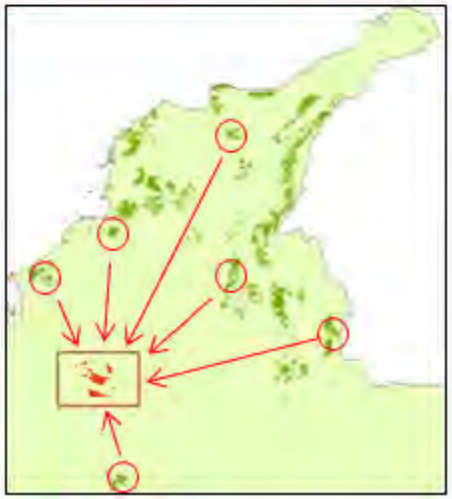

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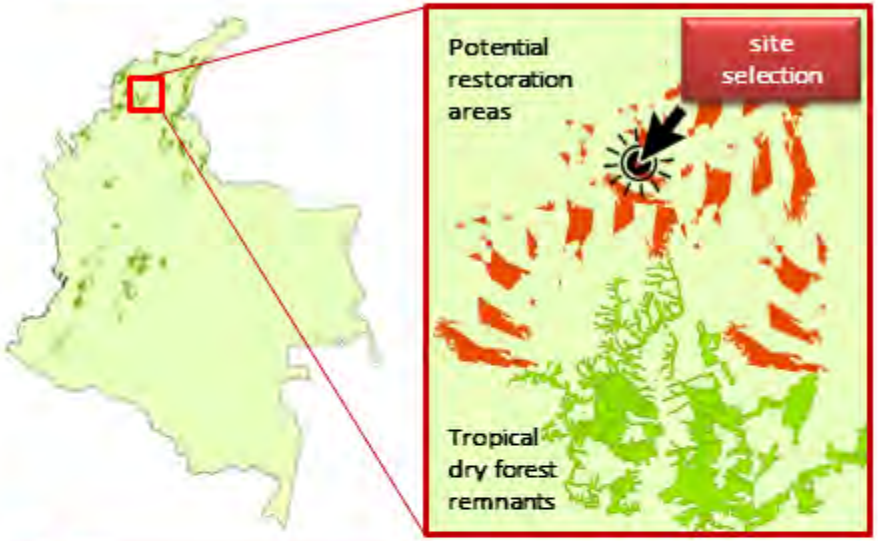

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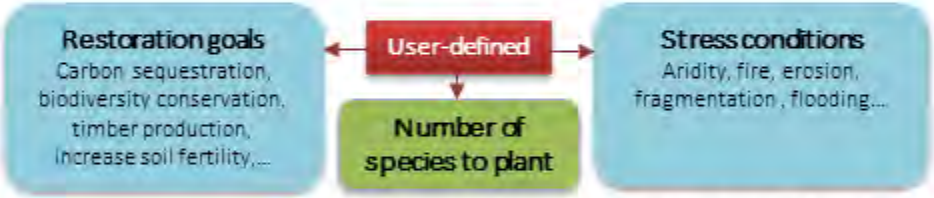

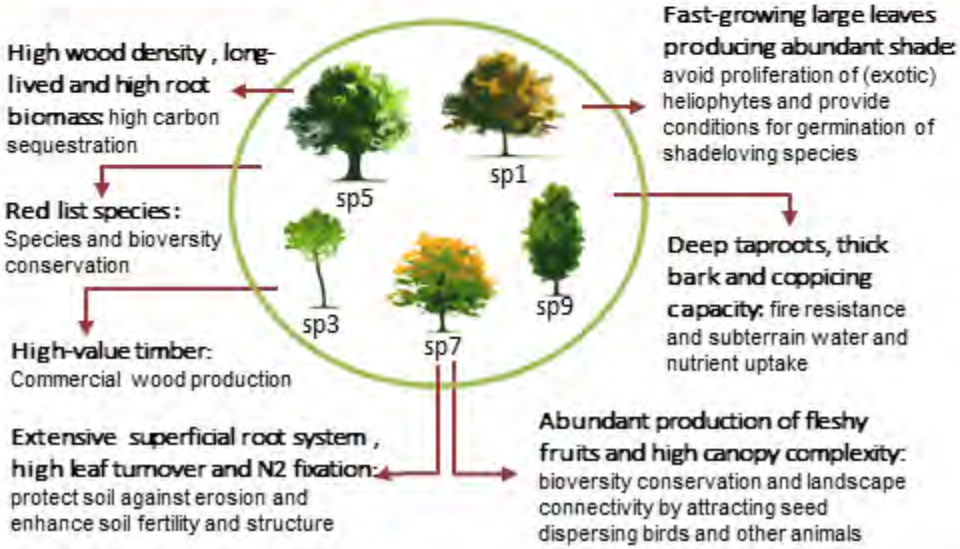

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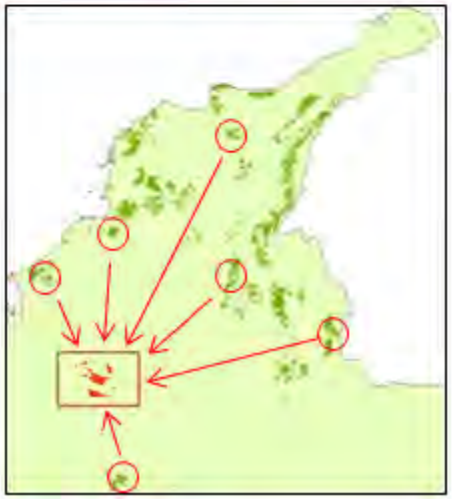
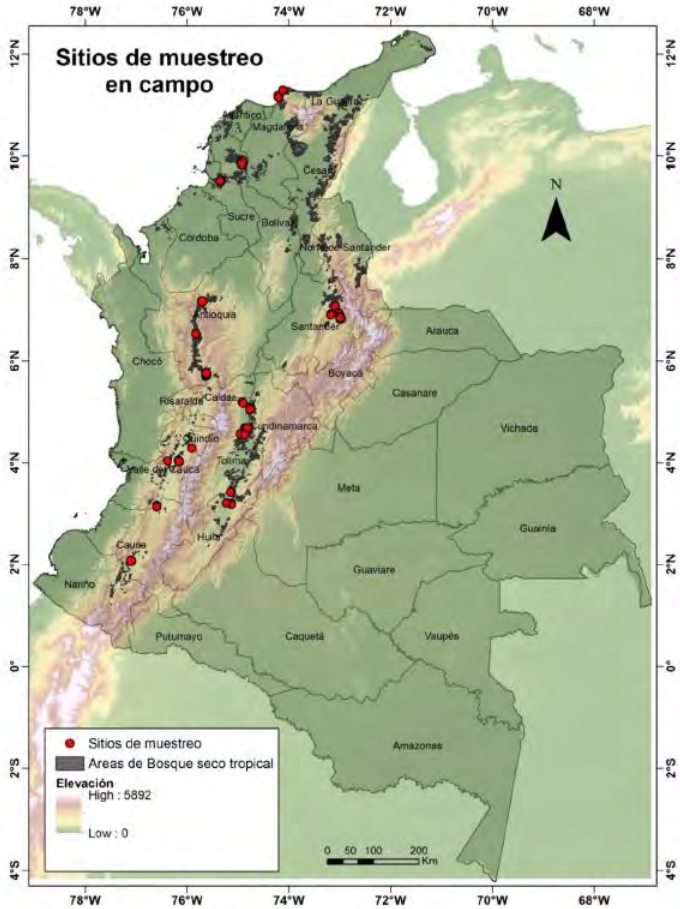


Genetic sampling at representative sites across the country (10 tree species)



Progeny trials
(5 tree species)

RES TOOL Restauración Arbórea del Bosque Seco Tropical en Colombia

Bioversity International

INICIO | LA INICIATIVA | LA HERRAMIENTA | CONTACTO

Formulario | Zonas de semillas

1. Localización del área a restaurar

Seleccionar un punto sobre el mapa según el área de restauración de su interés. Si lo prefiere, puede ingresar las coordenadas exactas manualmente. Los diferentes colores en el mapa de áreas potenciales de restauración indican la idoneidad de cada sitio para n'umeros menores (verdes) a mayores (rojo) de especies arbóreas.

Latitud: 8.172688517152562

Longitud: -72.6416015625

Siguiente

2. Numero y caracteristicas de especies a sembrar

3. Condiciones del sitio a restaurar

4. Objetivo de la restauracion

5. Precisar detalles del informe y finalizar

Report can be printed or sent to email; maps and propagation sheets can be downloaded

RES TOOL Restauracion Arborea del Bosque Seco Tropical en Colombia

Bioversity International

RESULTADOS RESTOOL

Coordenadas del sitio de intervención:

Latitud : **9.74289588496975** Longitud : **-75.234375**

Condiciones del sitio de intervención:

erosión fuerte

Objetivos de la restauración:

conservación aves frugívoras

Selección de especies limitados a:

Pachira quinata

Número de especies arbóreas que pretende plantar:

3

Estrategias de vida de las especies:

pioneras:	20% (1 especies)
intermedias:	20% (1 especies)
tardias:	60% (2 especies)

Idoneidad actual:

Sitio no es idoneo para ninguna de las especies en la lista de referencia. Se han realizado los analisis con las especies idoneas para el sitio

Projecciones de idoneidad hasta los años 2030:

Especies para las cuales las condiciones ambientales se mantienen favorables hasta los años **2030**:

Acacia glomerosa, Acacia polyphylla, Acalypha diversifolia, Acalypha macrostachya, Acalypha schiedeana, Acrocomia aculeata, Albizia guachapele, Albizia niopoides, Anacardium occidentale, Annona glabra, Annona muricata, Annona rensoniana, Apeiba tibourbou, Aralia excelsa, Artocarpus altilis, Aspidosperma cuspa, Aspidosperma polyneuron, Astronium fraxinifolium, Astronium graveolens, Bactris guineensis, Bauhinia glabra, Brosimum alicastrum, Bursera graveolens, Bursera simaruba, Byrsonima crassifolia, Caesalpinia mollis, Caesalpinia pulcherrima, Casearia aculeata, Casearia arborea, Casearia guianensis, Casearia sylvestris, Cassia grandis, Cavanillesia platanifolia, Cedrela odorata, Ceiba pentandra, Centropogon cornutus, Cinnamomum triplinerve, Cordia alba, Cordia alliodora, Cordia panamensis, Cynophalla hastata, Erythrina berteroana, Erythrina glauca, Erythroxylum citrifolium, Erythroxylum suberosum, Exostema caribaeum, Faramea multiflora, Ficus insipida, Ficus maxima, Ficus

Albizia niopoides, Anacardium occidentale, Astronium fraxinifolium, Bactris guineensis, Bursera graveolens, Bursera simaruba, Byrsonima crassifolia, Cordia alba, Handroanthus impetiginosus, Astronium graveolens, Protium heptaphyllum

Advertencias:

Las siguientes especies requieren de bastante agua y únicamente se deben plantar en cercanías de quebradas, rios o humedales. Como estos no existen en su área de intervención no son consideradas en la selección de especies más apropiadas: Ficus insipida, Guarema micrantha, Acalypha diversifolia, Annona glabra, Apeiba tibourbou, Genipa americana, Heliocarpus americanus, Inga punctata, Jatropha gossypiifolia, Pithecellobium lanceolatum, Trichilia hirta, Maclura tinctoria, Theobroma cacao, Anacardium occidentale, Protium heptaphyllum

Combinaciones de especies más adecuadas con base en conocimiento en nuestras bases de datos (sin considerar estrategias de vida, en orden de importancia):

1. Terminalia oblonga, Ceiba pentandra, Sterculia apetala
2. Terminalia oblonga, Ceiba pentandra, Melicoccus bijugatus
3. Terminalia oblonga, Sterculia apetala, Melicoccus bijugatus
4. Ceiba pentandra, Sterculia apetala, Melicoccus bijugatus
5. Terminalia oblonga, Ceiba pentandra, Albizia niopoides
6. Terminalia oblonga, Sterculia apetala, Albizia niopoides
7. Terminalia oblonga, Melicoccus bijugatus, Albizia niopoides
8. Ceiba pentandra, Sterculia apetala, Albizia niopoides
9. Ceiba pentandra, Melicoccus bijugatus, Albizia niopoides
10. Sterculia apetala, Melicoccus bijugatus, Albizia niopoides

No hay suficientes especies arbóreas caracterizadas como ", gf, " en nuestra base de datos para el área seleccionado:

Pioneras: 13 species; intermedias: 17 species; tardias: 1 species

Números de las zonas de semilla para diferentes horizontes de tiempo (Idealmente se usa semilla de cada una de las diferentes zonas de semilla):

Zona de semilla actual:	**21**
Zona de semilla 2050 (rcp4.5):	99
Zona de semilla 2050 (rcp8.5):	**21**

Los mapas de fuentes de semilla por especie indican de donde idealmente obtener material de siembra para promover la adaptabilidad bajo la realidad del cambio según cada horizonte en el tiempo y escenario de cambio climático. Estos mapas están basados en modelos de idoneidad y no necesariamente significa que cada especie esté presente en cada lugar. Para algunas especies puede pasar que no hay existen fuentes de semilla para uno o más escenarios futuros).

