

2.1.3. The classified forest of Eto-Lili in Togo, a national heritage saved thanks to participatory local governance

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The Forest Development and Exploitation Office (Office de Développement et d'Exploitation des Forêts ODEF) has carried out actions for the good management of the national forest heritage. However, these actions were too prescriptive and did not sufficiently take into account the interests and concerns of the populations living along or residing in these forests. In addition, the economic evolution and the demographic growth that the country has experienced have led a large number of local communities to sell part of their land. This situation and the socio-political crisis of 1990 led to aggressive behavior by the populations against the plantations: forest fires, illicit felling and land claims. In particular, these populations have occupied the lands of the classified forests of Eto-Lili anarchically, resulting in massive fraudulent felling, arson and illegal subdivision of land, thus compromising the survival of the ecological heritage of these protected areas, which is a guarantee of sustainable development. These actions and the destruction of gallery forests have increased the threat of drying up some waterways such as the Lili River, which represents the natural and physical limit of the Lili forest.

The experience developed by Inades-Formation Togo is based on the creation of a cooperation framework between the forestry administration, the various

stakeholders and the populations living around these protected areas for a consensual management of these forest areas. It is drawn from the Implementation Project of the cooperation framework between ODEF and the stakeholders for an effective participatory and sustainable management of the Eto-Lili complex.

This project was implemented in collaboration with the Forests Development and Exploitation Office (ODEF) and the financial support of the International Tropical Timber Organization (ITTO).

ODEF provided the methodological framework and guided the project activities. Inades-Formation Togo, in collaboration with the forestry administration, provided technical support for the entire process of setting up governance around the forestry complex. It has also contributed to improving the dialogue between the different actors by putting a particular emphasis on their awareness, the development of adapted didactic and pedagogical material such as survey sheets, simplified training materials, image boxes, etc.

The different actors of this experience are the traditional chiefs, particularly in the five cantons covered by the experience, the village chiefs and the

Village Development Committees (VDCs), who have carried and defended the concerns of their communities.

The main result of this experience was the establishment of a joint management committee for the forest complex, including representatives of ODEF, the Prefectural Council, the chiefs of the various cantons, representatives of the unions and the VDCs, and Fulani herders. In addition, the enjoyment of community rights was achieved through the establishment of mechanisms for land allocation and use with the definition of principles and rules shared by all. Formal contracts have been established between ODEF and the communities to define the rights and duties of both parties.

The implementation of this experience has reduced if not ended the conflicts between the communities and the forestry administration. These communities participate in the monitoring of the management of the resources of the

complex and this contributes to a better conservation of the resources of the complex. The rational cutting of wood is done in consultation with the forestry administration and the sale also benefits the populations.

The increase in the dividends from these sales makes it possible to finance social infrastructures programmed in the local development plans. Thus, the populations have been able to build more schools and health centers in their localities, which improves children's access to education; the sick are taken care of more easily and more quickly. The construction of local markets facilitates and increases people's access to additional financial resources.

Other positive changes include an improvement in the microclimate in the area, greater availability of wood energy, and the strengthening of the technical capacities of the population in forest resource management.

2.1.4. Building a collective and territorial dynamics for a responsible governance of the forests of Medina Yoro Foulah in Senegal

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Members of the governance committee of the Médina Yoro Foula forest

The Citizens and Local Organizations Mobilized for a Better Use of Natural Resources or *Projet COMMUN* is the entity from which is drawn the experience of building a collective and territorial dynamics for a responsible governance of the forests of Medina Yoro Foulah in the region of Kolda in Casamance, along the border with Gambi. It was carried out in the department of Médina Yoro Foulah, one of the 45 departments of Senegal. This department is an area where the forest is severely attacked with the traffic of wood with the Chinese; this wood passes through the port of Banjul in Gambia. Other factors responsible for the degradation of this forest are bush fires and excessive agricultural clearing, particularly in search of fertile land. This deforestation leads to irregular and insufficient rainfall, recurrent winds that cause much damage to seedlings, destroy huts and cause the death or disappearance of livestock in the forests. The women point out that deforestation forces them to travel

longer distances to find firewood, making their work increasingly difficult and more dependent on equipment such as carts and axes.

The pressure on forest resources also generates conflicts between farmers and herders, forestry operators, water and forestry services and the population.



The experience consisted in creating a departmental forest governance platform that brings together mayors, the departmental council and certain categories of key actors. This networking is justified by the inter-municipal nature of some of the local forests, the diversity of actors involved in this area, but also by the shared competencies between the commune and the department on forest management. The experience was implemented by the National Council for Consultation and Cooperation of Rural People (CNCR) in collaboration with the NGO GRET.

The organization of communal forums in the eleven communes has made it possible to develop a fruitful partnership between community actors for good

governance of forest resources. These forums have allowed for the



awareness raising and mobilization of the various categories of actors, and for discussions on the actions to be taken and the synergies to be established with other stakeholders in the area for the preservation of forestry resources. At the end of these forums, the communes drew up roadmaps with local actors for improved forest governance. In addition, they all committed to blocking the road to timber trafficking in the area.

The commune was chosen as the entry point for all activities and the environmental commissions already in place were expanded to include all territorial actors involved in the protection of the Medina Yoro Foulah forest. The project team helped these expanded commissions to develop action plans to monitor the activities of local communities in forest governance, to better inform themselves on the use of resources from the forest and thus build citizen control of public action. These actions have been consolidated by the establishment of a departmental platform on forest governance around

the departmental council. This platform promotes exchanges and mutual aid between the communes for the protection and restoration of forests, awareness-raising, as well as monitoring and environmental education of the various actors.

In terms of results, the project has developed a toolkit on forest governance to help local actors, women, youth, farmers, herders, loggers, etc. to better understand the provisions of the new forestry code, particularly with regard to people's rights to use the forests, penalties for violations, as well as reforestation and bushfire control techniques.

In addition, the project has made it possible to set up a fund to support collective economic and forest protection/restoration initiatives in order to better support and make more sustainable actions such as monitoring reforested areas, maintaining firebreaks and fighting bush fires. A total amount of eighty million CFA francs (80,000,000 FCFA) has been mobilized for this purpose.

Thanks to the project, young people and women have become involved in forest preservation activities and are fully exercising their rights to use the forests. The popular enthusiasm led to the choice of this department to host the Regional Tree Day which took place on August 4, 2019.

2.1.5. A provincial observatory for citizen participation in the governance of natural resources to combat climate change in Burundi

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Governance of natural resources

The province of Kirundo in the north of Burundi is characterized by savannah vegetation with a hydrographic network composed mainly of eight lakes that constitute the main source of water and fish for the populations of these areas. Demographic pressure has been accompanied by heavy deforestation caused by the search for firewood, which has led over the past two decades to periods of prolonged drought followed by periods of heavy rainfall that cause flooding and other damage. Overpopulation has also led to overexploitation of the land and a decrease in soil fertility and agricultural production.

Because of repeated periods of drought, the populations living along the northern lakes in general and those of Lake Nagitamo in Bugabira commune in particular have set up their fields on the shores of this lake where they can find

moist cultivable soil. The overexploitation of the banks of this lake has caused a sharp decrease in its water level, a disruption of the spawning area, a sharp reduction in fish production and the deforestation of the banks. Birds that no longer had perches left the area and the populations moved to other provinces and even to bordering countries such as Tanzania.

