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Cola acuminata, one of the priority species in the humid tropics
About the ICRAF-West and Central Africa

The West and Central Africa region of the World Agroforestry Centre covers a geographical area of 1200 million hectares, covering 21 countries with a population of over 330 million people. The regional office is in Yaounde, Cameroon. The region contains two main agro-ecological zones; the dry Sahelian zone, a semi-arid landscape stretching from Chad to Senegal and the Humid Tropics, spreading along the coast and extending to the central part of Africa. The region is the World Agroforestry Centre’s flag bearer in participatory tree domestication and tree biodiversity conservation, which aim to enhance the livelihoods of smallholder farmers through increased income and non-income benefits from indigenous trees and shrubs.

Promoting cultivation of high-value plants

In participatory tree domestication, researchers work with communities to select species from their natural habitats and adapt them for cultivation on farms. The procedure involves the identification, reproduction, adoption and diffusion of quality and high market value germplasm (i.e. seeds, seedlings, cuttings etc).

The region’s researchers have selected, developed and adapted vegetative tree propagation methods of air layering, rooting of cuttings and grafting. These techniques lead to early fruiting, replication of desired traits or characteristics, easy reproduction of species whose seeds are difficult to collect and conservation of valuable species.

Indigenous fruit trees such as Adansonia digitata, Cola spp, Dacryodes edulis, Garcinia kola, Irvingia gabonensis, Ricinodendron heudeletti, Tamarindus indica, Vitellaria paradoxa, Ziziphus indica have been promoted using participatory approaches.

Others include oil tree species such as Allanblackia spp and vegetables including Adansonia digitata, Gnetum africanum, Moringa oleifera; spice species such as Afrodragmacarpum lepidophyllus, Baillonella toxisperma, Monodora myristica and medicinal species, mainly Annickia chlorantha, Khaya senegalensis, Pausinystalia johimbe and Prunus africana.
Foreword

Agroforestry, forestry sector policy and institutional reforms: A cornerstone of sustainable development in West and Central Africa

The exploitation of natural resources has always constituted an important source of revenue for many households and communities in the Sahel and the Humid Tropics regions in West and Central Africa which are home to over 230 million people.

Some parts of the region, however, are experiencing a high level of degradation of their natural ecosystems due to demographic pressure, urbanisation, mineral exploitation and unsustainable harvesting of both timber and non-timber forest products. Elsewhere, farmers’ income generation is limited to few cash crops whose prices are determined internationally. Studies have shown that land degradation within the next 25 years could reduce world food production by 12%, possibly more in the dry zones. The situation in the West African Sahel is very precarious though we have seen a silver lining in the Zinder and Maradi regions of Niger.

We have enough evidence and many success stories to prove that agroforestry holds great prospect for poverty alleviation. Studies have shown that agroforestry can deliver a wide range of benefits. It can enhance food security, improve rural livelihoods, make better use of scarce rainwater and absorb atmospheric carbon among others. More specifically, the World Agroforestry Centre in collaboration with its partners has developed agroforestry technologies that could roll back deforestation and soil depletion, as well as increase, stabilise and diversify farmers’ income, and improve healthcare in rural areas through domestication of high-value trees and/or plants (fruit, culinary, timber, medicinal, fodder...).
Nevertheless, promotion and adoption of these agroforestry innovations require the right set of policies and institutions that can contribute to improving incentives and increasing producers’ participation and welfare in the tree crop sector. Taking into consideration that forests and trees are the cornerstone of sustainable development, the World Agroforestry Centre (ICRAF-WCA) has partnered with other organisations working in the region to help governments to develop better policies in that respect.

Revising out-dated policies and forest regulations will allow farmers in the region to take full advantage of growing trees on farms, providing them with a lucrative source of income.

Many countries within the region have already shown the political will to introduce change. For instance, in Mali and Burkina Faso, the Centre is working on the elaboration and implementation of local conventions for better management of natural resources. Local conventions are the most important tools available to local communities for the decentralised management of natural resources. In Cameroon, the ICRAF is playing a key role in the on-going revision process of the 1994 forestry law.