Imprimir reporte

Descargar mapas

Nutrition-sensitive forest restoration to enhance the capacity of rural communities in Burkina Faso to adapt to change (ADA-Restore)

Donors

Austrian Development Cooperation

RESEARCH PROGRAM ON Forests, Trees and Agroforestry

CGIAR

Duration: 3 years (15 August 2016-14 August 2019)
Inception workshop September 2016
Budget: 500k euro

Specific objectives of ADA project

- Contribute to develop a framework of indicators to monitor forest landscape restoration, across a range of approaches
- Analyze the supply chain of forest reproductive material and identify constraints to supply of diverse propagation material
- Identify social factors that trigger participation in forest restoration activities

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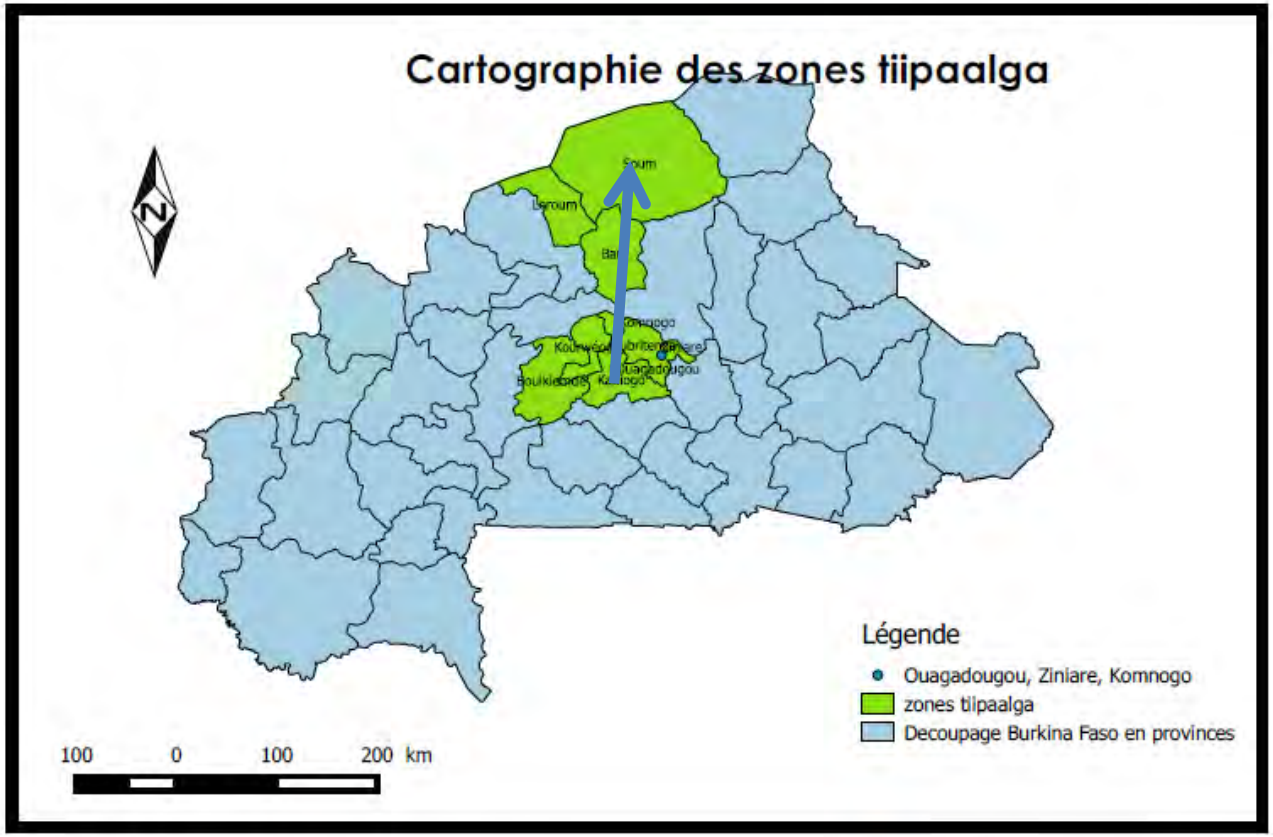
Issues of main interest

- Long-term sustainability of restoration efforts
- Potential for upscaling
- Emphasis placed on food tree species



Degradation gradient

Données tiipaalga, Août 2016

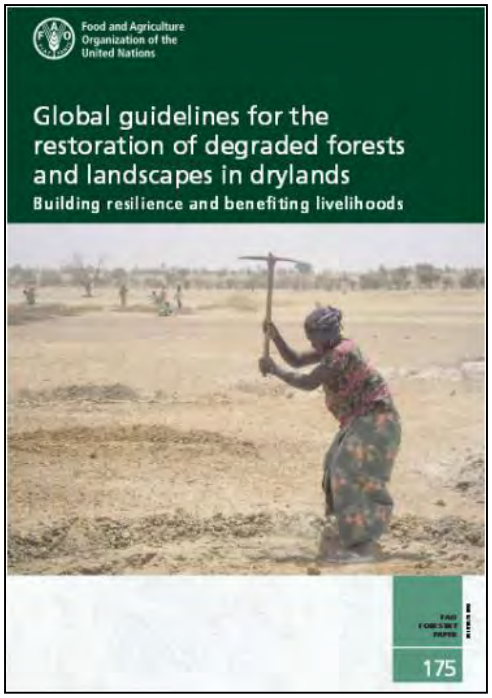
Source: TRAORE Daouda

Candidate project sites

Région	Province	Commune	Villages
Centre	Oubritentga	Zitenga	Komnogo Dayargtenga
	Kourwéogo	Laye	Barma Manefyam
Sahel	Soum	Djibo	Firguindi Kourohael
		Pobé Mengao	Niamanga Cisse

Gaps in monitoring frameworks

- Still common to measure the success of restoration efforts primarily based on <u>number of seedlings planted or that survived</u> in the short term
- Lack of adequate socio-economic indicators



INTERNATIONAL STANDARDS FOR THE PRACTICE OF ECOLOGICAL RESTORATION – INCLUDING PRINCIPLES AND KEY CONCEPTS

FIRST EDITION: December 2016

Tein McDonald, George D. Gann, Justin Jonson, Kingsley W. Dixon

SER SOCIETY FOR ECOLOGICAL RESTORATION

RESEARCH ARTICLE

Community participation and ecological criteria for selecting species and restoring natural capital with native species in the Sahel

Moctar Sacande[1,2,3], Nora Berrahmouni[2]

July 2016 *Restoration Ecology* Vol. 24, No. 4, pp. 479–488

Bioversity International

Analysis of social aspects

- Motivations of farmers to engage in forest restoration
- Inventory innovative practices and assess how they spread within the community
- Gender inclusiveness in forest restoration initiatives

Analysis of supply of forest reproductive material

a. Selection and innovation: how species and tree seed sources selection is carried out, diversity

b. Seed production/multiplication what are the in situ sources? Are there specialized seed production stands or orchards; how are nurseries organized? can they handle a large diversity of species? Do they rely on broad networks of seed collectors?

c. Quality control: registration system in place of seed sources? are seed sources certified? Policy in place to promote diversity?

d. Market access, supply and demand side: what species are available for restoration? seed supply chains are able to deliver diverse reproductive material? incentives in place for restoration?

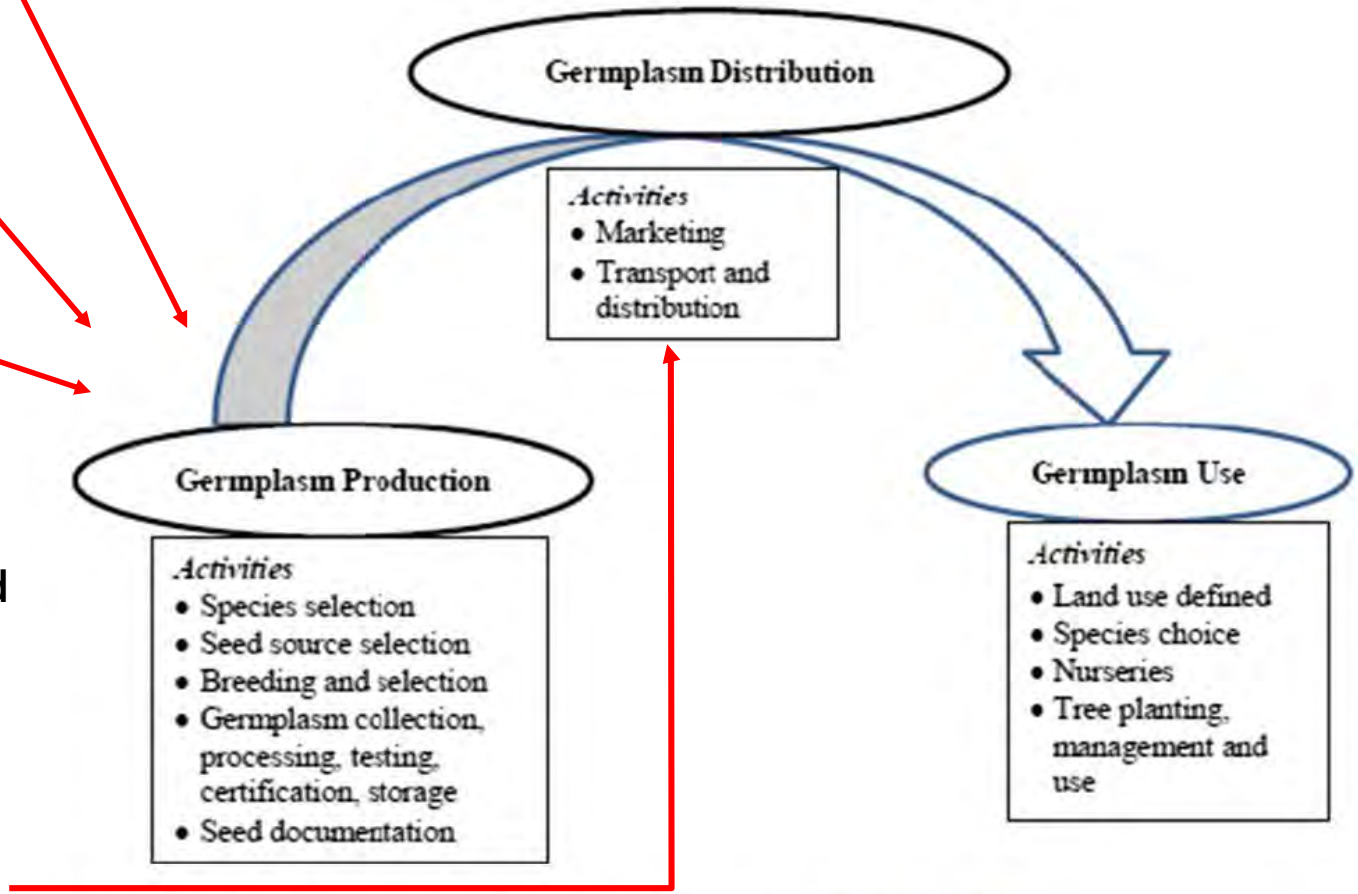
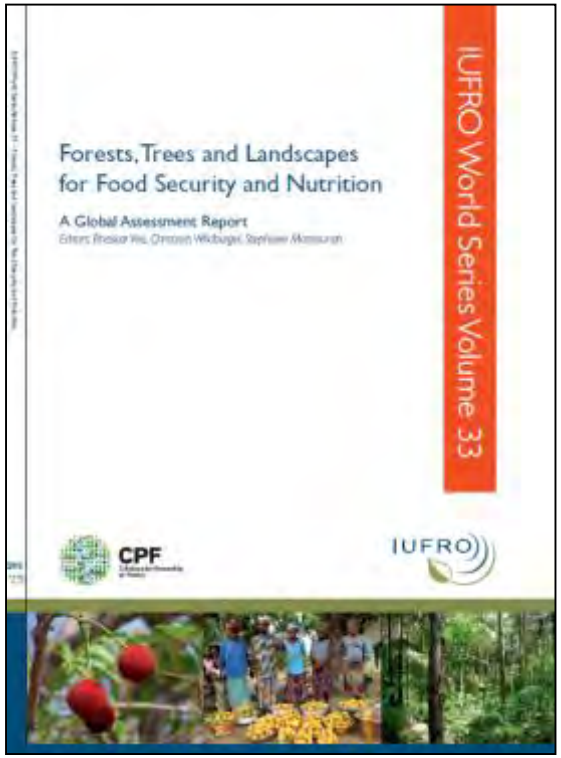


Fig. 1 Generalized tree seed supply model (adapted from Schmidt 2007)

Food tree species



RESEARCH ARTICLE

Forests, Trees, and Micronutrient-Rich Food Consumption in Indonesia

Amy Ickowitz[1]*, Dominic Rowland[1], Bronwen Powell[1,2], Mohammad Agus Salim[1], Terry Sunderland[1,3]

PLoS ONE 11(5): e0154139. doi:10.1371/journal.pone.0154139

Review

The Contribution of Forests and Trees to Sustainable Diets

Barbara Vinceti [1,*], Céline Termote [1], Amy Ickowitz [2], Bronwen Powell [2], Katja Kehlenbeck [3] and Danny Hunter [1,4]