In order to cope with this situation, the people of Kirundo province were led to establish forests on their individual plots of land and on state-owned land located on the hills. However, the afforestation installed on state land was poorly maintained or exploited anarchically because it was considered as not belonging to anyone.

Inades-Formation Burundi therefore supported the communities gathered within the Community-based Organizations (CBOs) to help set up a system of co-management of state-owned woodlands between the CBOs and the local administration. The two parties signed a management and exploitation agreement that clearly defines the responsibility of each party. According to this agreement, the resources generated by the exploitation and sale of wood were to be divided between the two parties, 60% for the grassroots associations and 40% for the administration. However,

this agreement was being increasingly disregarded by some government officials, and the leaders of the CBOs wanted to find a solution to this new problem. They encouraged the CBOs of all seven communes of Kirundo province to come together to set up a provincial observatory whose main role is to enable these populations to take an active part in the governance of natural resources throughout the province. These leaders have requested the support of Inades-Formation Burundi to help them set up this observatory, watch committees for the protection of the lakes, including that of Nagitamo, and also to support them in the management of these structures.

The observatory has 3,016 members, including 1,428 women and 1,237 young people, who monitor and denounce the abuses of certain administrative officials in the exploitation of woodlands. They also denounce fishermen who use equipment that does not respect the standards. These are small-mesh nets that have contributed to the impoverishment of Lake Nagitamo by allowing small fry to be caught, thus preventing them from growing and reproducing. Inades-Formation Burundi also supported the development of the convention between the CBO members of the observatory and the administrative authorities, as well as the elaboration of the operating rules of the various committees, including those that ensure the protection of Lake Nagitamo.

In collaboration with the technical services of the Ministry in charge of the Environment, Agriculture and Livestock, Inades-Formation Burundi monitors the

agreement through advisory support, as well as the organization and facilitation of exchange/debate workshops on the role of each stakeholder in the protection of natural resources. Thus, the stakeholders were questioned and sensitized on the respect of the agreed norms, including the prohibition of exploitation in a 50-meter strip around the lakes, in accordance with the Burundian water code, the prohibition of the use of prohibited nets in fishing to allow small fish to grow and reproduce, as well as the exploitation of the state-owned woodlands according to the modalities agreed upon mutually.

Among the results obtained is the improvement of fish production in Lake Nagitamo thanks to the planting of *Aeschynomene elaphroxylon*, a shrub whose branches attract birds whose waste contributes to fish food. In addition, representatives of the provincial observatory are now taking the courageous step of approaching communal and provincial administrative authorities and technical service officials to denounce abuses committed in the exploitation of community natural resources, even if the perpetrators are members of the administration. The administrators also accept that the community can give its opinion on the way community natural resources are managed.

In addition to fish, the respect of the developments around Lake Nagitamo and the established rules of governance has allowed an increase in food production on the hills overlooking the lake. The involvement of women and youth in the

elaboration of the convention and the operating rules of the Nagitamo Lake Protection Committee has reduced

the workload of women, who can now more easily find firewood and water for cooking.



2.1.6. Promotion of Community Initiatives to Protect Common Interest Resources in Kenya

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Community Initiatives

The project has been implemented in arid and semi-arid dry lands of Kenya including the Kitui, Machakos and Makueni Counties. The locations are most vulnerable to climate change phenomenon due to the fragile nature of the environment. The frequency and severity of both droughts and flood is already high and is expected to increase in coming years. The major impact of droughts on smallholder activities is increased food insecurity (food shortage and poverty) and loss of livelihoods.

The project aimed at building the capacities of the farmers to utilize natural resources sustainably since their livelihoods are strongly anchored on them. The project led to sustainable land and water management practices, which includes increasing access to clean and safe water to households, institutions and communities. On land rehabilitation

and management practices, the project enhanced reforestation, infiltration and retention ditches improving on land productivity. Environmental friendly wood fuel energy utilization technologies involved constant promotion of energy saving practices to reduce wood harvesting by the communities.

The implementation of activities consisted in promoting of community based organizations such as Water Resource User Associations (WRUAs)



Reforestation, infiltration and retention ditches improved land productivity

and Environmental Clubs from three primary schools (Kibauni, Kitile and Kiundani Primary Schools). The focus for the County and Sub county advocacy committees is for those that have been established in Machakos County, Mbiuni and Kathama Location

Inades-Formation Kenya promoted a common platform to protect and

rehabilitate local resources, enable communities to not only speak with one voice in relation to their local resources but also gives them a sense of ownership and responsibility. This has been possible through enhancing community involvement and participation in policy advocacy and decision making processes in aspects such as climate change, environmental management and agriculture. The County/ sub county advocacy committees, water Resource Users Associations (WRUAs) and School Environmental clubs form part of these platforms that Inades Formation Kenya has worked with. Sensitization and awareness creation through advocacy committees enabled the communities to become more conscious of their local resources and hence the need for sustainable management.

Community sensitization improved free adoption of agroforestry practices and helped increase tree cover and reclaim degraded lands improving on arable land availability. This has helped restore some of the water points that had dried. The experience improved community participation in environmental conservation and protection activities through establishment of tree nurseries and planting of trees. A total of 66350 trees were planted in the three counties and 23000 seedlings sold. The trees were planted in farms, public land and along riparian.

Soil, land and water management (SLM) practices have improved considerably. Adoption of practices such as run-off water harvesting, terracing and construction of gabions and water

pans have improved access to water for domestic, livestock and small scale irrigation farming. This together with improved farming techniques have helped the dilapidated eco-system in the natural environment.

People mobilization in matter of improving common interest



Alternative sources of energy as well as energy saving practices especially towards wood fuel energy exploitation has helped reduce dependence on wood thus decrease in rate of cutting down of trees.

Adoption and use of cooking stoves translated into savings of 50% to 60%

wood fuel and consequently reduction in deforestation.

The project life time reached a total of 1960 households (60% are women) and 2500 students, both secondary and primary school, all from the three target counties Machakos, Kitui and Makueni. The households were reached through

organized groups while the students were reached through environmental clubs.

The approach involved linkage with institutions, government and non-government organizations. The approach combined community awareness and practices promotion.

2.1.7. Building resilience to climate change variability through adaptive environmental management in Kitui North

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Training on Environmental Management

The Kitui climate is hot and dry and falls under arid and semi-arid with most of the county classified as arid. Climate change negative results has been observed over the years, this includes unpredictable rainfall patterns, diminishing household incomes, soil erosion and degradation among others. The county receives bimodal rainfall pattern where the short rains (October –December) being more reliable.

Kitui County lacks sustainable coping mechanisms for poverty reduction. There are no major cash crops while the livelihood depends on farm produce with over 60% crop failure. The survey result analysis indicated that 57% of the respondent rely on the farm produce, 21% rely on other sources, 16% on small business activities while the remaining depend on well wishers contributions. There has been poor governance in the

utilization and benefit sharing of the natural resources including, charcoal burning for livelihoods support, demands from curving on the traditional hard woods and cutting of trees for timber and construction purposes. Given this context, Kitui Development Centre implemented a projet titled : Building resilience to climate change variability through adaptive environmental management in Kitui North.