The present forestry law stipulates that any tree not planted by human being belongs to the state. This is not really encouraging local populations to plant trees. By incorporating the term “agroforestry products” in the new law, the ownership will be fully guaranteed for farmers involved in tree planting. Moreover, a clear difference will be made between non-timber forest products (NTFPs) harvested from the natural stand and agroforestry products derived from cultivated high value indigenous fruit trees. Thus, there is need to incorporate this into the new law.

Improved policies would also enhance better coordination among different ministries such as Agriculture, Environment, Forestry, Water and Lands. This would promote clear tenure rights to land, forests and trees thereby improving farmers’ access to agroforestry information and germplasm, and creating integrated competitive markets free from exploitation and abuse by monopolies, unreasonable taxation and access barriers.

On the other hand, policies alone cannot lead to the changes we need to reverse the trend of degradation and poverty. They should go hand in hand with institutional reforms. Therefore, the Centre is also experimenting with innovative extension approaches in response to the scarcity of appropriate dissemination methods for agroforestry technologies in most of the countries in West and Central Africa. Over the past 5 years, the Centre has provided information, tools and skills to community-based organisations so that they become important players in the promotion of agroforestry technologies. Preliminary assessments of their performances in terms of enhancing adoption of agroforestry innovations show that they are successful, though issues of profitability and sustainability need further investigation.
Policies and legislative mechanisms:

Progress made towards policy reforms

By Divine Foundjem-Tita, Ann Degrande and Zac Tchoundjeu

Introduction

It is now widely known that agroforestry can provide numerous benefits, both for livelihood improvement and environmental sustainability; the latter especially concerning climate change mitigation and adaptation. However, despite growing recognition, agroforestry seems to lack appropriate policies to guide its practitioners. Agroforestry policy research carried out by the Centre’s West and Central Africa regional programme therefore has been centred on understanding which and how existing policies and legislation enhances or constrains agroforestry development. More specifically, research has essentially focused on:

i) identifying and revising existing national policy documents that target rural development, forestry, environment and climate to assess to what extent they address agroforestry development;

ii) revising national legislations and regulations governing access and trade in tree and tree products and land tenure in order to identify constraints and contradictions in existing laws; and

iii) identifying and discussing with principal stakeholders who can contribute to and lobby for an agroforestry policy/strategy in Cameroon.

Current state of agroforestry policies in Cameroon

Results show that no blue print document defining an agroforestry policy or strategy exists for Cameroon. However elements of agroforestry technologies are hidden in existing major government policy documents related to agricultural development, forestry and poverty alleviation. Analyses of the policy documents (Table 1) reveal commitment of the Government of Cameroon (GOC) to include elements of Non Timber Forests Products (NTFPs) in its natural resources management and poverty reduction policies and therefore indirectly promote agroforestry. This interest is manifested in the country’s 2003 Poverty Reduction Strategic Paper (PRSP), the 2008 Growth and Employment Strategic Paper (GESP) which replaced the previous PRSPs, the Rural Development Strategic Paper (RDSP) and the National Forestry Policy. In all these documents, GOC identifies managing natural resources in a sustainable way as one of the four pillars to diversify and raise income in rural areas. The Rural Development Strategic Paper which stems from the Ministry of Agriculture and the National Forest Policy (NFP) from the Ministry of Forestry specifically mentioned the significance of promoting agroforestry-based production systems by integrating trees on-farm.
Table 1: The matrix of national policies/programs relevant to poverty and rural development:

<table>
<thead>
<tr>
<th>National policies/programs</th>
<th>Mentions elements of NTFPs/AFTPs (1= Yes/ 0= No)</th>
<th>Extend agroforestry and integration of trees on farm is addressed:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poverty reduction strategic paper (PRSP)</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Growth and employment strategic paper</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Rural development strategy</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Forest and environment sector programme</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>National forestry policy</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>National agricultural policy</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>National NTFPs policy</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>National forestry agency</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2 = Adequately addressed implies the policy document or mission statements just mention agroforestry and tree planting without further details related to the implementation strategy

1 = moderately addressed implies the policy document or mission statements mention and elaborate on action plans and implementation strategies regarding agroforestry, domestication and integration of trees on farm.