Sustainability **2013**, *5*, 4797-4824; doi:10.3390/su5114797

Bioversity International

Guissou *et al.* - Local Perceptions of Food Plants in Eastern Burkina Faso

2015

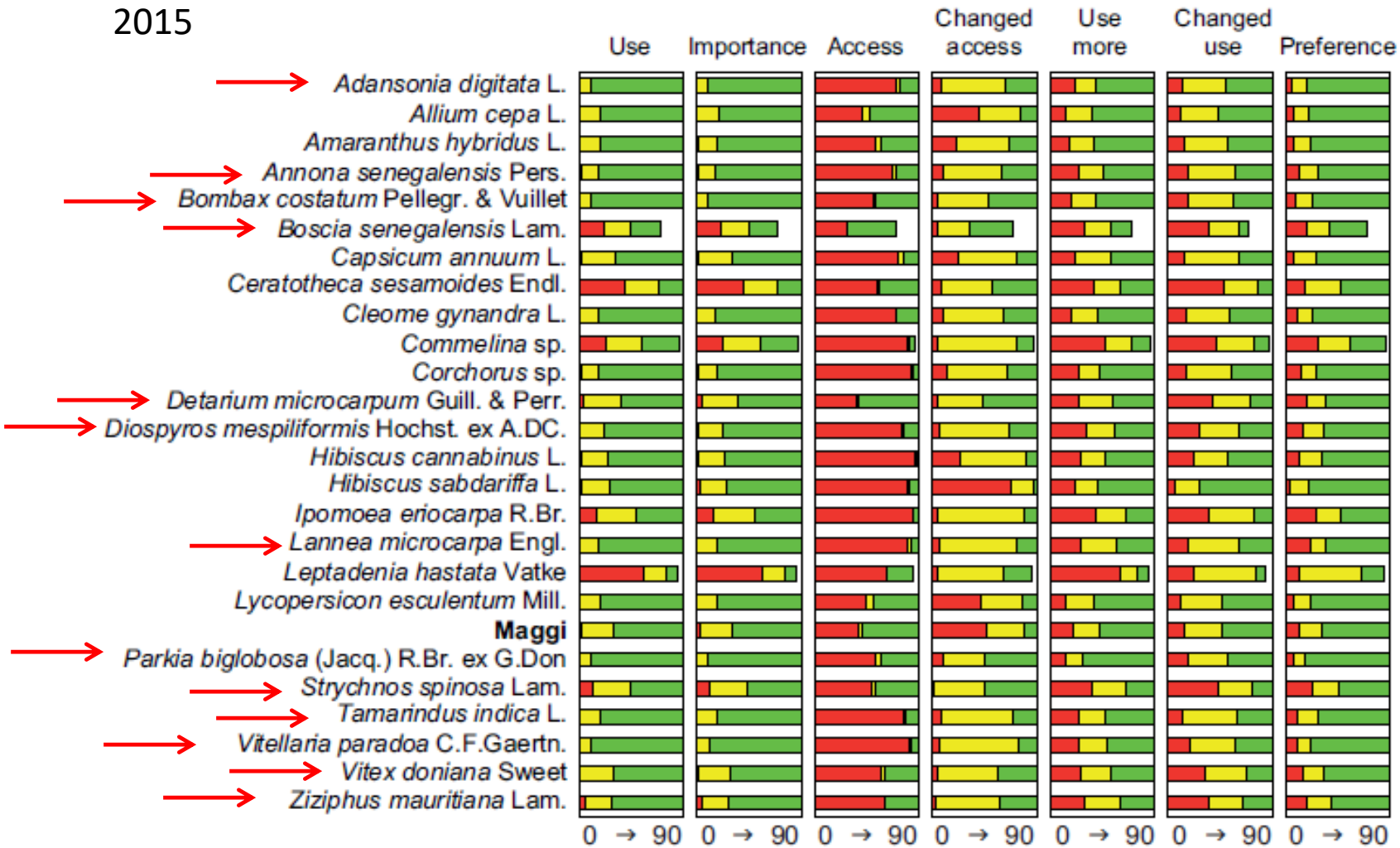


Figure 2. Informant responses per species for use, importance, access, change in access, if the species would be used more if it were more available/if informants had more money, changed use, and preferences for use as reported by villagers from Silmiogou and Ningaré, Boulgou Province, Burkina Faso. The x-axis shows the number of informants from 0 to 90. Shorter bars indicate that the species was unknown to some informants. Red, yellow, and green bars correspond to the following categories: Use = not used, used a little, used a lot; Importance = not, a little, very important; Access = easy, medium, difficult to access; Changed access = easier, same, harder to access; Use more (if it were more available/ if informants had more money) = no, a little, a lot; Changed use and preference = less, same, more.

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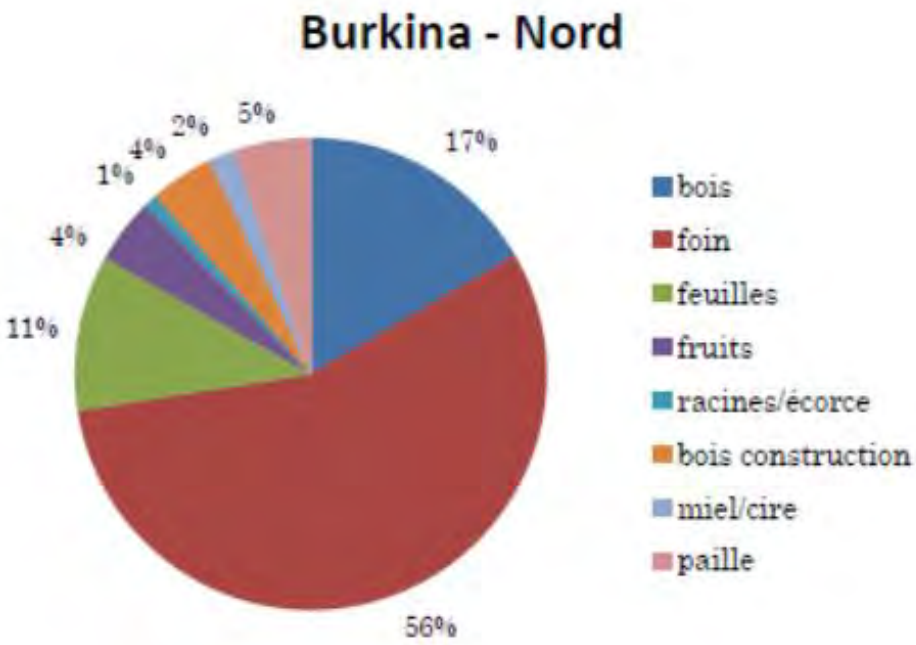
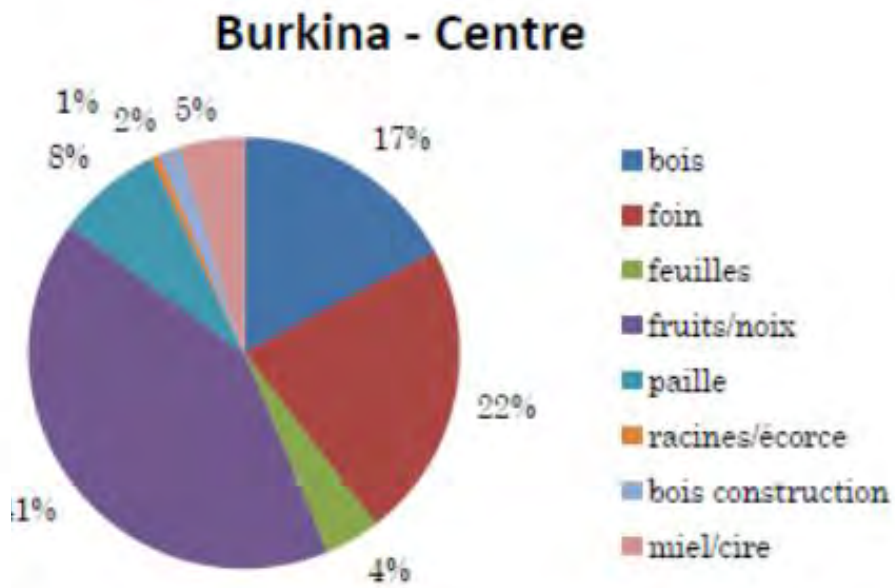
Food tree species

Analyze main uses of species in restored plots and benefits derived, focusing in particular on food trees





Data from tiipaalga (2012)

Review

SCI

Received: 10 October 2012 Revised: 18 April 2013 Accepted article published: 30 April 2013 Published online in Wiley Online Library: 27 June 2013

(wileyonlinelibrary.com) DOI 10.1002/jsfa.6196

Nutrient composition of selected indigenous fruits from sub-Saharan Africa

Barbara Stadlmayr,[a*] U Ruth Charrondière,[a] Sandra Eisenwagen,[a] Ramni Jamnadass[b] and Katja Kehlenbeck[b]

Literature review on compositional data compiled for 10 species recognized as highly important in the diet, particularly in rural areas and during periods of drought

Results

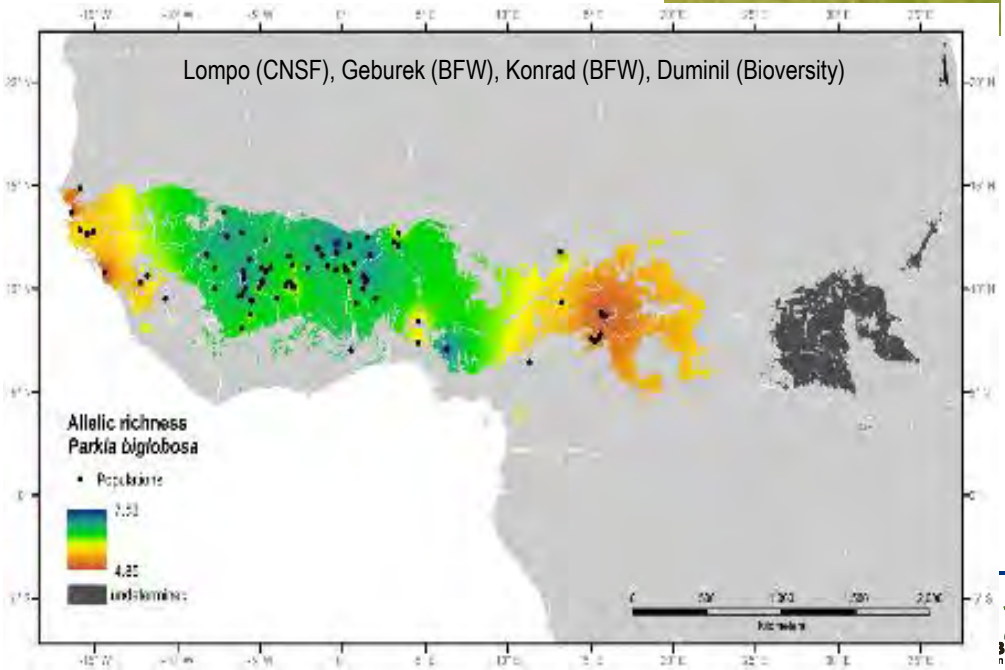
Adansonia digitata (26)
Dacryodes edulis (16)
Tamarindus indica (10)
Balanites aegyptiaca (9)
Sclerocarya birrea (9)
Ziziphus mauritiana (9)
Vitex doniana (7)
Irvingia gabonensis (5)
Uapaca kirkiana (3)
Syzygium guineense (3)

- Analyses mainly focused on macronutrients and minerals
- Vitamins, apart from vitamin C, were rarely reported
- Substantial compositional differences were found among as well as within the different fruit species
- Need to generate more high-quality data on a wider spectrum of components

Parkia biglobosa (néré)

- Large within species variation observed. Do different provenances have distinct traits? Do they have a genetic basis? Are these characteristics heritable?

Provenance trials, CNSF (Burkina Faso)



Thank you

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Annexe 15

Useful Plants in Kenya (MGU and Sainsbury Projects)

3rd workshop Kew Pilot Project

Great Green Wall

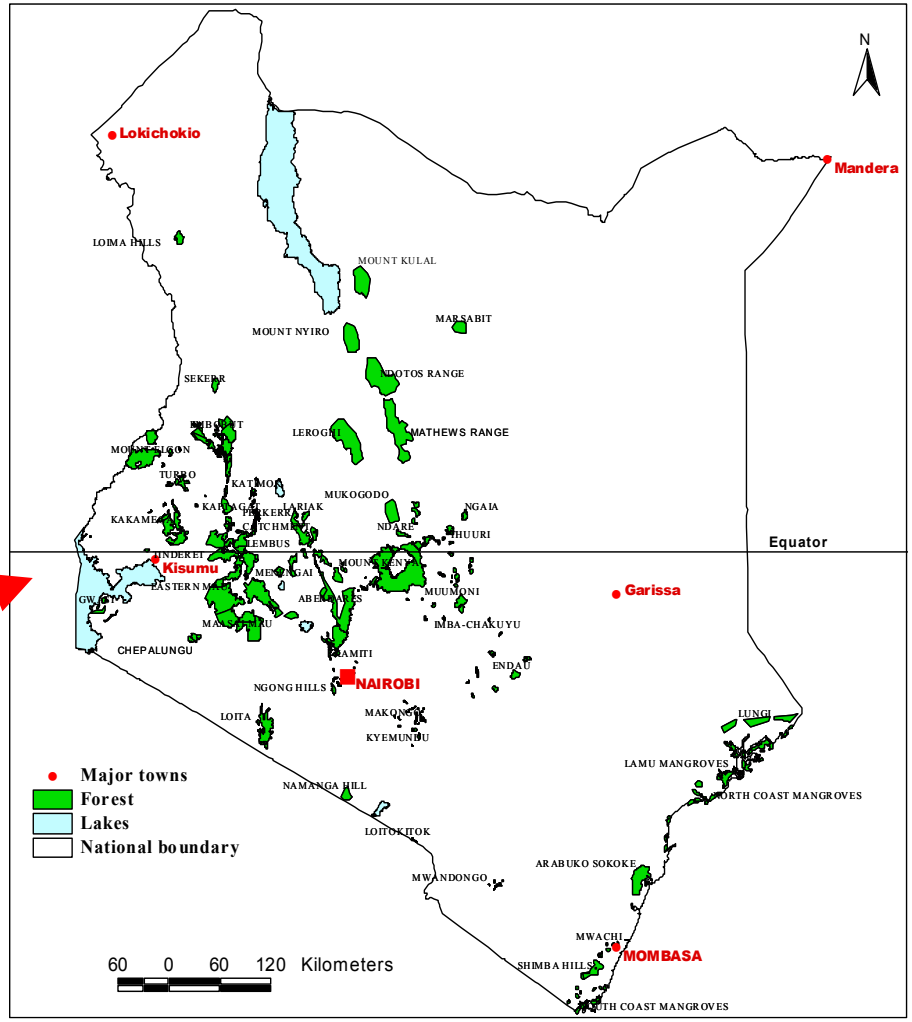
Agadir, Morocco

27th -30th March 2017

William Omondi

KENYA FORESTRY RESEARCH INSTITUTE

KENYA: gazetted Forest Reserves



Land degradation

Habitat destruction

Introduction

Goal

Welfare of local communities improved and useful important plants safeguarded from extinction in Africa

Purpose

Conservation and sustainable use of plants for human wellbeing

Projects' aim

1. Transfer knowledge and skills to local communities
2. Achieve biodiverse forests that enhance ecosystem services
3. Address economic and environmental challenges facing the community.
4. Deliver a legacy of increased forest cover
5. Address research and development activities aimed at restoring degraded areas.