The implementation of the experience required various actors and actions :

KDC collaborated with government line ministry of Agriculture and ministry of Environment. Those ministries gave technical advice on good agricultural practices and environmental guidance. Other collaborators were WARMA (Water Resource Management Authority) which gave technical guidance on best ways for water conservation and helped the formation of Water Ressources Users Association (WRUAs). KEFRI (Kenya forest research institute) provided the technical information on drought resistant trees which beneficiaries could adapt. Inades-Formation Kenya and CSUDP (Creating an inclusive, resilient dignified society platform) were key partners to the project. The Kitui County government provided conducive environment for project implementation. Provincial administration (chief and

assistant chiefs) were key to this project for mobilizing the community.

In collaboration with the ministry of Education, KDC identified and selected one primary school and one secondary school for establishment of school based environmental clubs.

KDC with technical support from Kenya forest service (KFS) mobilized and organized 4 groups, forming 2 community interest groups (CIGs), established 8 indigenous trees nurseries with at least 10,000 indigenous tree seedlings. KFS assisted the CIG to access market for the tree seedlings that were ready for planting. KDC in collaboration with the ministry of Energy facilitated community training and practical demonstrations on use of energy saving jikos and solar lighting systems.

KDC was taking lead in capacity building the community members in different aspects.

The implementation of the project improved several dynamics:

- (i) establishing indigenous tree nurseries with indigenous tree seedlings,
- (ii) practical demonstrations on use of energy saving jikos and solar lighting systems,
- (iii) the soil and water conservation techniques,
- (iv) established vegetable gardens using simple irrigation techniques plus measuring of terraces in their farms,
- (viii) African leafy vegetables farming and kitchen gardening,
- (x) application of organic manure and promotion of indigenous crops adaptable in arid and semi-arid areas (ASAL),



(ix) harvesting and utilizing run off rain water and soil conservation and protection,

(xii) construction of sand dams or sub surface dams and recycling of solid wastes to income generating activities like briquetting. Young children were inducted to issues of climate change adaptation through the school environmental clubs. Direct beneficiaries were 440 households which include women and youth.

The women have been able to have an income through the sale of seedlings and the surplus food yield they had from their farms. They have also been recognised as important part of the community since through the community interest groups have built the voice and also given them strength due to their numbers. The knowledge has enabled farmers to build their resilience against climate change shocks which has led to improved incomes and food security. The groups have had a platform where they are able to share their experiences and challenges.

Promotion of indigenous crops was done through trainings on seed collection, storage and pre-treatment. There was facilitation of the acquisition of suitable indigenous varieties and establishment of grains and seed banks.

Finally, the local seed which is climate resilient has led to improve a yield that has made the community food secure,

great outcomes among them cubing on food insecurity and increasing household incomes.

To consolidate those results and make them more sustainable, KDC wants to put more emphasis on the approaches which contributed to the project's success:

- (i) the sensitization of local chiefs and collaboration with the line ministries and specialized institutes like ,
- (ii) facilitation of locational awareness campaigns on reforestation and afforestation together with the community,
- (iii) the organization and support of the community for tree planting campaigns, stakeholders meetings where all relevant ministries and organizations,
- (iv) use of social media and mainstream media can help to mobilize and share the "know-how" produced by the experience for further actions.

2.1.8. A zoning system using participatory mapping in the Savannah region of Togo

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Mapping session

The participatory zoning experience was developed in the cantons of Tami and Nioukpourma in the Tône prefecture and in those of Nano and Nandoga in the Tandjouaré prefecture. Its objective was to help the populations of these areas to take into account the past and the present in order to plan a sustainable future for their territory. The prefectures of Tône and Tandjouaré are located in the région des Savanes, one of the five administrative regions of Togo. In this dry savannah area with a single rainy season, the effects of climatic hazards and human activities have led to a soil fertility crisis, which affects agricultural yields and the incomes of farming families. Overall, the northwestern part of the région des Savanes is one of the areas with the most severely degraded soils in Togo.

Participatory zoning was therefore proposed as a tool to provide solutions

to these indicators of environmental degradation, vulnerability to the impacts of climate change, food insecurity and poverty that affect nearly 90% of the population of the Savannah region.

Inades Formation Togo developed this experience in collaboration with the NGOs Agronomes et Vétérinaires sans Frontière (AVSF) and Recherche-Appui et Formation aux Initiatives d'Auto-développement (RAFIA), the Union régionale des Organisations de Producteurs de Céréales des Savanes (UROPC-S) with its grassroots organizations and the FOs.

Participatory mapping zoning is a tool that makes it possible to establish consensus between different stakeholders for the management of a territory. It makes it possible to represent the climatic, morpho-pedological, social and economic characteristics of the agrarian systems of a land area or territory. By representing areas where the renewal of natural resources seems compromised, it provides elements for discussion that lead actors to plan priorities for a possible land development policy.

The participatory mapping zoning approach has two closely related objectives: to represent a territory by identifying homogeneous areas and constraints (areas of high erosion, areas of conflict for grazing, deforested

areas, etc.) and to initiate a dialogue between stakeholders on the problems encountered, the causes perceived locally, the solutions already implemented by local stakeholders and the actions they wish to take on this land.

In the implementation of this experience, several collective actions were undertaken:

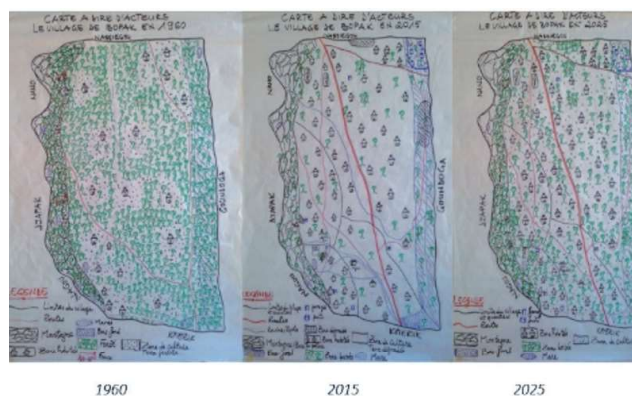
- Support for the development of plots of land using water and soil conservation works (SWC) to fight against water erosion and recover degraded land;
- Tree planting in the fields, through reforestation and the promotion of agro-forestry with living hedges and alley crops;
- Support for collaborative management of community pastures in order to address the issues of overconsumption of resources due to grazing and damage caused by roaming animals;
- The development and support of a land contracting approach to reduce land disputes and contribute to the adoption of agro-ecological practices.

47.6% of the beneficiaries of these

actions were women. The groups thus reached were able to take ownership of the strategies and activities of the experience to relay and replicate them according to their needs.

In terms of results, this agro-ecological zoning experience in the Savannah region made it possible to identify agro-ecological zones with homogeneous development potential and constraints. These ecosystem units were used in a similar manner in order to carry out the biophysical and agronomic characterization of each one and also to define their location in relation to each other.

It also enabled a dialogue to be initiated between the various stakeholders in the area around the issues identified (lack of soil fertility, land tenure problems, insufficient food production, extreme poverty of farming families) and led to the reorganization of 11 cantonal FOs, 140 village FOs and 2013 rural households. Thus, the experience has made it possible, for example, to maintain soil fertility by combating erosion at the watershed level, to resolve the issue of grazing, to preserve or regenerate wooded areas, etc.