0 = Not at all simply means the policy document does not treat or include any element related to the integration of trees on farm.

The above results indicate that agroforestry and related activities are cross-cutting among different Government ministries in Cameroon but none has the mandate to coordinate the activities to ensure that both environmental and livelihoods concerns are properly addressed. The resultant effect of an uncoordinated strategy is confusion as to which, amongst numerous, tree planting activities/programs fall within the domain of agroforestry, which ones are simply forestation and afforestation, what species need to be planted where, what planting distances and with which crops. The abundance of afforestation and reforestation programs to address environmental issues specifically from the Forestry and Environment ministries may mislead the important role the Ministry of Agriculture can play in promoting interaction between crops, animals and trees on the same farmland for livelihoods concerns.

Institutional constraints related to agroforestry development in Cameroon

Another aspect of our policy research focuses on identifying institutional constraints related to agroforestry development in Cameroon with emphases on legal and regulatory barriers. In the absence of separate laws governing trees on farmers’ fields and the NTFPs sector in Cameroon, some elements in the 1994 forestry law and other related texts address NTFPs and indirectly affect trees in other farming systems. Some aspects of the law regarding ownership of trees make
reference to the laws governing land and state property and were also considered in the analyses. Emphases in analysing the legislation were put on the following elements: definition of forests and forests products; agricultural products; ownership and access to forest resources (with emphases on NTFPs) their exploitation for personal and commercial uses and how they may affect trees outside forest and the decision to plant trees.

Results show that existing legislation governing trees in Cameroon (1994 Forestry Law and the 1974 ordinance on land tenure) potentially limit smallholder producers’ economic rights to exploit NTFPs and de facto limit their rights to the trees they plant on their farms. In fact the law defines forests and forests products and says that the latter differ from agricultural products but does not define agricultural products. The implication of this unclear definition is that it provides confusion as to whether products harvested from farm trees which are also found in the wild, such as kola (Cola spp.), bush mango (Irvingia gabonensis), njansang (Ricinodendron heudelotii), etc., shall be considered as agricultural products or forestry products.

Based on the law, local populations are conferred usufruct rights which constitute the right to exploit NTFPs for personal use, but not for commercial purposes. On the other hand, some NTFPs are defined as ‘special products’ in the law (section 9 (2)), meaning that interested parties are expected to obtain permits to exploit and sell such special products. Though government officials say this law has been uplifted for some products for example kola nuts, no clear legal documents exist conferring commercial rights to farmers. The resultant effect is that farmers’ property rights are poorly defined as the products which come from their farmland are subjected to forestry regulations. This means that policy makers need to adapt subsequent regulations to current shifts in agricultural and conservation practices where originally wild trees are now planted on farm.

Following the 1994 Forestry Law, trees planted on land without a title deed belong to the state. Also, all naturally growing trees belong to the state even if they grow on cultivated land. These mean that, trees growing on private land will only be considered property of the individual if the person claiming rights to the trees has a deed. This means that if the laws were to be properly enforced, most farmers would lose their rights to the trees on the land for which they are claiming ownership under customary rules.

**Progress towards an agroforestry policy development strategy**

The above results defining the state of agroforestry policies in Cameroon and the impact of legislation on agroforestry development require that a coordinated effort from related government ministries (Forestry, Environment, Agriculture, Commerce and State Property and Land Tenure) be set up with the objective to:

(i) provide justification and relevant information that policy-makers can use to ensure that the potential of agroforestry in providing livelihood and environmental services is fully exploited;

(ii) provide adequate definitions, procedures and guidelines that need to be incorporated in subsequent agricultural/forestry/agroforestry legislation in order to distinguish agriculture from agroforestry, forestry and non-timber forest products.