Inception meetings and public participation

Building capacity of communities in seed propagation, handling, quality control and to establish and manage group nurseries

Provision of seeds and nursery inputs


23 08 2014

Restoration of forests on degraded lands

Promote reforestation by using seedlings raised from local indigenous species

- **Reduce soil erosion**
- **Restore biodiversity**

Seed handling and propagation studies

Garcinia buchenanii


03 06 2014

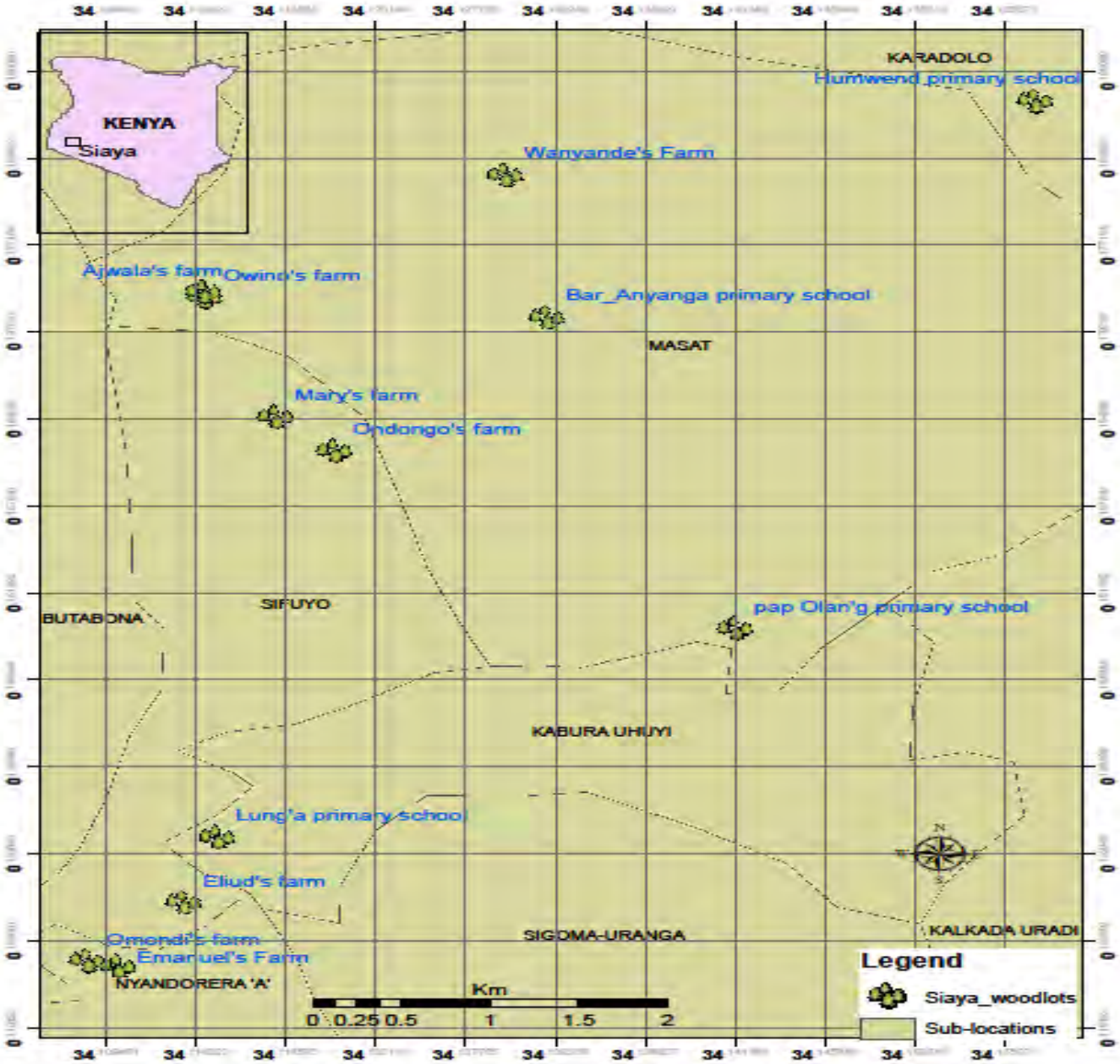
XIV WORLD FORESTRY CONGRESS, DURBAN, SOUTH AFRICA, 7-11 SEPTEMBER 2015

‘Useful plants for reforestation activities in Kenya: linking environmental challenges to the well-being of local rural communities’.

- William Omondi[1], Victor Otieno[1], Desterio Ondieki Nyamongo[2], Moctar Sacandé[3], Efisio Mattana[3], Alex Hudson[3], Tiziana Ulian[3]


31 05 2014

Siaya woodlots




KEFRI

School programmes enhanced through:

- Involvement of students and teachers in tree planting activities

- Support to vulnerable students unable to meet basic education costs

- Support construction of classrooms.

Achievements

1. Capacity of local community members to propagate and conserve plants enhanced through training and the improvement of local facilities
2. 150,000 seedlings planted in farmlands
3. Income of local community increased through sale of seeds, seedlings and other tree products
4. Demonstration plots provide information of performance of different species in projects sites
5. Species propagation protocols and performance established, published and disseminated

Some useful wild plants

Overall Outputs

- **Contributed to increase in tree cover by promoting tree planting culture and conservation**

- **Improved knowledge and capacity of communities in the propagation, use and value of plants**

Technical guidelines for establishment of community seed stands and woodlots

- Site selection
- Tree species selection
- The source of planting material
- Establishment and management costs
- Seed stand ownership and benefit sharing
- Product processing and marketing
- Researchable issues data collection and management
- Management Plan

Acknowledgments

1. Local communities

1. All Institutional partners

2. International co-ordinator and partners


Thank you for your attention

Annexe 16

OECD Forest seed scheme

3rd workshop Kew Pilot Project
Great Green Wall

Agadir, Morocco
27th -30th March 2017

William Omondi

Kenya Forestry Research Institute

Seed exports: 2013

	Metric tons	*Value (M$)*	*Lead country*
Field crops	**4,093,667**	**7,797**	**France**
Vegetables	**114,065**	**3,564**	**Netherlands**
Fowers	**5,510**	**318**	**Netherlands**
Trees /shrubs	**674**	**4.4**	**USA**

OECD Certification system

- **The object of the OECD Forest Seed and Plant Scheme is to encourage the production and use of seeds, parts of plants and plants that have been collected, processed and marketed in a manner that ensures their *trueness to name and origin*.**

The scheme

- Provides internationally recognized protocols for inspection, testing, certification, quarantine control, variety testing and description of seeds and planting materials.
- Member states of the Schemes adopt standards and procedures for establishment / production, inspection, sampling and testing of seeds.

Documentation and traceability of certified material

- Suppliers delivering seeds are responsible to give to the buyer the register reference of the Master Certificate e.g Batch number.

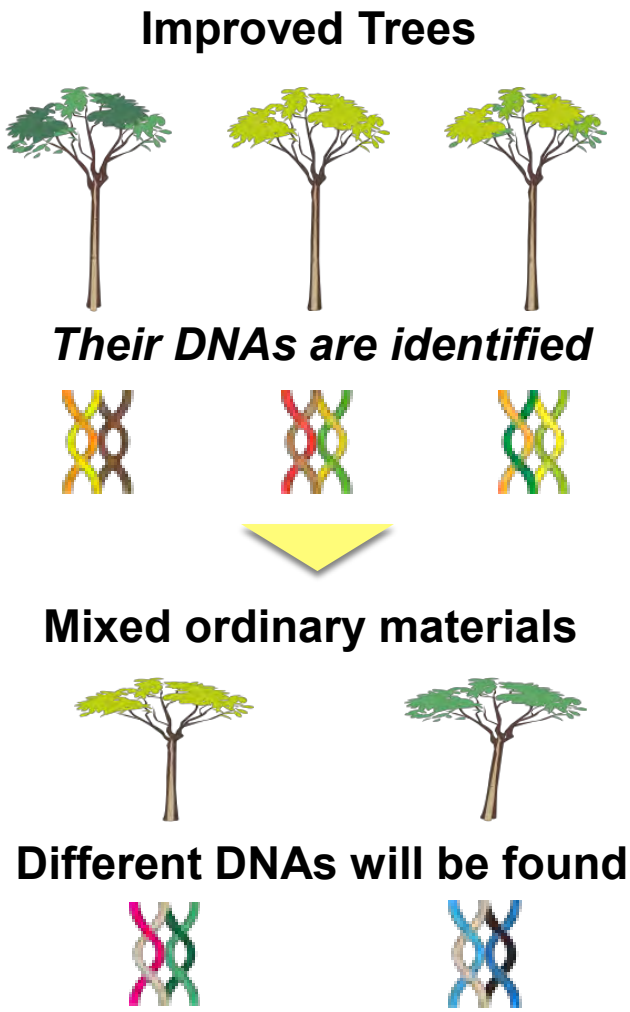
- Information of all seedlots to be provided on the label or a supplier's document.

- The aim is to ensure that the marketed material is traceable to the registered source throughout the whole chain from production to end use.

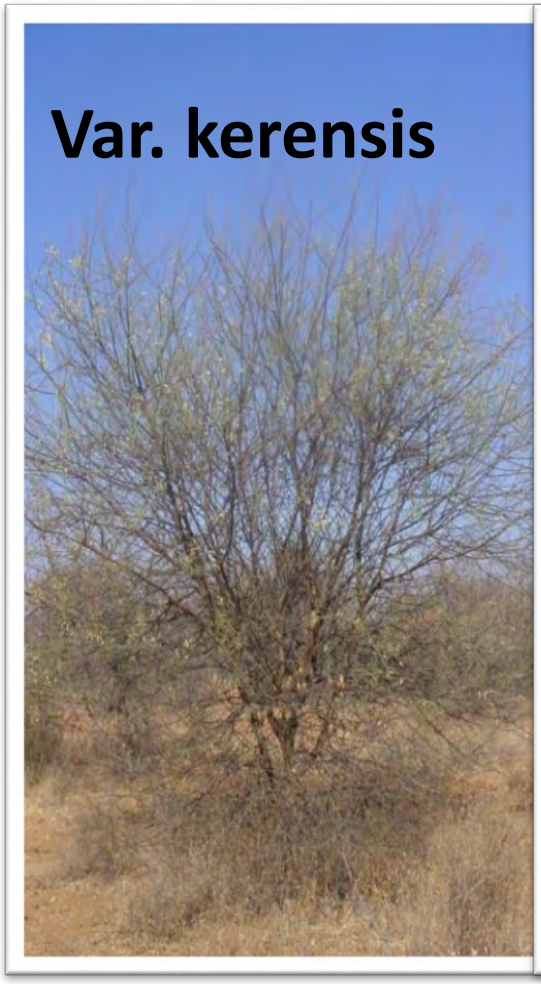
Origin of improved materials can be genetically traced

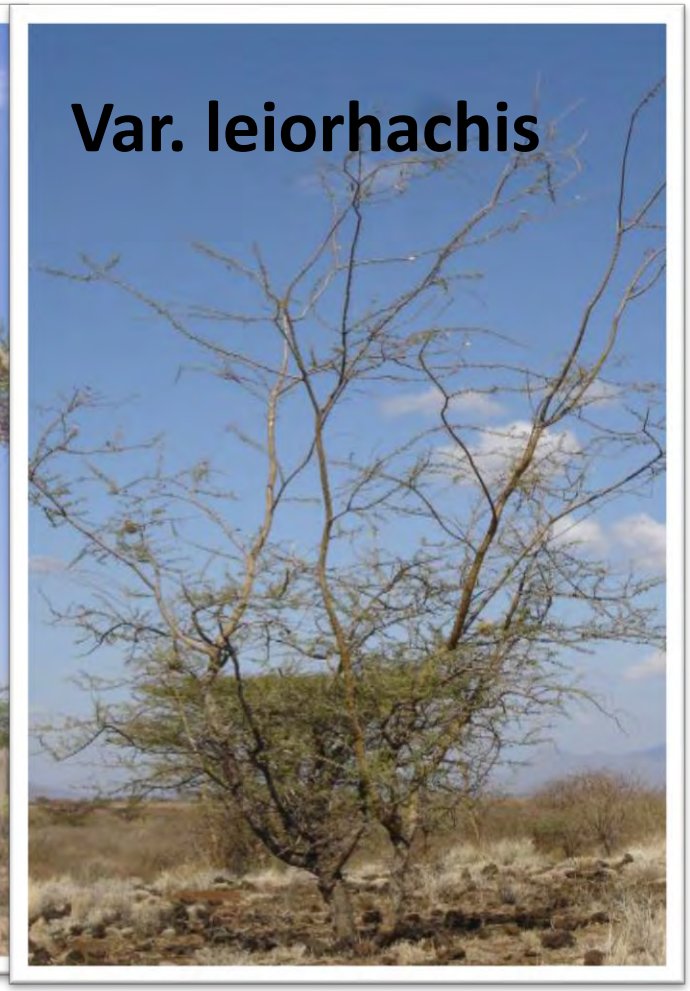
- Identification of DNA characteristics of mother trees should be undertaken before establishing improved orchards for the purpose of traceability

- Any fake seeds/seedlings, can be detected through DNA testing



Acacia senegal






Anti-malarial agent
342302033

Master Certificate mandatory for all certified seed lots

- All seed produced and traded must be from an officially registered source .