Zoning maps of BOPAK, Nano Township, in 1960, 2015 and 2025

2.2. Governance of Local Seed Systems for Climate Resilience

2.2.1. The (Union des Groupements Naam de Koumbri) in Burkina Faso is committed to the development of traditional seeds

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In Burkina Faso, and more particularly in the northern region, populations are increasingly confronted with the effects of climate change. These effects are most clearly seen through the increase in the frequency of heavy and light rains that cause floods or droughts and violent winds. As a result of these climatic disturbances, some “improved” seed varieties used by local producers have become unsuitable. Indeed, after a period of use of these seeds, producers in the northern province of Yatenga noted that the quantities of sorghum and millet harvested were gradually decreasing. In addition, these crops did not keep well. They were deteriorating faster than their previous crops.

In response to this situation, in 2014, in collaboration with Inades-Formation Burkina Faso, the Union of Naam Groups of Koumbri (UGNK) embarked on a process of promoting traditional seeds. The UGNK was created in November 1977 in the province of Yatenga. It now has 447 groups of agricultural producers spread across 16 villages in the province.

This Union has, in a dynamics of farmer action research, decided to select, multiply and distribute the best traditional seeds more adapted to allow producers to face not only climate change, but also the poor performance of the so-called

“improved” seeds popularized by the State’s technical services.

The process of valorization of traditional seeds developed by the UGNK includes several steps that begin with the awareness raising of the populations on the problems related to the so-called “improved” seeds. Local traditional seed varieties are then identified and tested. The capacities of the experiencing producers are then strengthened and experiential fields are set up. After the assessment of the performance of the tested traditional varieties, they are produced on a larger scale and distributed to producers.

In addition to the technical aspects, in terms of local governance, the Union has set up a local commission to conduct the process of selecting seeds for distribution. The experience also focused on the establishment and community management of seed banks.

In 2016, this process involved 107 volunteer farmer-experienceers responsible for identifying and testing traditional varieties in the 16 villages of the commune of Koumbri.

The main result of this experience of valorization of traditional seeds by UGNK is the acquired seed and food

sovereignty. The populations have an autonomous seed system at the farmer level. The experience makes available seeds of traditional varieties that are efficient and adapted to climate change.

Thanks to this experience, there is a growing awareness of the issues surrounding seeds. The populations perceive the importance of traditional seeds and agro-ecology in the framework of food sovereignty.

This experience has made it possible to save traditional varieties threatened with extinction. Out of 45 varieties tested at the outset, 22 traditional varieties of sorghum and millet have now been selected after several cycles of experiential production. UGNK has a repertoire of 22 traditional seed varieties whose characteristics are described on cards. These seeds are multiplied and

distributed by seed producers trained for this purpose. A traditional seed conservation hut has been built. Taste tests are organized to ensure consumer acceptance of traditional varieties. Several farmers' organizations and NGOs have come to exchange with UGNK on its experiences in promoting farmers' seeds. Organizations such as Inades-Formation Burkina drew inspiration from UGNK's experience to promote farmers' seeds among the beneficiaries of its projects.

Today, more than 270 households in Koumbri use these traditional seeds. According to Warmé Sidiki Paul, President of the UGNK, "with the state certified seeds, if I harvest, I cannot reach the next harvest. Today, thanks to our traditional seeds, I earn enough food for my family. In addition, my production is better preserved".

2.2.2. Improving native seed saving for climate change resilience: Experimentation and awareness-raising on the importance of local seeds

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This experience in drought-tolerant indigenous seed conservation was conducted for three years by the Itumbule Soil & Water Self-Help Group in Ngaamba, Makueni County. This 14-member group, supported by Inades Formation Kenya, adopted indigenous farming and seed saving methods that are more resilient to the effects of climate change. In this region and elsewhere, traditional drought-resistant crops had been largely abandoned.

To assist the Ngaamb farming community, Inades-Formation Kenya first identified farmers as resource persons for indigenous seed selection and conservation, and then mobilized and trained farmers on indigenous seed conservation with the help of the selected resource persons. Farmers were advised on how to select, reproduce and save seeds. The seeds produced are then exchanged among the farmers. Other community members were sensitized on the importance of using these indigenous seeds to keep and maintain local biodiversity.

The use of indigenous knowledge has enabled the development of breeding and conservation methods and facilitated the ownership of the technology and traceability of the seeds produced.

Indigenous seed selection and

preservation has played a key role in innovation and traditional knowledge management. Farmers have been able to identify and mark the crop selected for seed based on desired qualities and traits. Mature seeds of maize, sisal or some grasses, are kept in the form of cobs. Some seeds, such as maize and sorghum, are first smoked before being put in gourds covered with a maize cob and stored in well-ventilated traditional stores. In these stores, natural preservatives such as lantana camara or chili pepper are placed to fight against pests.

In terms of results, these native seeds can withstand changes in rainfall patterns and tolerate changes in environmental conditions. This ensures that group members have seeds every season because they can save and replant the same seeds that are still productive. Through seed saving, sharing and exchange, these populations safeguard their culture and community cohesion.

The collection of reliable information was possible through observations, data and interviews conducted by the group with which Inades Formation Kenya has been working for the past five to seven years. The women, who are the main holders of this knowledge and practice, are thus sure of the quality of the food they consume, given the traceability.

The availability of seeds allows farmers, especially women and youth, to access them in time and therefore to plant early, a fundamental factor for climate change adaptation and mitigation. The farmer seed exchange has been able to unite farmers as each farmer rotates his or her crops, making it necessary to access each other's seeds, season after season. There has been more networking for more agricultural information. This has encouraged more farmers to engage in native seed saving and to use more good land management practices.



However, to sustain these practices, Inades Formation Kenya needs to work with other stakeholders to influence national legislation to put the emphasis on supporting such seed sovereignty conservation initiatives.

2.3. Governance of Local Flood Early Warning Mechanisms

2.3.1. A community-based early warning system against floods

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Hydro observer in the Mono basin ; Source : DRE 2016

Almost every year for more than a decade, communities bordering the major rivers of the Mono River in southeastern Togo have experienced flooding, causing damage to communities. For example, the toll of the 2007 floods was very high, with 20 people killed, 58 injured and 34,000 displaced. 22,129 huts were destroyed in these localities, 101 bridges and culverts were broken or washed away, 46 schools and colleges were damaged or destroyed, 3 health clinics were rendered unaffordable, and more than 1,500 hectares of food crops were destroyed (SNRRC 2013).

To reduce the impact of these floods on human facilities and infrastructure, the Togolese Red Cross (TRC) has set up a community-based early warning system for these floods. This warning system (SAP Flooding) is based on the reading of the water level on the beacons made of

an iron bar or a concrete post of 3 to 4 meters high colored from bottom to top (green-yellow-red) and a panel that gives instructions on how to behave according to the water level.