To provide such information, the World Agroforestry Centre in Cameroon plans to organise a stakeholder meeting in 2012 that will bring together experts from related Government ministries hitherto mentioned, as well as other national and international NGOs and farmer representatives to reflect on a possible agroforestry policy/strategy for Cameroon and lobby for a recognised sub-department most likely in the Ministry of Agriculture to pilot agroforestry activities.
Disseminating Agroforestry Innovations:

Potential of Rural Resource Centres in Cameroon, the Democratic Republic of Congo and Nigeria

By Ann Degrande, John Mafolo & Chioma Okwu

Introduction

The fact that 75% of the poor in developing countries live in rural areas, strengthening the agricultural sector can not only improve access to nutritious food, it does more – at least twice as much – to reduce rural poverty than investment in any other sector (FAO, 2011). The role of extension in this battle is clear; there is a great need for information, ideas and organisation in order to develop an agriculture that will meet complex demand patterns, reduce poverty, and preserve or enhance ecological resources. While ineffective dissemination methods have contributed to low adoption of agricultural innovations in general, this is particularly true for agroforestry innovations, which are known to be complex and knowledge intensive, involving several components (crops, livestock and trees), requiring the learning of new skills, such as nursery establishment, and often providing benefits only after a long period (Franzel et al, 2001).
Concept of Rural Resource Centres

After a decade of research by the World Agroforestry Centre in West and Central Africa, agroforestry innovations ready for dissemination include: vegetative propagation techniques (marcottage, rooting of cuttings and grafting), integration of trees through the development of multi-strata agroforests, soil fertility management techniques, and improved marketing strategies for commercialisation of agroforestry tree products mainly through the organisation of group sales. To face the challenges of inappropriate extension methods for agroforestry, the World Agroforestry Centre (ICRAF) in West and Central Africa has been experimenting with relay organisations and rural resource centres for the dissemination of agroforestry innovations and more particularly participatory tree domestication, for the last 5 years (Asaah et al, 2011; Simons and Leakey, 2004; Tchoundjieu et al, 2006).

Relay organisations (ROs) are boundary-spanning actors that link research organisations like ICRAF, and farmer communities. They join with researchers in conducting participatory technology development, implying a two-way interaction of capacity building and institutional support on the one hand and feedback on the technology development on the other hand. The ROs disseminate innovations to farmers using demonstrations, training and technical assistance, after which farmers provide feedback and by so doing, help develop the innovations further. At the same time, some ROs use the rural resource centre concept in their extension approach. Rural resource centres are places where agroforestry techniques are practiced and where farmers can come for information, experimentation and training. A typical rural resource centre consists of a tree nursery, demonstration plots, a small library, a training hall and eventually accommodation facilities. Depending on which innovations are relevant to the area, the rural resource centre may also host a unit for processing of agroforestry products and/or a seed multiplication plots. RRCs are managed by community-based organisations, which can be Non-Governmental Organisations (NGOs) or farmer groups. Rural Resource Centres are assumed to facilitate the diffusion of technologies to farmers because they encourage continuous interaction between farmers, relay organisations and research, making the technologies more relevant and acceptable; and increase farmers’ access to information, skills and planting material.

In 2010, ICRAF collaborated with 36 relay organisations, of which 30 use the rural resource centre approach for the dissemination of agroforestry to 317 farmer groups, gathering 7968 farmers (table 1).
Table 1: Number of partners collaborating with ICRAF, December 2010

<table>
<thead>
<tr>
<th></th>
<th>Cameroon</th>
<th>DRC</th>
<th>Nigeria</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relay Organisations</td>
<td>23</td>
<td>12</td>
<td>1</td>
<td>36</td>
</tr>
<tr>
<td>Resource Centres</td>
<td>15</td>
<td>10</td>
<td>5</td>
<td>30</td>
</tr>
<tr>
<td>Farmer groups</td>
<td>218</td>
<td>72</td>
<td>27</td>
<td>317</td>
</tr>
<tr>
<td>Group members</td>
<td>5707</td>
<td>1600</td>
<td>661</td>
<td>7968</td>
</tr>
</tbody>
</table>