- A certificate that provides all relevant information of the seed lot is issued by the Designated National Authority
- The Certificate is an assurance that the seeds are collected from an approved source, handled and tested using approved protocols.

- A certificate issued for a seed lot is also for the plants raised from that seed.

Evira
Finnish Food Safety Authority

OECD

CERTIFICATE OF PROVENANCE FOR REPRODUCTIVE MATERIAL DERIVED FROM CLONES OR CLONAL MIXTURES

Issued in accordance with the OECD Forest Seed and Plant Scheme

FINLAND **Certificate No**

It is certified that the forest reproductive material described below has been produced in accordance with the OECD Scheme for the Certification of Forest Reproductive Material Moving in International Trade.

1.	i. Botanical name:
	ii. Common name:
	iii. Name of hybrid:

2. Nature of reproductive material:	3. Category of reproductive material:	4. Type of basic material:
☐ Parts of plants ☐ Plants	☐ Qualified ☐ Tested	☐ Clone ☐ Clonal mixture

5.	Stated purpose:
6.	Reference identity of basic material in National Register:
7.	Autochthonous: ☐ Autochthonous/indigenous ☐ Non-autochthonous/non-indigenous ☐ Unknown
8.	Origin of basic material (for non-autochthonous/non-indigenous material, if known):
9.	Region of Provenance of basic material (if known): Country: Region of Provenance: Provenance (short title): Location coordinates:
10.	Quantity
11.	Is the material covered by this certificate the result of subdivision of a larger lot covered by an original OECD certificate? ☐ Yes ☐ No Original certificate number: Total quantity of seed/part of plants/plant in original lot:
12.	Method of propagation:
13.	Length of time in nursery:
14.	Number of clones in mixture:
15.	Number and nature of packages:
16.	Other relevant information:

Name and address of Designated Authority:	Stamp of Designated Authority:	Name and responsible officer and signature:
Finnish Food Safety Authority **Mustialankatu 3** **FI-00790 Helsinki, FINLAND**		Date:

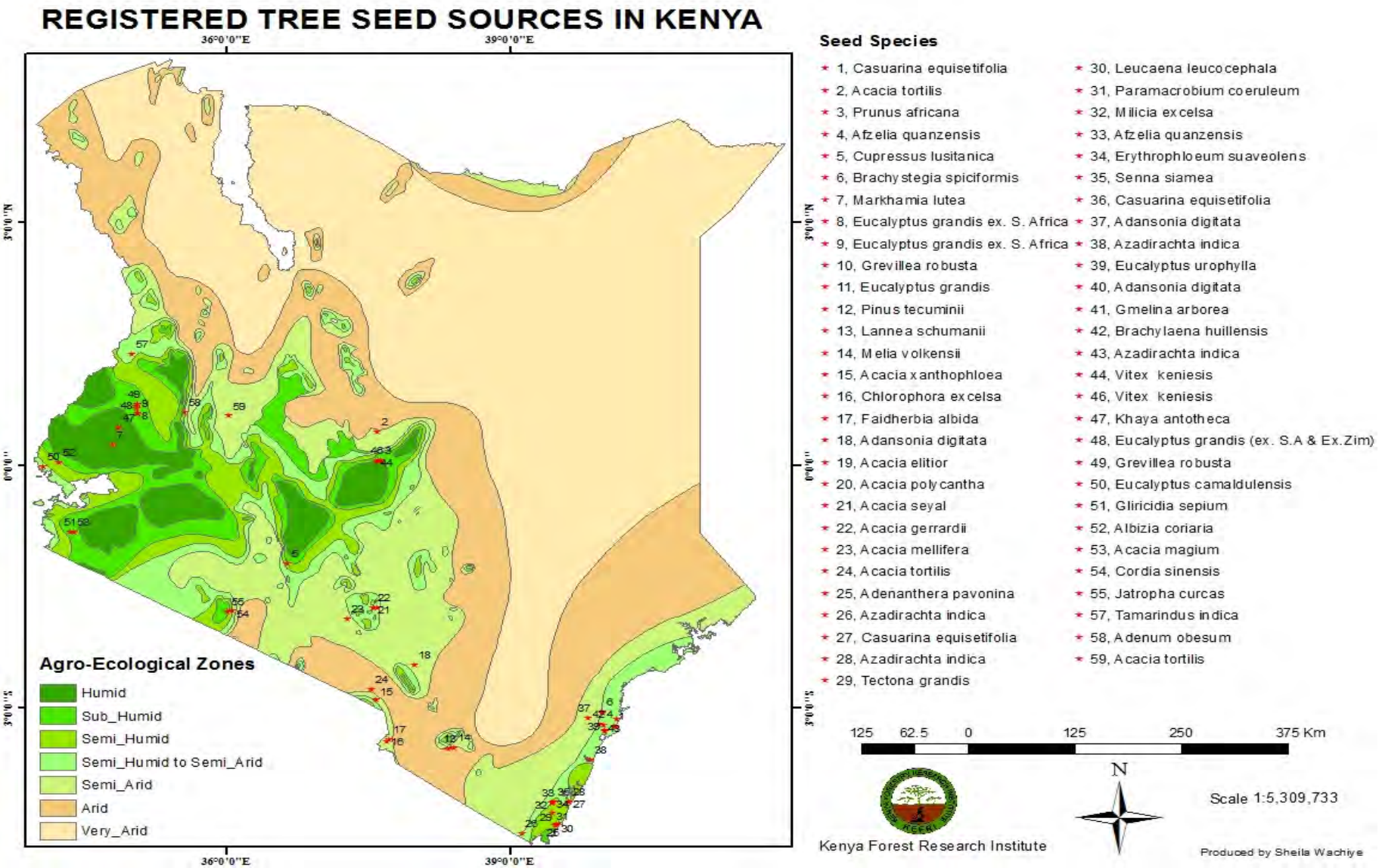
Electronic Certification System (ECS)

- Improve the efficiency of the export certification process
- Significantly reduce the risk of errors, loss, and fraudulent documents.
- Provide a means to improve the quality and range of data from which strategic decisions can be made

The Electronic Certification System (ECS)

- Reduce the total cost of verification and certification
- Provide the ability to rapidly respond to increasingly changing market requirements.
- Enable importing countries to pre-clear consignments before the actual product arrives.

Digitization and publication of registered seed sources




atoria
Lake Turkana
Eastern
Prunus africana
Rift Valley
North Eastern
Western
Warbugia ugandensis
Acacia senegal seed source isiolo
Acacia senegal seed source Isiolo
Croton megalocarpus seed source Nyeri
Nyanza
Central
Croton megalocarpus seed source Ngong forest
Nairobi
Acacia senegal Kajiado
Mara
Nairobi - Namanga, Kenya
Coast
Arusha
Shinyanga
© 2012 Google
US Dept of State Geographer
© 2012 Cnes/Spot Image
Data SIO, NOAA, U.S. Navy, NGA, GEBCO
0°28'36.23" N 39°07'05.64" E elev 874 ft
©2010 Google
Eye alt 615.74 mi

Linkage to Great Green Wall initiative

- To supply bulk high quality seeds to countries implementing the project
- large scale production and involvement of trained and registered community groups.
- Likely to spur a vibrant conservation of efforts in regions of production and use in addition to enhancing social economic status of producer communities

Annexe 17

Great Green Wall Cross Border Pilot Project

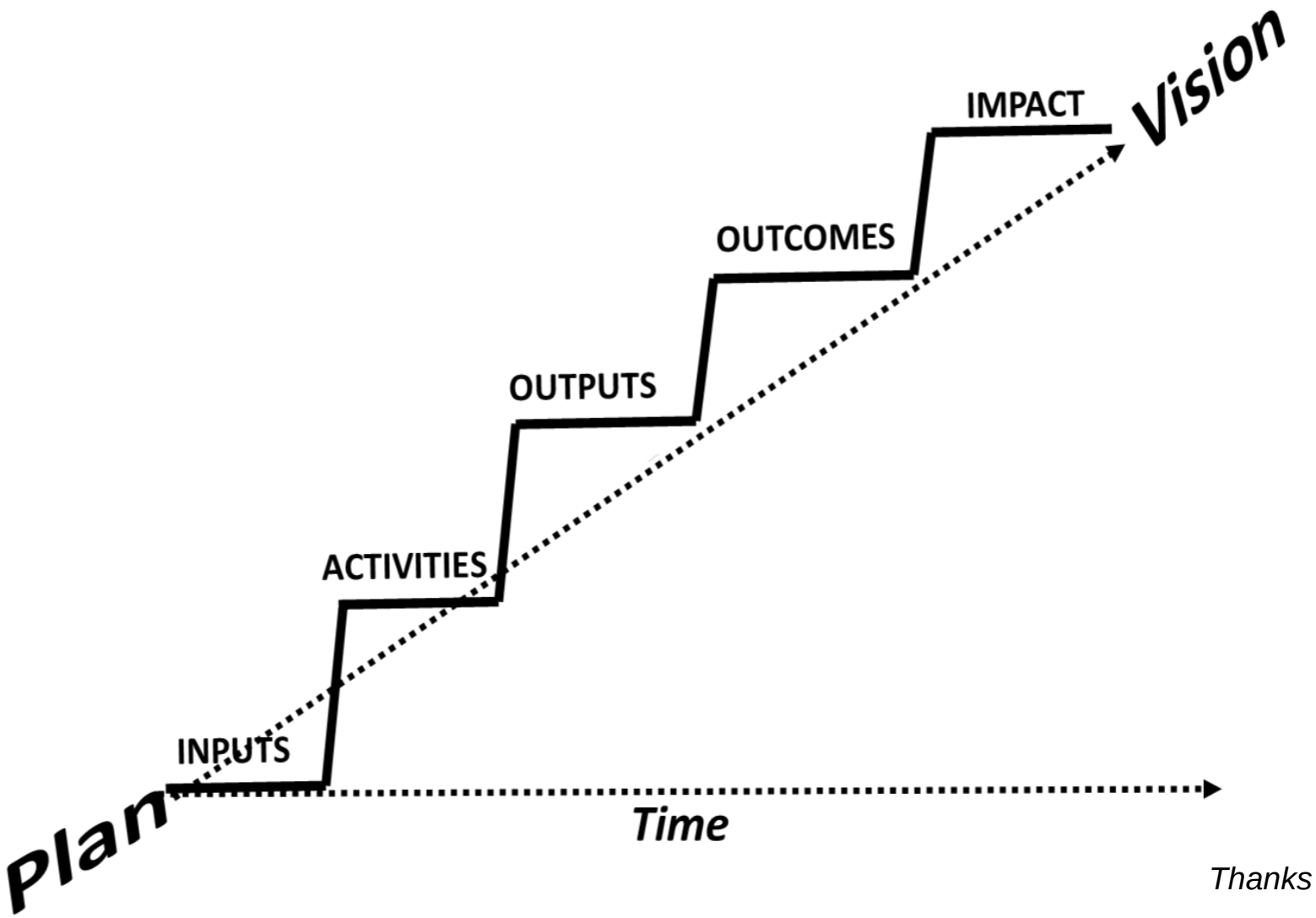
Evaluation & Planning Workshop
Agadir, Morocco, March 27th - 30th 2017

M&E and data gathering in Mali: Quantitative and qualitative approaches to identify factors of long-term sustainability