The SAP Flooding is coordinated by the National Platform for Disaster Risk Reduction (PNRRC) at the central level and the prefectural platforms at the local level. It covers communities in the prefectures of Moyen Mono, Yoto, Lacs, Bas Mono and Vo, located downstream from the Nangbeto hydroelectric dam. Several actors participated in its implementation. A large number of these actors have benefited from several capacity building sessions on data collection, information dissemination, and flood preparedness to reduce flood risks. The community, including local authorities and structures, monitor the rising waters on the beacons and provide information on the existence of endogenous risk indicators. The parameters taken into account by the SAP Flooding are rainfall and river levels. These data are collected by CRT volunteers, hydrology observers, meteorology collectors and the Benin Electricity Community (BEC).

In the implementation of the SAP Flooding, the hydrometeorological data are collected at the community level and transmitted to the central level

for processing. The collected data are integrated into the hydrological model FUNES (functional estimation) acquired for this purpose. This model uses a self-adapting algorithm to forecast water levels and river flows.

The results of the processing are disseminated in the form of quarterly prevention and alert bulletins by the ANPC. In critical situations, a message is disseminated in the form of a communiqué to the communities concerned and an alert is subsequently issued by the Minister of Security and Civil Protection, who chairs the PNRRC. In emergency situations, local authorities provide information and coordinate preparedness and assessment activities at the local level. In these situations, hygiene kits are distributed for cholera

prevention, tarps for waterproof shelter construction, mosquito nets and other supplies needed at evacuation sites. Life jackets are also given to the prefects who make them available to the population at the boat sites to avoid drowning.

The SAP Flooding allows a better planning of water releases at the Nangbeto hydroelectric dam. The effective involvement of the communities in the SAP Flooding system has allowed a better knowledge of the phenomenon. Thus, floods considered in the past as a fate by the communities of the areas at risk, are now understood differently. The populations of the five prefectures concerned by the SAP Flooding in the Mono basin are better equipped to deal with flood situations.

2.3.2. A Local Risk and Disaster Reduction Committee to enhance traditional endogenous early warning mechanisms to cope with floods in Kratchi, Togo

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Since 2000, the Kratchi district in the town of Notsè, Haho prefecture, in the Plateaux region, has been facing increasingly severe flooding due to climate change. Kratchi is a semi-precarious district with a population estimated in 2010 at 1,302 inhabitants. It is crossed by several rivers, the main one, N'djé, causes a lot of damage in the community during floods. This situation has been aggravated by the behavior of the riparian populations who, under the pressure of population growth, anarchically occupied the immediate perimeter of the river or even settled in its bed. They practice agriculture on its banks, dump solid waste in the gutters preventing the flow of rainwater and causing silting of the watercourse.

These populations are generally surprised by the floods and their serious consequences: collapse of houses, loss of furniture, livestock, production and food reserves stored in the granaries, destruction of official documents such as birth or marriage certificates, nationality certificates, school books and even money.

Faced with the urgency of the situation, the community agreed to organize itself, with the support of civil society organizations, to set up its own early warning system based on traditional endogenous knowledge and



Damage caused by flooding

mechanisms. The experience of using traditional endogenous early warning mechanisms to cope with floods is mainly based on the establishment of a Local Committee for Risk and Disaster Reduction (CLRRC), the observation and interpretation of local indicators based on traditional knowledge, to prevent floods and heavy rains.

For this experience, APAD- International benefited from the support of key actors such as the Global Network of Civil Society Organisations for Disaster Reduction (GNDR), the Prefectural Directorates of Environment and Social Action, the Town Hall, the chiefdoms and the Comité de Développement de Quartiers (CDQ), the CLRRC (Comité Local de Réduction des Risques et Catastrophes), the elderly and the local Red Cross.

Elderly people, including women, were solicited to share their knowledge on the signs that are traditionally considered as announcing floods or heavy rains. Through stories telling the history of the locality, these elderly people were able to teach the population how to read the messages of nature announcing certain events such as floods.

These traditional local indicators, described in the table below, helped build the early warning system to prevent or minimize the negative effects of flooding

in Kratchi and surrounding communities.




Older people teaching nature's messages to younger generations

Indicators or signs of heavy rainfall	Indicators or signs of flooding
Clouds formed on the northeast side of the district called "AGOGOUNOU"	Coming together of clouds from the North-East and South-East
Cries of some red birds with red eyes and of some big black birds	
Croaking of toads	
The appearance of the rainbow	
Formation of red clouds in the morning on the eastern side (sign of heavy rains and strong winds)	
Formation of red clouds on the west side at sunset	

Subsequently, an information and communication system using traditional tools (gongs, specific cries) was set up to trigger the alert in case of probable flooding or heavy rainfall. Individual protection equipment and materials for construction, desilting and clearing gutters (wheelbarrows, shovels, pickaxes, gloves, boots, mufflers, daba, etc.) were made available to the populations.

This experience highlighted the capacity of the community of Kratchi to rely on its traditional knowledge to develop a resilience mechanism to local floods.

Since the implementation of the local warning system in 2015, there have been no reported deaths from flooding in the Kratchi neighborhood. The 1,302 residents of this neighborhood,



including six people with disabilities, have understood how to protect themselves from flood-related risks based on the early warning information put in place. In the rainy season, the people of Kratchi make sure to put all the objects they consider precious under cover. Documents are laminated, put in a box and placed high up in the rooms, and small livestock are moved to the enclosures of neighbors who are in a

safe place. At the appearance of the flood indicators, the elderly people in the areas at risk are moved by their families to the neighboring families living in safe places. This relocation is coordinated by members of the Local Disaster Risk Reduction Committee to host families who have previously agreed to offer hospitality to them during periods of flooding.

2.4. Education and Awareness-raising on Eco-citizenship

2.4.1. Cultural Biodiversity Week (CBW): A community-based experience to enhance biological and cultural diversity in Tsiko, Togo

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Visit of the agro ecological centers' booths during the CBW

In the Plateaux region of Togo lies the classified forest of Assimé, which covers an area of 900 ha between the prefectures of Kpélé and Danyi. Since the beginning of the year 2000, part of this forest and the vegetation covering the slopes of the Atakora have been regularly destroyed by fire, resulting in significant losses of property, irregular rainfall, higher temperatures, a decrease in soil fertility and agricultural production, and a reduction in the income of the population, especially women.

To address this situation, in collaboration with the Village Development Committee

(VDC) of Tsiko village, the Environmental Youth Volunteers (EYV) initiated the celebration of the Biological and Cultural Diversity Week (BCDW). This week is an annual intergenerational event organized by the Environmental Youth Volunteers (EYV) to celebrate cultural diversity, heritage and traditions while promoting practices that preserve and sustainably enhance community development.

This experience was launched in 2003 and is perceived as a tool for education and awareness raising on environmental issues. Each year, the week provides an opportunity for EYV to address, in collaboration with local authorities and other partners such as the African Biodiversity Network (ABN), AFSA (Alliance for Food Sovereignty in Africa), issues related to the environment and local, regional and international development.

Several activities are carried out during the event: awareness raising, visits of stands, training in entrepreneurship and environmental leadership, organization of the Forest University Day of Assimé, visit of the experience sites of the agro ecological center of the EYV, etc.

Since its launch, in addition to the local communities of Kpélé and Tsiko, this week has already attracted more than 1,500 national and international

participants from over 20 countries.

The activities carried out during the different editions of the CBW have made it possible to reforest 20 ha in the classified forest of Assimé and school and community areas of the prefecture of Kpélé. More than 15,000 plants of *Erythrophlorum*, *Terminalia*, *Khaya*, *Galsinia* and *Anacardium* were planted in these areas, thus improving the vegetation cover in this prefecture. The reforested areas are managed by communities, schools, and state forestry representatives according to their own areas.