Box 1: Example of a Relay Organisation using the Rural Resource Centre approach

APADER (Association pour la Promotion des Actions de Développement Endogènes Rurales), created in 1993 and located in Bangangte (West Cameroon), is running a RRC, where agroforestry innovations are developed together with farmers and adapted to local conditions. The RRC is equipped with 2 motorbikes, a training hall, offices, computers, a printer, a generator and internet access. The centre also has a tree nursery, seed multiplication units, demonstration plots and a processing unit (dryer and grinder). Through its RRC, APADER has trained about 280 farmers and is technically supporting 28 farmer groups. APADER has also initiated a network of 23 nurseries, called UGICANE (Union des GICs des Agroforestiers du Ndé). Ten of these nurseries have developed into profitable enterprises and each generates about 500,000 FCFA (1,000 USD) a year. APADER is also providing organisational support to COFTRAKOL, a cooperative composed of 25 women, specialised in processing of karité (Vitellaria paradoxa) and other oleaginous products such as safou (Dacryodes edulis). Through its achievements, APADER has succeeded in developing strong partnerships with a number of research and development partners, such as the Ministry of Agriculture, the Institut de Recherche Agricole pour le Développement (IRAD), the Zenû Network, the University of Dschang, Peace Corps and the Programme National de Développement Participatif.

Performance of Relay Organisations and Viability of Rural Resource Centres

In 2010 and 2011, studies were carried out in Cameroon to evaluate the performance of relay organisations in the dissemination of agroforestry innovations, identify factors affecting their performance and assess the viability of the RRC approach.

Overall, the relay organisations studied were successfully diffusing agroforestry innovations to farmer groups by using a combination of approaches, namely theoretical and practical training of farmers, open-door events to sensitishe and demonstrate new technologies to a wide public and establishment of demonstration plots showing the benefits of agroforestry innovations; some were using the RRC approach. All relay organisations in this study got part of their financial resources from ICRAF support, revenues from the nursery and through service provision (e.g. training). Other sources of income were contributions from members, as well as sales of livestock and agricultural products. Performance of relay organisations was assessed in terms of number of groups supported and farmers trained, technical knowledge on and mastery of agroforestry techniques by farmers trained, diffusion and adoption rates of innovations disseminated, and farmers’ satisfaction.
As far as knowledge acquisition is concerned, 44% of the farmers supported by the ROs had basic knowledge on all technologies, 14% said to have mastery and 6% could also teach other farmers on the topic. Knowledge domains that were best acquired, however, included rooting of cuttings and tree spacing, while topics less mastered were post-harvest technologies, group sales and conflict management, all required to develop marketing strategies for agroforestry products. This is related to the fact that ROs had been introduced to tree propagation earlier than to marketing-related aspects and were therefore able to gain more expertise on tree propagation issues. In terms of adoption, farmers interviewed mainly applied the following agroforestry techniques: marcotting, rooting of cuttings, grafting, soil fertility management and use of njansang cracking machine (post-harvest technique). However, adoption was very variable according to the techniques. Highest rate of adoption was recorded for the marcotting technique and the lowest for soil fertility improvement. This can be explained by the fact that marcotting is a dividable technique (can be done on a single tree), applicable to many different species independently of ecological zones and does not need much equipment. On the other hand, soil fertility management is a technology that requires land tenure security and a higher upfront investment in planting a large number of trees or shrubs, and therefore is more difficult to adopt. Respectively 11% of the farmers interviewed were very satisfied and 67% satisfied with the performance of the ROs. In fact, 78% of the respondents mentioned good technical support as one of the strong points of the work by ROs, followed by regular follow-up of group activities (reported by 39%) and contact with a range of other partners through the ROs (26%). Most respondents also felt that the language used by ROs was adapted to the target population. Moreover, staff of ROs were said to be patient and tolerant, and the techniques disseminated were relevant to farmers’ needs. Only 10% expressed that they were not satisfied at all with the performance of the ROs. The major points of dissatisfaction were failure to find buyers for their products (86%), delays in implementation of activities (70%), absence of financial assistance (69%) and non-respect of appointments (56%).