Paolo Ceci, RBG Kew

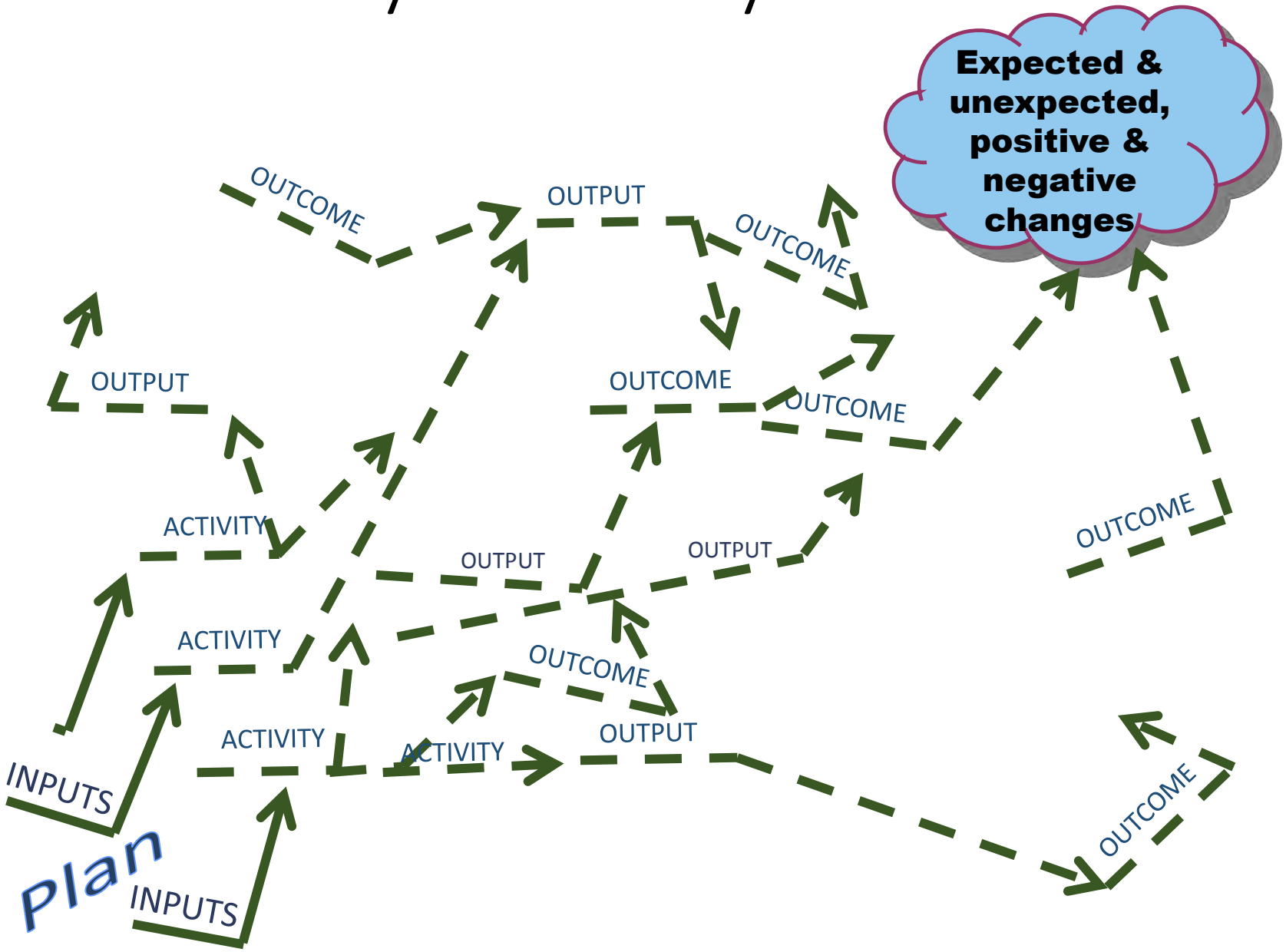
Contents

Why a M&E system?



Thanks to Ricardo Wilson-Grau

Why a M&E system?



Why a M&E system?

- Keep track of activities, outputs and outcomes
- Learn from experience
- Improve project management and performance
- Planning and allocate resources
- Show results and share them with different partners
- It must be set up at the beginning of an intervention

Why a M&E system?

- How does the project affect the beneficiaries?
- Are the achievements direct results of the project implementation?
- Shall we change the project strategy to improve its results?
- Can we justify costs?

Output and outcome indicators

- How project performs in terms of foreseen activities vs long-lasting changes generated, i.e. behavior changes
- Impacts…these refer to the effects of a change on e.g. income, health, state of natural resources, etc. …can a project get so far? ...It might get an order of magnitude

Output and outcome indicators

- This implies a mixed approach to measurement and observation: quantitative, qualitative, and quantitative analysis of qualitative indicators
- Outcome monitoring requires a baseline to be drawn and possibly a control group to be surveyed

Species performance indicators

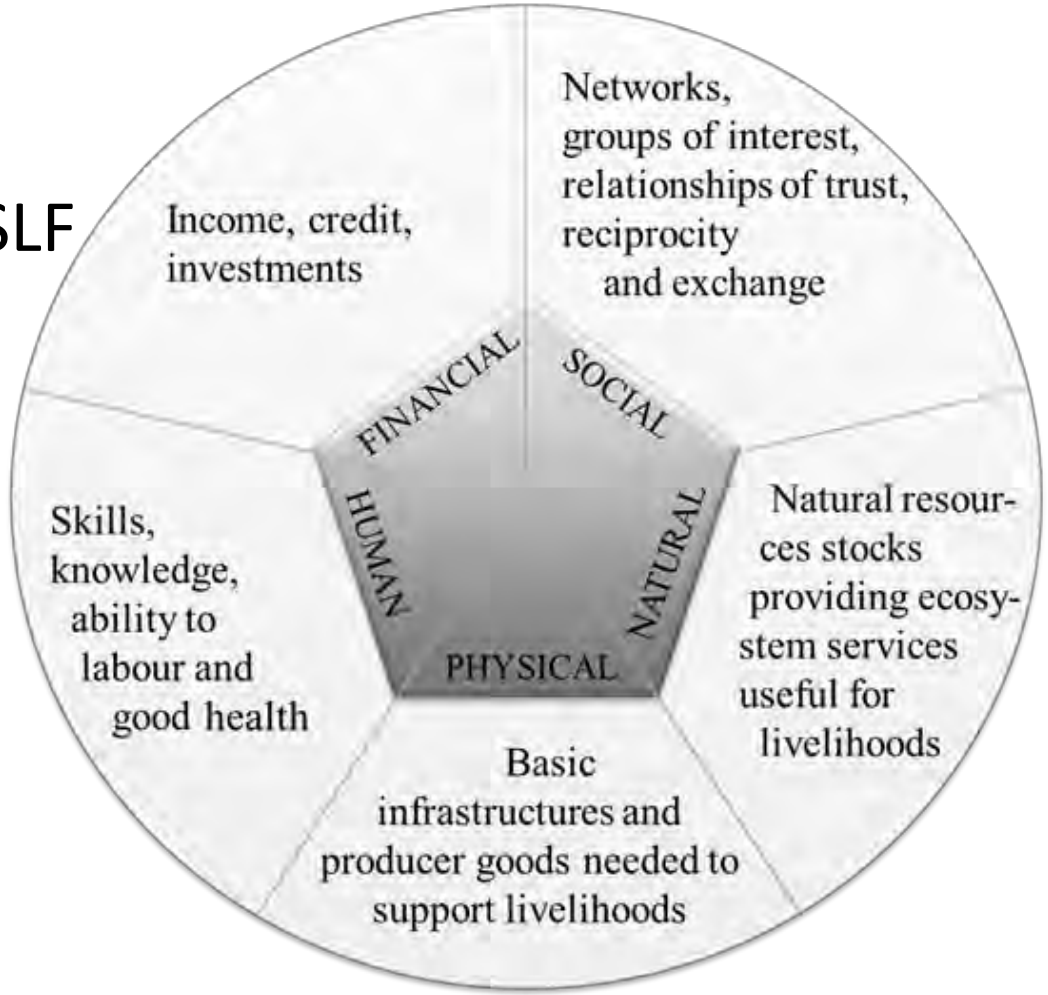
- Participatory monitoring: collaborating farmers, IER, Eaux et Forêts, Conseil du Cercle de Bankass
- Monitoring surveys are undertaken at the beginning and after every planting campaign
- Dead plants are counted and replaced, survival and growth rates (diameter and height) are entered in an Excel sheet (2013, 2014, 2015, 2016)
- Data related to ANR, herbaceous species and bare-root plants are also recorded
- Highly valuable data to understand what species survive and get to a productive size under specific environmental and socioeconomic conditions
- ***13 useful species with survival rate higher than 50%***

Ethnobotanical survey – RBG Kew protocol

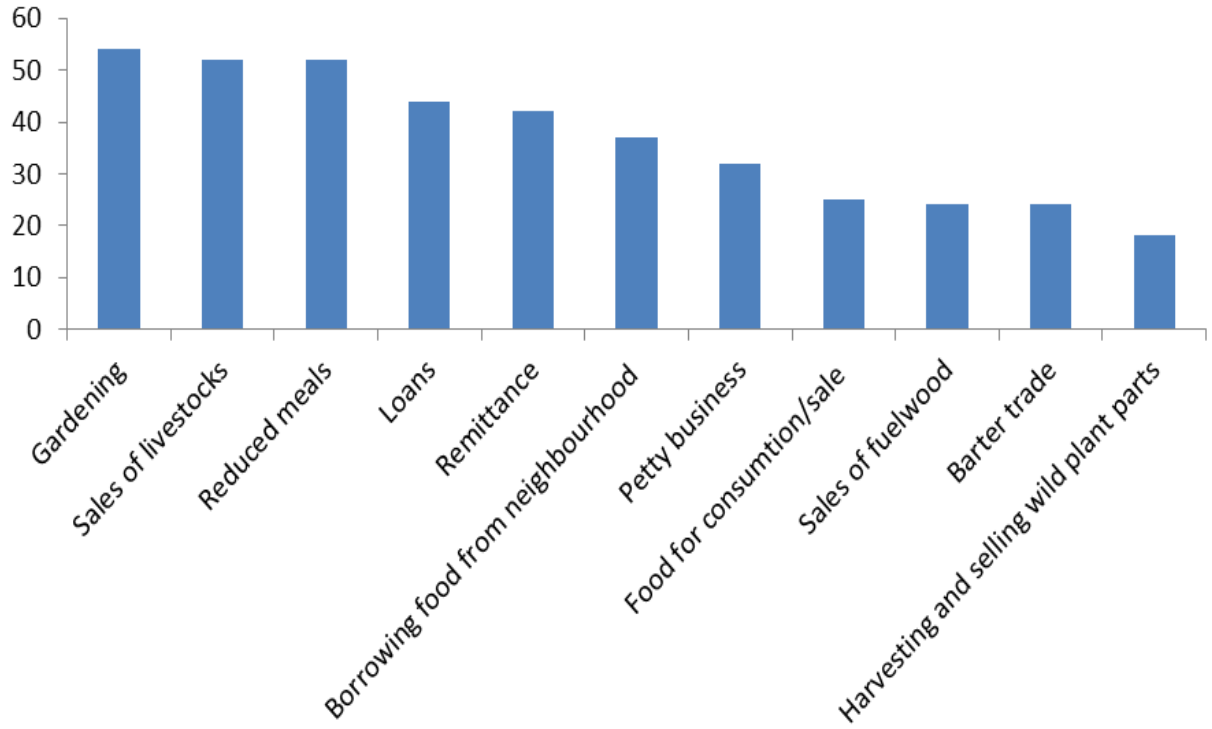
- Administered between May 2013 and April 2016 to a stratified sample of 161 respondents
- It investigates preference of species among different socio-professional associations, their use, parts used and state of conservation
- It highlighted a list of 71 species, non necessarily native
- Resulting data were partly exploited to prioritize useful species
- More information can be extracted from the survey, data are currently being entered in a codified matrix

Socioeconomic baseline survey – AAD protocol

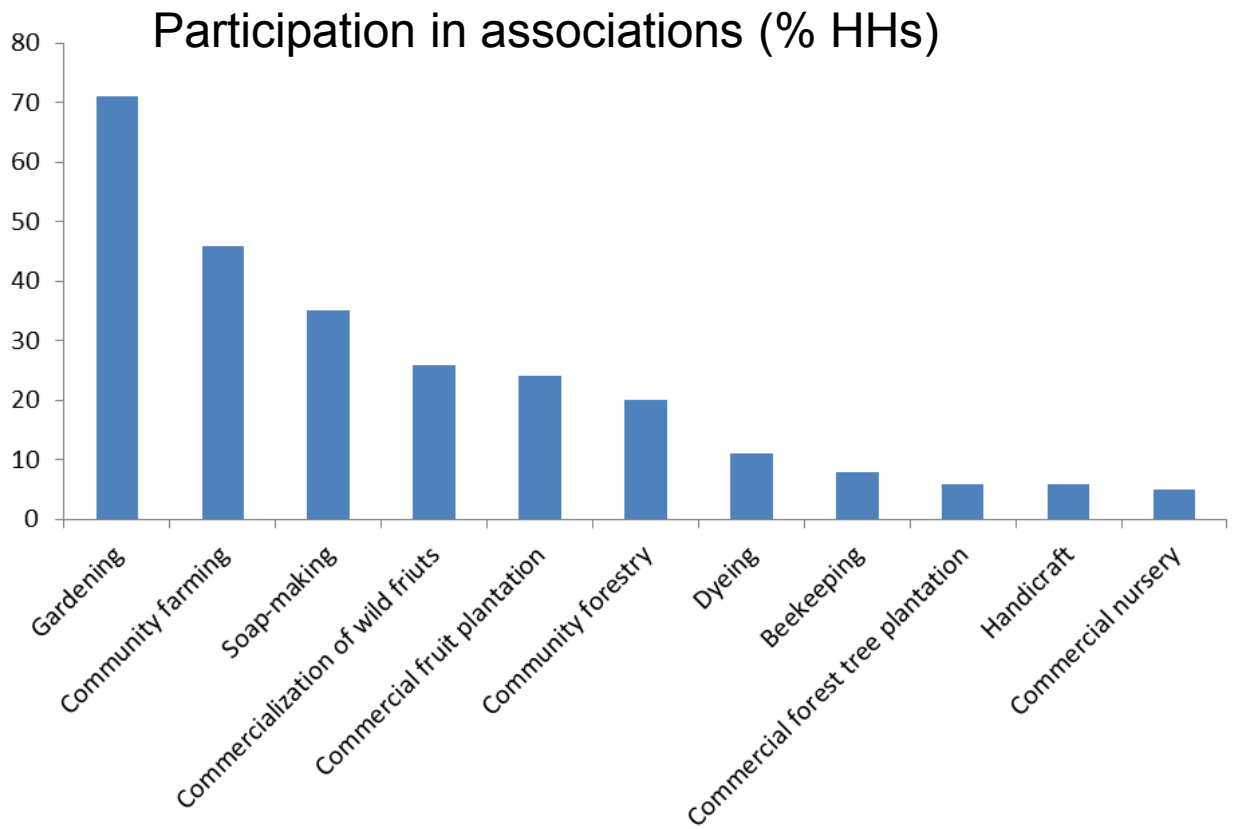
- Administered between March and April 2016 to a stratified sample of 130 respondents
- Designed upon the 5 capitals of the SLF