This initiative has also led to an improvement in agricultural practices in the Kpélé area. The evidence is that the women's groups of Kpélé-Tutu, Hoémé and Danyi-Ndigbé have produced Bokashi organic fertilizer with the technical support of EYV for their agricultural activities, particularly market gardening, rice growing and ginger cultivation.

An average of 15 temporary jobs are created each year since the launch of the CBW in 2003, which corresponds



Practical training on how to make Bokashi organic fertilizer

to approximately 240 jobs mainly in catering, agro-ecology and the manufacture of improved stoves.

Youth and women in general have improved their knowledge of biological and cultural diversity and local knowledge. For example, young people are now more familiar with local traditions and dishes. The women of the women's groups are able to produce pesticides and organic fertilizers for their agricultural activities.

Through the CBW, the EYVs have carried out social activities in the village: construction of a community well, donation of tents and chairs to the VDC and the chiefdom, installation of garbage cans in public spaces for the cleanliness of the village and support for income-generating activities.

2.4.2. A citizen jury to support local development in Kolda

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In the Kolda region of southern Senegal, the visible effects of environmental degradation were the silting up of valleys, the degradation of lateritic roads, deforestation, etc. The populations in general, and women and youth in particular, were affected by the scarcity

security must be tackled by combining several strategies, including the defense of common natural assets in the territories and the establishment of bodies oriented towards good governance and the fight against climate change.



Silting of valleys, degradation of roads and abusive wood cutting

of fertile land that was increasingly distant from the villages, the scarcity of harvested products, and the pressure on forest resources, which made the search for wood even more difficult or increased the price of charcoal.

The experience of setting up citizen juries launched on January 16, 2016 to support local development in Kolda, Senegal, was initiated by Oxfam International (Oxford Committee for Famine Relief). This experience builds on the Project to strengthen the resilience of 1,000 households in Kolda through a multidimensional approach. Its multidimensional approach is based on the assumption that the problem of food

The citizen juries are a framework for consultation and advocacy composed of people designated by the community. Their mandate is to identify policy dialogue issues and to ensure their strategic positioning with mayors (locally elected officials) and sub-prefects (central government representatives at the local level). These juries were set up in Bagadadj, Coumbacara, GuiréYéro, Bocar and SaréBidji, four communes in the Kolda region. The experience took place in three stages: informing and raising the awareness of the population; selecting the members of the juries; and setting up and training them.

The citizen juries have each an action plan



Training of jury members in Bagadadji

for their commune; they contribute to the implementation of good agricultural practices and techniques of defense and restoration of the soil such as the realization of stone barriers along the valleys and ponds, the planting of living hedges, acacia mellifera, vetiver trees and fruit trees. Mulching and the use of compost are also part of the actions they carry out for the restoration of these soils.

These citizen juries also organize entertainment and awareness-raising sessions for the development and implementation of local conventions. They support the water infrastructure management committees in respecting these agreements, in particular for the collection of taxes and the respect of prohibitions concerning agricultural practices around the ponds. They help

to settle certain conflicts or act as spokespersons for the populations with the authorities.

Thanks to advisory support and intermediation between local elected officials, the authorities and the population, the citizen juries have enabled women's groups to obtain certificates of deliberation from the municipal council on their market gardening areas. As Khadiatou SOW, President of the SaréFara village group in the Commune of Guiréyéro Bocar, says, «Previously, we did not dare ask the mayor for land for farming. Thanks to the awareness-raising activities carried out by the members of the citizen jury, we now know the procedures for obtaining plots for agricultural use. Today, our group has a 0.5 hectare plot of land that the mayor's office has granted us following a deliberation by the municipal council”.

Mothers now find it easier to declare the birth of their children at the town hall; the number of beneficiaries of national social protection services such as family grants and equal opportunity cards has increased. Universal health coverage has increased significantly.



2.4.3. An information and awareness-raising system for Ivorian pupils and students on climate change and education for sustainable development

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University Days for Sustainable Development (UDSD)

The United Nations Framework Convention on Climate Change (UNFCCC) emphasizes that man is one of the main responsible for the negative effects of climate change; he can effectively fight against these effects, against global warming in particular, by adopting lifestyles that promote sustainable development. But this issue did not seem to arouse much interest in academic circles and universities in Côte d'Ivoire, particularly at the Félix Houphouët Boigny University. The actions of awareness raising for an ecological conscience and the adoption of lifestyles taking into account the values of sustainable development were hardly visible in this temple of knowledge that attends nearly 36% of the students of Côte d'Ivoire (Source: MEMPD, PND 2016-2020).

Thus, in 2013, several students from the Félix Houphouët Boigny University of Abidjan, decided to create the Club de Développement Durable de Côte d'Ivoire

(CDD-CI) which initiated an awareness-raising system on climate change and education for sustainable development in which youth are the main target. This initiative is implemented in several secondary schools and universities in the country. Several types of activities are offered to students: conferences and training seminars, film screenings, awareness raising through social networks and in lecture rooms.

University Days for Sustainable Development (UDSD) have been institutionalized with scientific and eco-tourism outings (Green Beach)



Youth learn how to negotiate on climate change-related issues (Cop In my City)

and simulation sessions on climate negotiations (Cop In my City).

In terms of results, the CDD-CI, through its activities, has been able to directly reach 10,000 youth on the issue of

sustainable development in relation to climate change.



Green Beach Operation in Assinie-Mafia

CDD-CI members are increasingly engaged in discussions on the Sustainable Development Goals (SDGs). They participate in international meetings organized on the subject in order to be better informed. 60 students from Félix Houphouët Boigny University were trained in climate negotiation techniques during the first edition of the COP in my City organized in June 2018.

The behavior change activities consisted in raising awareness among students on water, energy and waste management practices. The beneficiaries of these trainings now pay more attention to their energy and water consumption and avoid producing waste while they have the opportunity. They relay their knowledge in their respective departments (branches) and in their living quarters or university residences. The information received reports on eco-citizen actions initiated by

the latter, in this case operations «Clean Campus», «Sweep Operation», «Plastic free neighborhood» etc. They are the leaders of these cleanliness operations and want, in their daily practices, to be models of eco-citizenship.

Moreover, considering the relevance of its actions towards the youth in general, universities and schools in particular, the Ministry in charge of the Environment does not fail to associate the CDD-CI, in its environmental meetings, with civil society organizations.

It should also be noted that at the beginning, the CDD-CI had only one channel of information, namely social networks with more than 5,000 subscribers. Today, several other online and physical media offer their services at low and sometimes free rates. Thus, the television channel: MTV+ and online media such as Climate Reporter, Inter, Abidjan. Net and Koaci.com cover all the activities of CDD-CI and make reports or dedicate articles to the organization's actions.



Discussions with customary authorities

2.4.4. Grassroots environmental education to address climate change in the Diocese of Kisantu, DR Congo

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Trimming of a mango tree for the production of makala

The periphery of Kinshasa and more particularly Central Kongo are confronted with a shortening of fallow periods, mainly due to a very strong increase in their population. This situation leads to increased pressure on forest resources and a decrease in crop productivity in the absence of soil fertility restoration.