Though differences were not statistically significant, results suggest that relay organisations which operate under favourable internal and external factors perform best for most of the performance indicators. Also, the study puts forward that external factors such as existing opportunities for agroforestry, strong farmer associations and good road and communication networks, might affect the effectiveness of relay organisations more than their internal capacity, reflected by their human, material and financial resources. However, in-depth studies involving more relay organisations are necessary to increase our understanding of what factors affect performance of organisations in disseminating agricultural innovations.
Conclusion and Policy Implications

Definitely, the involvement of grassroots organisations in the extension of agroforestry has increased the relevance of the techniques and the quality of services rendered to the beneficiaries. Already, farmer-led experimentation and adaptation is common in the rural resource centres. The approach has also succeeded in reaching a relatively high number of women and youths, often overlooked in ‘traditional’ extension systems. One challenge though in this approach remains the technical expertise of RO staff, which calls for continuous training, coaching and upgrading of extension staff.

Also, one of the generic problems of agricultural extension, namely the difficulty of cost recovery, has not yet been solved. It is expected that community-based extension would be more cost efficient compared to other approaches. However, while more research is required to increase our understanding of the sustainability and financial viability of the RRC approach, preliminary cost-benefit analysis suggest that RRC, under current circumstances, are not profitable without external support and can thus not operate autonomously. As it is unlikely that resource-poor farmers in the region will be able to pay for technical assistance in the near future, strategies need to be developed to integrate the RRC approach in national agricultural development programmes in order to take full advantage of their expertise. In this way, they could be paid for their services as extension workers, which would allow them to further expand their capacities and become worthy partners in the promotion of agricultural innovations and contribute to the much needed growth in the agricultural sector of developing nations today.

References


Producers’ Perception of Collective Action Initiatives in the Production and Marketing of Kola in Cameroon

By Amos Gyau¹, Bertin Takoutsing¹ & Steven Franzel²

Introduction

Development practitioners are becoming increasingly concerned about improving smallholder farmers’ market access. This is against the background that market access is seen as one of the important instruments which can be used to improve income and employment (Doward et al, 2003), and subsequently alleviate rural poverty. In Cameroon, collective action in the form of farmer organizations has been used as a strategy to increase the benefits of agriculture and forestry to smallholder farmers. This is against the background that producer organizations have been widely heralded as leading contributors to poverty alleviation and food security by many development organizations (FAO, 2010). After many years of facilitating collective action initiatives in the kola supply chain in Cameroon, there is a need to assess farmers’ perception of the effectiveness and usefulness of such initiatives. This is expected to provide information for organizations using collective action to be able to examine their own activities and determine whether they are effective in improving smallholder farmers’ livelihoods. In view of this, this article examines kola producers’ perception of collective action initiatives in the western highlands of Cameroon with the aim of providing information that would be used to integrate farmers’ concerns into the implementation of collective action activities. A combination of qualitative and quantitative research methodologies were used to identify the main criteria for evaluation of collective action and subsequently, farmers’ evaluation on these factors was elicited.
Methodology