Socioeconomic baseline survey – AAD protocol



Coping strategies to food shortage (% HHs)



Field surveys: same respondents

Ethnobotanical survey sample (71 useful species)			
Region	Circle	# surveyed	Timeframe
Mopti	Bankass	12	May 2013
Mopti	Koro	49	May 2015
Mopti	Bandiagara	30	May 2015
Kayes	Kayes	70	April 2016
Total		161	

Socioeconomic survey sample			
Region	Circle	# surveyed	Timeframe
Mopti	Koro	40	March 2016
Mopti	Bandiagara	20	March 2016
Kayes	Kayes	70	April 2016
Total		130	

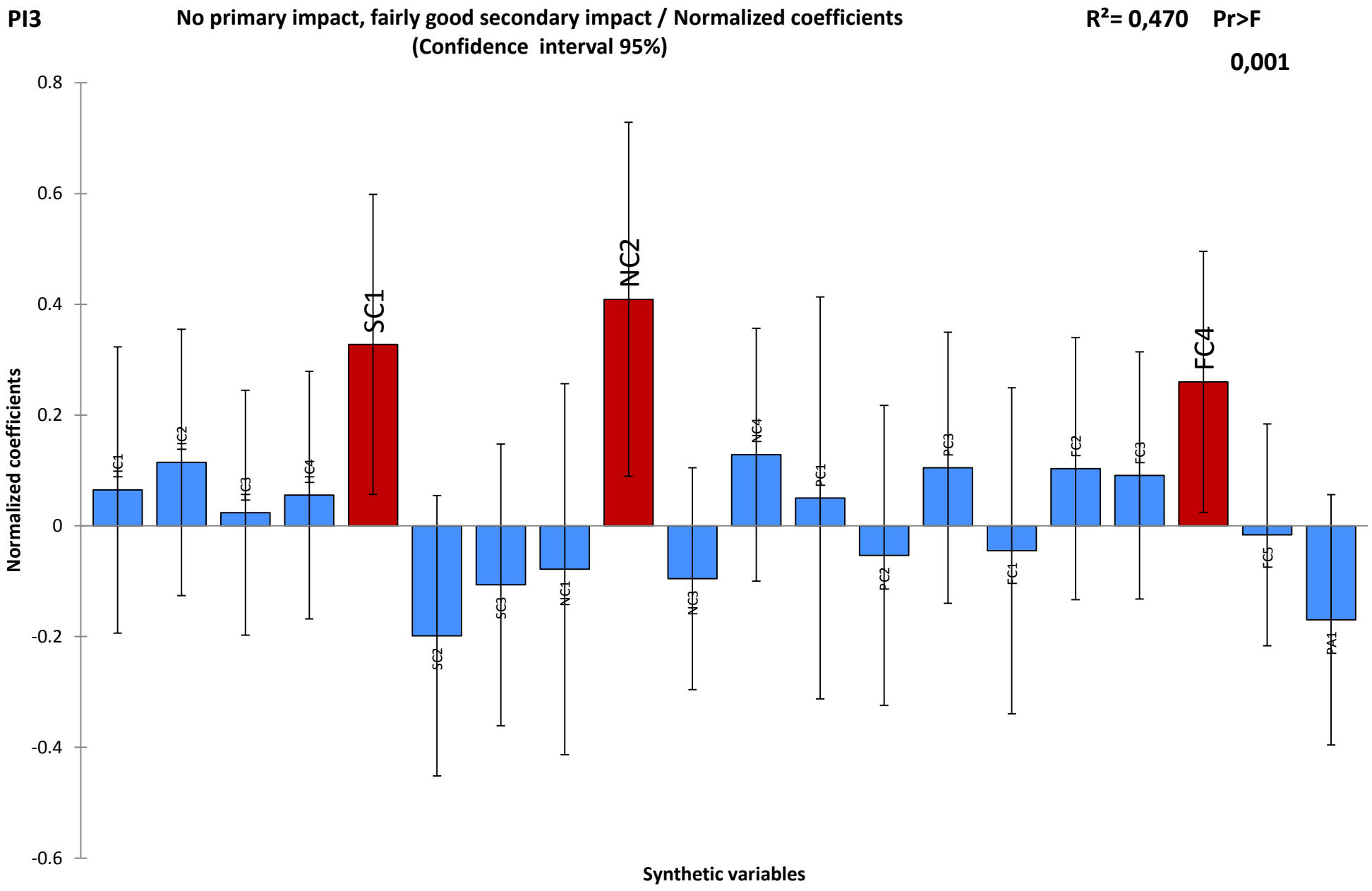
Adjusting sample and filling in a combined matrix

- Estimated project population > 2000
- With 95% confidence level and 8% margin of error, 150 respondents would be needed to make the stratified sample fairly representative
- 20 more questionnaires to be filled in Bankass
- Compiling socioeconomic and ethnobotanical data in a single matrix to investigate relationships between the two domains od data
- Data entering difficulties linked to the open structure of the ethnobotanical questionnaire

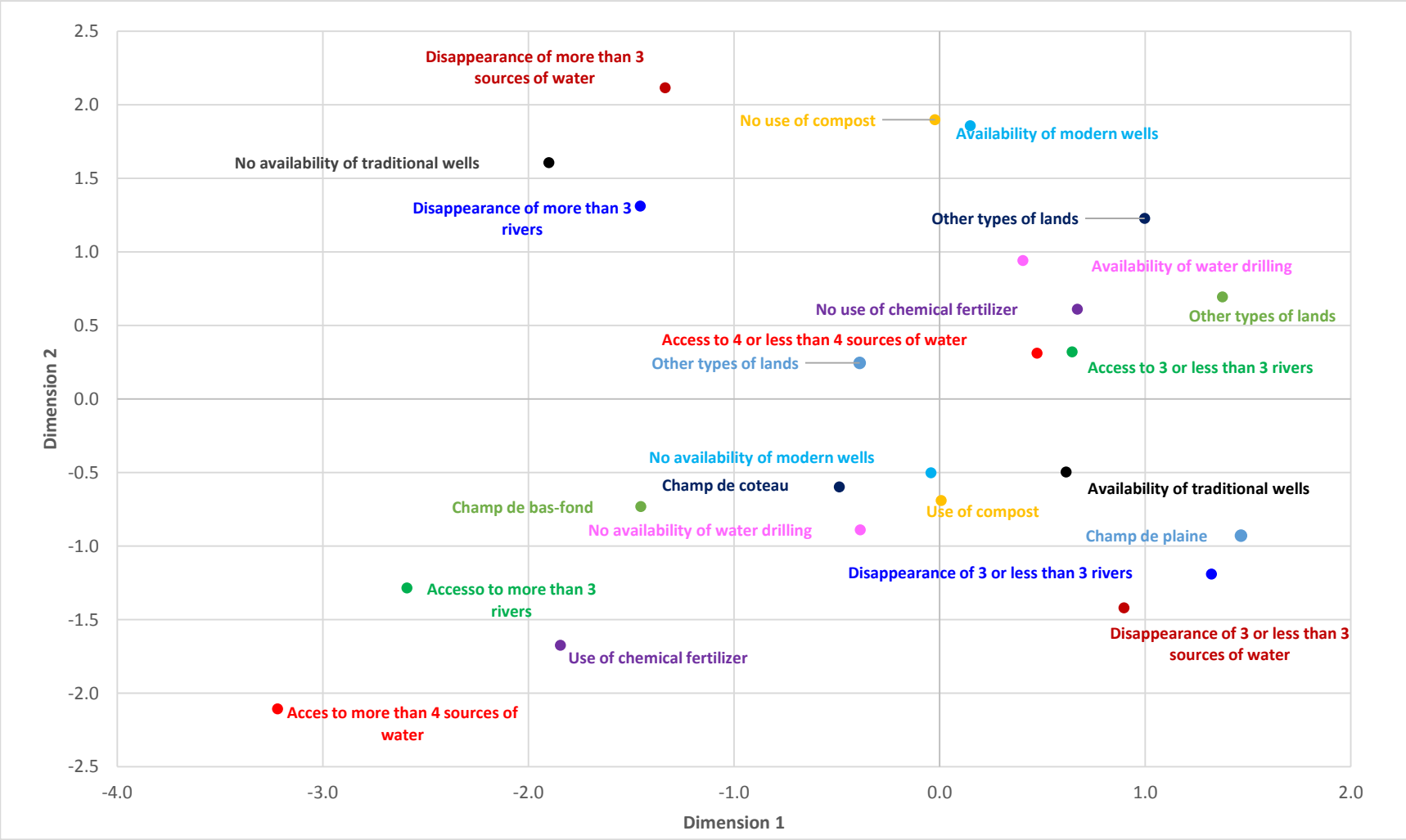
Inferential analysis

Model's parameters			
Source	Value	Pr > |t|	Significance (> 90%)
HC1	0,072	0,619	38,13%
HC2	0,139	0,346	65,43%
HC3	0,033	0,831	16,93%
HC4	0,084	0,621	37,89%
SC1	**0,270**	**0,019**	**98,14%**
SC2	-0,263	0,122	87,79%
SC3	-0,150	0,405	59,46%
NC1	-0,081	0,643	35,72%
NC2	**0,466**	**0,013**	**98,71%**
NC3	-0,123	0,344	65,62%
NC4	0,190	0,265	73,47%
PC1	0,052	0,783	21,73%
PC2	-0,069	0,694	30,57%
PC3	0,144	0,395	60,48%
FC1	-0,048	0,761	23,86%
FC2	0,144	0,386	61,38%
FC3	0,144	0,419	58,14%
FC4	**0,420**	**0,031**	**96,87%**
FC5	-0,029	0,871	12,94%
PA1	-0,070	0,139	86,13%

Significant components	
The community understands the value of forests and is actively committed to increase the forest cover, especially for future availability of timber. Instead, participants to the project do not continue activities, not deeming them relevant and remunerative.	
SC1 (+) - Associativism for economic purposes and in the interest of the community (horticulture group, decision-making meetings)	Men and women of the family participate in a socio-economic interest group (dealing with horticulture or dyeing or soap making). The group is legally recognized, the family is represented in the management and the overall functioning is considered satisfactory. The family is also actively involved in decision-making meetings and forest protection activities.
NC2 (+) - Good state of natural resources	High availability of land of all types. Villagers own private forest plantations, forest cover has increased (natural and riparian forests). Rainfall pattern has not significantly changed, there are abundant water resources.
FC4 (+) - Family with mixed livelihood strategy and alternative activities	The household relies on craftsmanship or trade or other alternative activities as second source of income. A very few members contribute to the income. Agriculture is very insecure and not practiced during the dry season. The household owns goats and chicken and sells goats.