Central Kongo is located south of the city-province of Kinshasa in the west of the DRC and the city of Kisantu is 120 km from the capital. The Kisantu area and the outskirts of Kinshasa have long been a supply basin for food products and wood energy, particularly charcoal, for the city of Kinshasa. The production of this charcoal, makala, accelerates the clearing of degraded forests and forest fallows. The wood-energy sector employs approximately 300,000 people in the outskirts of Kinshasa alone. (Schure, 2014).

From 2016 to 2019, the Diocesan Development Office (BDD) of Kisantu, DRC, implemented a project for environmental education of the population at the grassroots level, with a view to fostering participatory and sustainable governance of local resources.

The actions carried out within the framework of the project concern: the training of students to create school nurseries to reforest certain degraded areas; the training of women to make and use improved fireplaces, as part of better management of firewood resources; income-generating activities (IGA) for reforestation to produce firewood and charcoal. Conferences allow to raise the awareness and inform these populations on climate change and its effects.

Organized popular forums offered the political-administrative authorities the opportunity to present the guidelines, laws and official legal provisions on environmental management and to exchange with the population, especially students and pupils.

The educational activities of the populations are carried out by environmental clubs and/or units that disseminate information to these populations in order to help them better manage and protect the resources of their environment.

In terms of results, at least 3,433 people, including 1,323 women (38.5%), have benefited from environmental education activities at the grassroots level in order to meet the challenges of climate change in the Diocese of Kisantu.

The training and support provided have produced significant changes in the agricultural production system; agroecological practices are becoming more widespread. Despite the popular belief that one should not plant a forest, 1,000 ha of land have been reforested with melliferous plants; caterpillar plants; forest species; fruit trees. 380 ha of land have been put under improved defenses.

The use of improved stoves is spreading and the recycling of organic matter has become a common agricultural practice.

This experience has also contributed to the establishment of a local participatory management committee (CLGP) that helps manage land conflicts. This committee is composed of sector and group leaders, the village chief and the chairmen of the village development committees. It is responsible for the maintenance of secondary roads and agricultural tracks, and for advocacy and the resolution of issues related to the proper management of the environment.

2.4.5 “One student, one tree”: students from Walungu in South Kivu, DR Congo, plant fruit trees to protect the environment

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A plum tree orchard in Luciga

«We all have a duty to preserve the environment that has been entrusted to us and to pass it on intact to future generations” Helmut Kohl, 1983.

In the Province of South Kivu in the Democratic Republic of Congo (DRC), a progressive destruction of the ecosystems in the forests of Kamano, Lwampango, Nakatudu, in the territory of Walungu has been recorded. This destruction is caused by bad practices such as the illicit exploitation of minerals

that destroy agricultural land, marshes for the manufacture of bricks and the cutting of wood for the manufacture of charcoal.

In addition, the various armed conflicts in the east of the Democratic Republic of Congo and the occupation of the forests of South Kivu by armed groups have forced the rural population to leave. During their forced displacement, these populations cut all the small trees to make charcoal, firewood and timber to build precarious houses.

This context has created increasing poverty in rural areas, including Walungu, which led the Cooperative Association in Female Synergy «ACOSYF» to launch in 2017, the project One student one fruit tree in the family plot.

The experience conducted by ACOSYF with the support of the Agro pastoral Group of Kivu and a Foundation



Schoolchildren and students are responsible for disseminating the training received

called «PANZI», consisted in teaching households in the territory of Walungu and students to plant fruit trees on family plots, regardless of their size. These fruit trees should contribute to the reforestation of the area and fight against the loss of soil fertility. They should also provide income to the very poor families of Walungu.

For the first phase of the experience conducted in 2017 and 2018, eighteen schools were selected in Kaziba Chiefdom and two in Ngweshe Chiefdom. Of these schools, seven are elementary schools and three are secondary schools.

Before the experience began, the majority of households in Walungu did not know how to plant fruit trees, nor did they know that these trees play an important role in protecting and restoring the environment. They were also unaware that the sale of the fruit produced could improve their income. The project has raised awareness, informed and trained nearly 1,992 schoolchildren and students on the role of trees in soil protection and environmental preservation. They are involved in disseminating what they have learned and in planting fruit trees in their schools and colleges as well as on family plots.

Today, more than 3 ha of passionflower, plum, guava, orange, avocado trees, etc.

have been planted in Walungu. Nearly 200 households have fruit trees on their plots, fruit consumption has increased by 30% in families, and fruit is abundant on the markets of Walungu and the province of South Kivu.



A fruit tree nursery

Moreover, in this area affected by armed conflicts, ACOSYF carries out awareness-raising activities on peaceful cohabitation through the sharing of fruits between households.



A plum orchard and bio plums in Luciga

2.5. Local Governance of Transhumance to Ensure the Survival of Livestock in the Dry Season

2.5.1. Parking contracts between herders and farmers to ensure the survival of livestock and better peaceful coexistence in the dry season

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Chad is a large livestock country with a livestock population of over 50 million. In addition to livestock, most rural populations live from rain-fed agriculture. Agricultural production takes place during the rainy season, which runs from May to October in the experience area.

The large-scale herders are transhumant, moving with their livestock from north to south during the dry season and from south to north during the rainy season in search of pasture and water. Climate change and the advance of the desert towards the south, which is making the Sahelian zone more arid, are now forcing these herders to move further south. This is causing strong demographic pressure and conflicts over natural resources, land and grazing areas in particular, in the Eastern Logone province.

Farmers in this area are increasingly faced with the problem of livestock devastating their fields, which is a source of numerous inter-community conflicts. Each year, these conflicts result in a large number of casualties.

The perfect peaceful coexistence that existed in the 1970s between farmers and herders has almost disappeared; it was based on a tacit understanding

between these two communities. The cattle were parked in the fields after the harvest, feeding on crop residues and leaving dung to enrich the fields. The herders provide milk to the owner of the field. However, armed conflicts between northern and southern Chad have created a great divide between these communities, causing this practice to disappear.

Faced with this situation, the Association technique d'appui à la sécurité alimentaire, la nutrition et la protection de l'environnement - Technical Association for Support to Food Security, Nutrition and Environmental protection (ATASANPE), wanted to help the two communities re-establish the ancestral system of understanding by improving it and by involving the local authorities of Mbaikoro in the Nya department, Eastern Logone province. Local conflict management committees (CLGCs) have been set up in each canton to help resolve these conflicts amicably.

Through several activities to bring the various communities together, the Local Conflict Management Committee (LCMC) of Mbaikoro Canton has raised awareness among farmers and herders so that they can live together peacefully.

The approach consisted of developing a community protocol for resource management in both the rainy and dry seasons. This protocol concerns groups of transhumant herders who regularly visit the area and the farmers of the same area. It defines the general rules for the management of agricultural products (cereals, tubers, fodder, etc.) and agricultural by-products (crop residues, etc.). It also covers the management of other products such as meat, milk, animal waste, hides, etc. In addition, it defines the periods and dates of transhumance, taking into account rainfall patterns, areas of high crop concentration, sacred sites and community forests.