Data Collection Procedure

The study was carried out in the West and North West regions of Cameroon. The study took place in March and April 2011 using a multi-step sampling procedure. First, the agro-ecological zones of the two regions (West and North West regions of Cameroon) were identified taking into consideration two important parameters; the production volume and market potential of kola. This enabled stratification of the study area into high and low production and market potential areas. Six different zones were obtained namely: Ndu, Tatum, Batibo, Mbengwi, Bayangam and Bangangte. The second level of sampling involved choosing the villages and localities for data collection which were distributed across the production zones determined at regional level. The level of organization of the producers and their implementation of collective action initiatives were also considered in the choice of villages within these zones. This was to ensure that both low and high production zones, and key kola nut production and market centers were covered during the study. In the next step, two focus group interviews with actors along the kola chain were conducted to identify the main factors which kola producers use in evaluating intervention activities with particular emphasis on collective action initiatives. Next, a questionnaire was designed based on the factors identified above and the collective action literature. A 5-point Likert scale was used to record responses to questions (ranging from 1=strongly disagree to 5=strongly agree) and was useful for eliciting farmers’ perceptions. Before the field survey, the questionnaire was pretested to ensure suitability. Feedback received was used to adjust the questionnaire accordingly.

The next step was to select producers involved in collective action from each of the six zones identified above. Thirty six farmers who have been involved in collective action were randomly selected from each zone using lists provided by community-based organizations. The total sample was thus 216 farmers. The data were collected by six trained enumerators who visited the farmers either on their fields or in their homes depending on convenience. After cleaning the data, 203 questionnaires out of the original 216 were found suitable for analysis.

Results

Description of the sample

Results of the statistical analysis indicate that less than 4% of the farmers are younger than 30 years. About 24% of the respondents are aged over 61 years. About 19% of the respondents have no education and 54% have only primary education. Only 0.5% (1 person) has a university education. About 75% of the respondents are males and 25% are females. For the majority of the respondents (81.3%) income from kola forms less than half of their income.

Producers’ evaluation criteria for collective action and development of constructs

Results from the focus group discussions indicate that producers have both positive and negative views on the effectiveness of collective action interventions. Positive factors mentioned by producers include effectiveness of the interventions in reducing time used to look for buyers, reducing transportation cost, enabling them to learn and acquire new skills in production, harvesting and post-harvest handling, and in enhancing their social status, improving social networks and improving market access and profitability.

Negative factors mentioned in the focus group discussions include loss of autonomy and confidence, delays and conflicts among members of the groups. Each dimension was measured with three to six statements.
### Producers’ perception of the collective action

The findings on producers’ perceptions are reported in Table 1.

#### Table 1. Producers’ perception of collective action

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Agree/disagree</th>
<th>Agree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Numbers of respondents with percentages in brackets)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Transaction costs</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>... reduced the time I used to look for buyers</td>
<td>1(0.5)</td>
<td>6(3.0)</td>
<td>10(4.9)</td>
<td>121(59.6)</td>
<td>65(32)</td>
</tr>
<tr>
<td>... reduced the time I used to take the products to the market</td>
<td>0</td>
<td>5(2.5)</td>
<td>16(7.9)</td>
<td>117(57.6)</td>
<td>65(32)</td>
</tr>
<tr>
<td>... reduced transportation cost considerably</td>
<td>0</td>
<td>4(2.6)</td>
<td>30(19.9)</td>
<td>79(52.3)</td>
<td>38(25.2)</td>
</tr>
<tr>
<td><strong>New learning and skills acquisitions</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>... improved my skills in storage techniques and the quality of the products</td>
<td>15(7.6)</td>
<td>26(13.1)</td>
<td>31(15.7)</td>
<td>87(43.9)</td>
<td>39(19.7)</td>
</tr>
<tr>
<td>... improved my skills in kola harvesting techniques</td>
<td>11(6)</td>
<td>22(12)</td>
<td>30(16.3)</td>
<td>89(48.4)</td>
<td>32(17.4)</td>
</tr>
<tr>
<td>... improved skills in kola conservation techniques</td>
<td>14(7.1)</td>
<td>28(14.3)</td>
<td>31(15.8)</td>
<td>94(48.0)</td>
<td>29(14.8)</td>
</tr>
<tr>
<td><strong>Market and financial improvement</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>... increased the quantity of kola nut I sell</td>
<td>3(1.5)</td>
<td>15(7.4)</td>
<td>39(19.3)</td>
<td>79(39.1)</td>
<td>66(32.7)</td>
</tr>
<tr>
<td>... increased my knowledge in marketing</td>
<td>0</td>
<td>5(2.5)</td>
<td>15(7.4)</td>
<td>132(65.3)</td>
<td>50(24.8)</td>
</tr>
<tr>
<td>... obtained better price for my products</td>
<td>2(1)</td>
<td>3(1.5)</td>
<td>22(11)</td>
<td>104(52)</td>
<td>69(34.5)</td>
</tr>
<tr>
<td>... entered in contact with new buyers</td>
<td>7(3.5)</td>
<td>4(2.0)</td>
<td>20(10.1)</td>
<td>107(54)</td>
<td>60(30.3)</td>
</tr>
<tr>
<td>... more stable prices for my products</td>
<td>2(1)</td>
<td>2(1)</td>
<td>22(11)</td>
<td>136(68)</td>
<td>38(19)</td>
</tr>
<tr>
<td>... improved on kola quality related information</td>
<td>2(1)</td>
<td>6(3)</td>
<td>32(15.9)</td>
<td>122(60.7)</td>
<td>39(19.4)</td>
</tr>
<tr>
<td><strong>Social networks and status</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---
Classification of producers based on perceptions