PI3
No primary impact, fairly good secondary impact / Normalized coefficients
(Confidence interval 95%)
R²= 0,470 Pr>F
0,001
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
Normalized coefficients
HC1
HC2
HC3
HC4
SC1
SC2
SC3
NC1
NC2
NC3
NC4
PC1
PC2
PC3
FC1
FC2
FC3
FC4
FC5
PA1
Synthetic variables

Ex. Natural and physical capital



Explanatory variables	Estimated Coefficient	Wald Statistics	Odds Ratio	Significance Level
Perception of increases in temperatures	0,9257	1,75	2,524	0,081*
Perception of decreases in temperatures	0,6858	1,20	1,985	0,230
Perception of increases in precipitations	3,7652	5,59	43,171	0,000***
Perception of decreases in precipitations	3,7974	6,01	44,587	0,000***
Gender of HH head	0,5986	1,44	1,820	0,150
Age of HH head	0,0012	0,12	1,001	0,908
Marital status of HH head (Polygamous)	-0,2290	-0,65	0,795	0,519
Marital status of HH head (Not married or widow)	0,0996	0,19	1,105	0,849
Education level of HH head	1,0705	3,18	2,917	0,001***
Access to water source	0,4297	2,40	1,537	0,017**
Economic assets	-0,3474	-1,83	0,707	0,067*
Level of Investments	-0,2351	-1,47	0,791	0,142
Partecipation to social life	-0,0586	-0,35	0,943	0,727
Level of food security	0,0562	0,34	1,058	0,735
Constant	-4,9003	-5,13	0,007	0,000
Number of observation: 296				
LR Chi2 (14): 122,36				
Prob > Chi2: 0,0000				
Pseudo $R^{2:}$: 0,3018				
Hosmer-Lemeshow Chi2 (8): 6,7				
Prob > Chi2: 0,57				

*significant at 10%, ** significant at 5%, *** significant at 1%

Focus group discussions

- Qualitative approach to understand project socioeconomic effects and constraints on the ground
- Based on semi-structured interviews
- 3 focus group discussions held in Bankass area: Association of planters and environmentalists of Endé, Cooperative of nursery men of Bankass, Association of vegetable-producing women of Dimbal
- Direct observation on community and individual parcels

Focus groups discussions - Endé

- Kew's fenced community plantation has not yet got to a productive age
- Support in terms of supply of seedlings, watering tools, etc.
- Economic potential from production and sale of juice of *Balanites aegyptiaca* and *Tamarindus indica*
- Production can reach 100 liters/week but lack of market access prevent from selling the entire quantity
- Price on the market is 1000 F CFA/liter
- Estimated 10% contribution to HH income from useful species exploitation
- Set up a projects' coordination framework at the municipality level?

Focus groups discussions - Bankass

- Private nursery men supported by the project in terms of seed supply, planting tools, technical advice, payment of water fees, etc.
- Nursery men sell seedlings (forest and fruit trees) to development projects and markets (3000-5000/year), increasing by 20% the annual HH income
- Ex.: young seedlings from 100 to 250 CFA, taller ones up to 600 CFA, grafted ones 1000 CFA, bare-root baobab from 1000 to 5000 CFA

Focus groups discussions - Dimbal

- Support to the association of vegetable-producing women, supply of seeds (request for potato seeds), agricultural tools, fencing part of the parcel, etc.
- Several fruit and forest tree species in the parcel make for a functional agroforestry system
- Products from useful species are exploited only at the individual level (juice preparation would be an economic option)
- Revenue from sale of fruits and vegetables can account to up 10% of the HH income and is used for children school and health fees
- Ex.: Tomato (annual production 500 kg) 200 gr at 100 CFA, letuce 3 hoes at 100 CFA (60000 CFA annually), papaya the volume of a small pot at 250 CFA (100 fruits produced annually)

Conclusions

- Mali GGW sites really respond to the objective to halt the advancement of the desert
- Lack of coordination between development projects
- Difficult access to water
- Need for fencing barbed wire
- Poor, shallow sandy soils
- Low pluviometry
- Extreme heat
- Hot wind (harmatan)
- Lack of appropriate tools (harvest, conservation, processing, packaging)

Conclusions

- Distance of parcels
- Distance of sites from FRP in Sikasso
- Insecurity
- Pests (opportunity to further spread Neem-based techniques)
- Lack of grafting techniques
- Distance of markets and lack of transport
- Lack of business administration capacity, book keeping and proper units of measure
- Timeframe of environmental projects vs agricultural ones
- Appreciation of ecosystem services and biodiversity being restored by Kew project, in particular soil fertilization

Thank you for your attention

Annexe 18

Atelier d'évaluation et de planification du Projet Transfrontalier «Grand Muraille Verte» Burkina Faso-Mali-Niger

Agadir, Maroc Du 27 au 30 mars 2017

Retombées socio-économiques des parcelles de mise en défens (MED) de tiipaalga au Burkina Faso

Par Tounougrenoma Serge ZOUBGA

Chargé de Programme à tiipaalga, zone nord, Djibo.

E-mail: serge.zoubga@tiipaalga.org

PLAN DE PRESENTATION

1. Objectifs de tiipaalga
2. Programmes de tiipaalga
3. Création et gestion durable des parcelles MED
4. Résultats obtenus
5. Retombées socio-économiques des parcelles MED pour les ménages partenaires et les communautés
6. Acquis, difficultés et perspectives

1. OBJECTIFS DE TIIPAALGA

- Promouvoir des techniques de récupération, de gestion et d'exploitation durables des ressources naturelles,
- Valoriser les arbres à travers la cueillette, la transformation et la commercialisation des produits forestiers non ligneux au Burkina Faso,
- Diffuser des technologies plus économes, adaptées et sécurisées en bois de cuisson,
- Atténuer les effets des changements climatiques à travers l'absorption par le couvert végétal en croissance et la diminution des émissions des gaz à effet de serre.

2. PROGRAMMES DE TIIPAALGA

- Programme de Récupération des Terres Dégradées;
- Programme de diffusion des foyers trois pierres améliorés (F3PA)
- Programme de valorisation des Produits Forestiers Non Ligneux (PFNL);

3. CRÉATION ET GESTION DURABLE DES MED /1

- Programme RTD
- Problématiques majeures liées à l'environnement ;
- sensibilisation des communautés, responsabilisation des ménages dans toutes les actions;
- Mise en défens (MED) clôturées à l'aide de grillage (protection contre le bétail) tissé sur place en entraide communautaire;
- Elles sont réalisées avec des partenaires de tiipaalga identifiés au sein des communautés rurales, aménagées, exploitées et gérées par les familles;

3. CRÉATION ET GESTION DURABLE DES MED /2

❑ Conditions du partenariat et de durabilité des investissements :

- Disposer d'un terrain dont la question **foncière est réglée**,
- Assurer la **main d'œuvre pour les travaux d'implantation de la clôture**,
- Garantir une protection totale de la végétation vivante contre toutes formes de dégradation en **appliquant la RNA**;
- Assurer le gardiennage et l'entretien de la clôture grillagée,
- Définir les objectifs du site et être disponible à aménager la parcelle avec un appui technique de tiipaalga **(formations techniques, suivi appui conseil**),
- Respecter le **cahier de charges** dans son intégralité pendant toute la durée du contrat de partenariat

3. CRÉATION ET GESTION DURABLE DES MED/ 3

❑ Formalisation du partenariat :

- Adhérer aux objectifs de tiipaalga,
- Organiser la délimitation d'un terrain d'au moins 3 ha terre dégradée et encroutée ou relique forestière), en présence des ST et des responsables villageois (Conseillers, CVD, responsables coutumiers, voisins, personnes ressources, etc..);
- Produire un **document de sécurisation socio-foncière du terrain** à aménager visé par la mairie (PV de palabre/ Attestation de possession foncière, etc.),
- Signer un contrat de partenariat avec tiipaalga pour une durée de 07 ans, renouvelable,
- Accepter la conservation in situ et le cahier de charges qui l'accompagne.

3. CRÉATION ET GESTION DURABLE DES MED /4

❑ Travaux d'aménagement du site et de gestion durable:

- Inventaires initiaux biomasse et biodiversité (SR) repris tous les 5 ans;
- Géolocalisation du site : coordonnées PGS des 4 angles et la porte
- Mise en œuvre des activités d'aménagement et de gestion durable impliquant tous les membres du ménage : épouses et enfants;
- techniques d'économie d'eau pour restaurer les parties dégradées et encroûtées (zaï, cordons pierreux, ½ lunes);

- Régénération naturelle assistée (RNA) des arbres et utilisation des sous produits par les ménages;
- Production et plantations de plants d'espèces locales utilitaires : baobab, jujubier etc ;
- Réalisation de haie vives défensives

❑ *Deux modèles d'aménagement/gestion*

- Agriculture durable (agroforesterie) appliquée sur une bande périmétrale de 12 m soit 25% de la parcelle ; bande cultivable = valoriser à court terme le site en attendant l'apparition des produits forestiers à long terme ;
- Mise en défens du noyau correspondant à 75 % de la forêt = pratique/exploitation sylvo-pastorale

Réalisation de haies vives défensives pour renforcer l'efficacité des clôtures des parcelles MED

Impacts de la MED sur la restauration du couvert végétal : cas de régénération naturelle de *Piliostigma reticulatum*

Site MED de M. TAO Abdoulaye en mai 2013 (Aladjou)

Même site en juin 2015

Impacts des MED sur la restauration du couvert végétal (suite)

Impacts des MED sur la restauration du couvert végétal herbacé

Régénération herbacée abondante sous l'effet de la protection et des techniques d'économie d'eau comme les demi-lunes. L'ensemencement est naturel et des espèces à fort potentiel fourrager comme le *Shoenefeldia g., Pennisetum p., Andropogon g.*, poussent naturellement et sont valorisées à travers la fauche et conservation pour l'alimentation du bétail.

3. CRÉATION ET GESTION DURABLE DES MED /5

❑ valorisation des produits forestiers non ligneux

- Valorisation des fruits, graines, feuilles récoltés dans les MED, consommés, transformés ou vendus,
- **Fauche et conservation du fourrage naturel pour la vente ou l'autoconsommation** :
- Transformation des graines de Balanites (huile et savon) par les femmes,
- Apiculture dans les forêts régénérées

4. RÉSULTATS OBTENUS

❑ Sur le milieu physique (province du Soum)

- 177 bosquets/forêts familiaux sont protégés et sécurisés dans 55 villages, 7 communes entre 2003 et 2016,
- 494 ha de terres dégradées récupérés par des mises en défens avec clôture et environ 353 000 arbres protégés durablement,
- 52 espèces locales sauvegardées dans leur milieu naturel,
- *Ces sites protégés sont des espaces propices pour des plantations sécurisées dans le cadre de la GMV avec près de 245 045 plants mis en terre entre 2014 et 2016; taux de réussite de plus de 85 %.* ⟹ *Appui du PPTF/GGW est intervenu en 2014 et 2015 avec 41000 plants.*

❑ Sur le changement de comportements

- Application des pratiques agricoles adaptées aux changements climatiques à l'intérieur et à l'extérieur des sites protégés,
- Renforcement des capacités des partenaires sur diverses thématiques : méthodes culturales, compostage, confection de zaï, demi lune et de cordons pierreux, RNA, rôle et importance de l'arbre dans les exploitations agricoles, technique de plantation;
- Respect des partenaires vis-à-vis de l'environnement.

5. RETOMBEES SOCIO-ECONOMIQUES DES PARCELLES MED

- Première évaluation en 2012;
- Chaque année les partenaires font le point des produits tirés des MED, autoconsommés ou vendus;
- En 2016, une enquête systématique sur les sources de revenus a été réalisée après de 161 bénéficiaires de parcelles MED
- Le traitement des données a permis de déterminer neuf (9) sources de revenus qui sont : le bois, les fruits, les feuilles, le fourrage, le miel, l'andropogon, les produits médicinaux et les produits issus de l'exploitation de la bande cultivable.

5. RETOMBEES SOCIO-ECONOMIQUES DES PARCELLES MED

Sources de revenus	Montants (FCFA)	Nb. de personnes	Moyenne/ personne (FCFA)
1. Fourrage	26 961 000	155	173 940
2. Bois	2 835 000	84	33 750
3. Semences	2 500 000	20	125 000
4. Fruits	85 500	10	8 550
5. Feuilles	970 000	15	65 000
6. Miel	535 000	13	41 153
7. Plantes médicinales	8 500	3	2 800
8. Andropogon (paille pour confection seccos)	3 917 250	102	38 400
9. Produits agricoles issus de la bande culturale	9 570 250	105	91 145

Autres bénéfices importants pour les bénéficiaires

- Objet de convoitise et de prestige social
- Utilisation des produits (fourrage notamment) par toute la communauté
- Exploitation des espèces végétal pour la pharmacopée à la demande;
- Réapparition d'animaux sauvages sur les sites: francolins, lièvres etc.

❑ Utilisation des revenus

Activité	Nombre	Taux
Epargne	6	4 %
Dépenses de toutes sortes	148	92 %
Réinvestissement dans la MED	7	4 %
Total	161	

4. ACQUIS, DIFFICULTES ET PERSPECTIVES

❑ Acquis

- La MED protégée de tiipaalga est reconnue comme bonne pratique de GDT à fort potentiel économique et social dans le contexte des CC : partenariat avec la CN/GMV (appui depuis 2014) et de la FAO dans le cadre du projet ACD (2016) qui a assuré cette année le financement des MED,
- Exportation de la technologie MED à Dori cette année ou 25 ha mis en place dans le cadre du projet ACD.
- Technologie appréciée des communautés encadrées,

❑ **Difficultés**

- Quasi absence de structures d'accompagnement des entreprises forestières,
- Intégration insuffisante des systèmes agro – sylvo – pastorales,
- Problèmes fonciers
- Faible niveau de développement de l'esprit entrepreneurial pour faire des MED de véritables unités économiques pour les ménages ;
- Impossibilité de satisfaire la demande avec plus de 200 demandes reçues chaque année;

- *Absence de partenariat formel avec le projet TF*

- **Perspectives** :

- Mise à l'échelle les MED pour des impacts socio-économiques et écologiques plus importants et à la hauteur des défis à relever,
- Recherche de moyens d'accompagnement des communautés plus consistants,
- Privilégier l'information, la communication et l'éducation pour booster le changement durable des comportements en milieu rural,
- Poursuivre le RC des partenaires ruraux en matière de GDT,
- Poursuivre la collaboration avec l'IGMVSS et s'il y lieu de poursuivre, travailler dans un cadre formalisé avec le projet.

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