The approach has also facilitated the signing of contracts between the breeders and farmers with the counter signature of their respective community representatives and that of the deconcentrated technical service of the State in charge of rural development. Finally, the approach includes the monitoring of the execution of the contract between the two parties so that each party respects its commitment and the establishment of a Minutes of good execution of the contract at the end of it, before the departure of the breeder from the farm.

In terms of results, a total of 130 hectares

of grazing land was made available to farmers by contract for the temporary parking of 2,000 oxen during the dry season. They benefit from crop residues for their food.

Eighty people, i.e., 40 farmers and 40 herders, have benefited from this experience. Given that in the area of the experience each household has about 8 people, the total number of beneficiaries could be estimated at 640 people.

The experience also allowed the implementation of an approach and a tool for peaceful cohabitation between these two development actors who were fighting daily over local natural resources that were severely degraded and scarce due to climate change. It also allowed, for the first time, a collaboration between herders and farmers in some villages of the South.

Thanks to this experience, the two communities have come closer together, women and young people are seeing each other and cohabitation is becoming a reality in the area. Exchanges allow everyone to get more out of their activities: women from both communities can freely exchange millet for milk, peanuts and other products for butter, etc. Cattle can now be parked in the fields in complete peace of mind.

2.5.2. Local mobilization around pastoral hydraulic structures to regulate transhumance and peacefully manage the periphery of the Zakouma National Park in southeast Chad

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A landscaped pastoral pond

In Chad, starting in the 1980s, there has been an exponential increase in the size of the herd. In 2016, the herd in Salamat was estimated at around three million heads. Recurrent periods of drought in the Sahelian strip have also worsened the situation, increasingly forcing herders to transhumance over long distances during the dry season.

Because of its potential for grazing and the many permanent water points in the Zakouma National Park, the Gara plain near this park has become a welcome area for transhumant herders and their livestock. Each year, during the dry season, this plain welcomes nearly 50,000 transhumant herders who stay there with their families and their herds. This transhumance was often a source of conflict between transhumant herders and sedentary people, and also between transhumant herders and national park conservation officers. Very often, these conflicts result in numerous victims among men and livestock.

The Local Mobilization around Pastoral Hydraulic Works project to regulate transhumance and peacefully manage the periphery of the Zakouma National



Herders drawing water from traditional wells to provide water for livestock



Park in southeastern Chad was co-funded by the European Union and the National Coordination of the Global

Climate Change Alliance (GCCA+); it was implemented by the ALISEI consortium and the Sahel-Ecodev Association.

It began with the awareness raising of all stakeholders, namely representatives of transhumant and sedentary herders, traditional and administrative authorities and technical services involved in the Gara plain. The aim was to obtain their support for the objectives and results of the project as well as their participation in the implementation of activities. Specialized companies were selected after a call for tenders and were entrusted with the realization of the works after topographic and geophysical studies to select the best sites for the implementation of the hydraulic works.

The development of ponds, each connected to a solar well and protected by an anti-erosion device, is one of the first visible results of the project and constitutes for now, a unique technological innovation in Chad.



The two ponds already constructed greatly improve access to surface water for a large number of livestock in the dry season. Families have easier access to drinking water in the pastoral zone thanks to the boreholes. The solar boreholes help about 100% of the women living in this canton to have easier access to drinking

water for their families. Each year, the shepherds are no longer obliged to dig a large number of traditional wells with tree branches, which helps to reduce the destruction of woody species.

490 km² of pastureland is used in the dry season for transhumant and sedentary livestock, which contributes to the stabilization of transhumance of about 15,000 head of livestock and almost 4,000 herders. This stabilization helps to ensure a more peaceful cohabitation between the users of the space and natural resources in the peripheral zone of the park. The number of livestock incursions into the park has also been greatly reduced; in 2016, 14 were reported and only 4 in 2019. Conflicts between herders and forestry agents have been significantly reduced.

The developments are also at the origin of many other progresses in the plain: creation of a microclimate which allows the regeneration of the vegetation cover around the water points and the protection of these against erosion.



Solar wells for better access to drinking water for farmers and their families

CONCLUSION

The process of capitalizing on the 50 experiences started from a world of actors unknown to Inades Formation. The launch of a call for proposals was a transparent and efficient way to stimulate the participation of these potential actors. The internet search gave us an idea of these actors in addition to the partner organizations known by Inades-Formation itself. Thus, the call was transmitted through the various addresses obtained. The partners then distributed the call. Among these actors, were public services specialized in the management of the environment and climate change.

The 158 experiences proposed by 58 organizations indicate the importance given to the search for solutions to the various types of problems posed by climate change in Africa. Indeed, these problems greatly affect the agricultural sector, which is the essential basis of food, employment and income for rural populations.

By analyzing the proposed themes and the professional sensitivities of the actors, it emerges that practical experiences in the field predominate over local governance initiatives for better management of the effects of climate change. Of the 50 experiences selected, 31 are good practices in the field. They concern techniques to cope with the loss of soil moisture, by promoting water saving. Other agro-ecological practices aim at soil regeneration, rehabilitation of seeds resistant to the effects of climate change and the use of renewable energy

for irrigation. Non-direct agricultural practices focus on alternatives to the intensive use of firewood.

Community participation is also effective in climate change resilience initiatives. Thus, 19 experiences are local governance initiatives related to natural resource management and agroecological transition, resilient seeds, community information systems to help people better cope with the consequences of climate change, education and awareness-raising on eco-citizenship, and management of transhumance to ensure the survival of livestock.

The 50 experiences published in this document are disseminated through different channels: websites, email exchanges with the different actors who applied. They are also disseminated through the media and conferences. 10 experiences have been capitalized in the form of videos; they include drought-tolerant seeds, dissemination of climate information, participatory and preventive flood management, agroecological transition and alternatives to the use of firewood. The various partners were invited to act as relays for a wide dissemination of the capitalization materials.

Responses to the challenges of climate change should give rise to three types of intervention: research-action for innovations; support for alternative models on a small and large scale; and the establishment of governance

mechanisms to drive dynamics at the territorial level. In light of this need, the development of approaches and tools to promote citizen participation is emerging as an area of work for capacity building of civil society in Sub-Saharan Africa.

This will make it possible to promote dynamics on a territorial scale, in particular frameworks for awareness-raising, consultation and local conventions for :

- The preservation or rehabilitation of forest, agro-forestry and water resources;
- Alternatives to the intensive consumption of firewood;
- Preventive management of climate-related disasters such as floods;
- Access to climate information;
- Affordable access to renewable energy;
- Promotion of local seeds known for their tolerance to drought and temperature variations;
- Management of transhumance for livestock in drylands;
- Awareness-raising of young people from an early age, with an emphasis

on those in schools and academia, given their social influence, etc.

It is therefore essential to mobilize civil society organizations in the implementation of international commitments and conventions on climate change. The same applies to their mobilization for the implementation of sustainable development objectives at the territorial level. This will also require the mobilization of development partners to support the scaling up of capitalized experiences.

Moreover, it is clear from this capitalization that efforts still need to be made, particularly to mobilize rural youth and to create frameworks that encourage their involvement. The participation of women and the development of responses to their specific problems have been observed in the various experiences. However, local governance mechanisms in the agricultural sector and in the fight against the issues of climate change must create regulatory frameworks that guarantee the participation of these women and the consideration of their specific needs in a sustainable manner.



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