In the next stage, farmers were classified according to their scores on the evaluation criteria.

Description of clusters

By using the dimensions of farmers' evaluation criteria and demographic characteristics, two main clusters were identified as described below.

Cluster 1 (Positive oriented group): Cluster 1 consists of 76% of the total respondents and as such is made up of majority of the respondents. Members in this group are more likely to continue with collective action since they generally have a very high positive perception of all the dimensions relating to the benefits of collective action.

| Being a member of the group enables me to earn respect in my community | 2(1.0) | 4(2.0) | 66(32.5) | 95(46.8) | 36(17.7) |
| Being a member of the group improves my social status in the community | 2(1) | 4(2) | 69(34) | 94(46.3) | 34(16.7) |
| My reputation as kola nut farmer improved by becoming a member of the group | 0 | 4(2) | 53(26.1) | 107(52.7) | 39(19.2) |
| Being a member of the group has helped me to be in contact with many people | 0 | 0 | 7(3.4) | 110(54.2) | 86(42.4) |

They believe that collective action reduces transaction cost, improves their marketing performance, provides social and financial benefits, and facilitates acquisition of required skills to effectively engage in collective action. Members of this cluster believe that collective action has few negative issues. Examination of the demographic characteristics of this group of farmers reveal that many are married and very few are separated indicating that the members in this group seem to have more stable family relationships. More members in this group also receive a relatively higher percentage of their incomes from kola nut compared to members in cluster 2. Given their perception ratings of collective action, this group is referred to as “Positive-oriented group”
Cluster 2 (Unimpressed group): This group consists of 24% of the respondents. They are not likely to continue with the collective action since they do not agree with positive statements about collective action. Rather, they have a higher degree of agreement with the negative dimension of collective action. In terms of their demography, a lower percentage of them are married compared to those in cluster 1. All of the members of this group have a very low reliance of kola income as it accounts for not more than 30% of their annual income. This group was referred to as the “unimpressed group”

Implications

The findings have implications for the organization of future collective action activities. First, we argue that although the majority of the farmers view collective action positively, differentiated strategies have to be used in order to reach out and promote collective action among farmers who belong to the two groups. For example, whilst one of the objectives of the collective initiatives is to enhance farmers’ skills in the area of marketing, conservation and value adding along the supply chain, this seems not to be achieved as satisfactorily compared to the other objectives. This therefore suggests the need to emphasize skill acquisition in the future implementation of collective action initiatives so as to enhance farmers’ evaluation and benefits. In particular, they are yet to learn and obtain the needed skills which can help to store kola successfully in order to reduce post-harvest losses. This aspect could be an area to be focused on by collective action promoters particularly because only 63% felt the initiatives enhance conservation techniques compared to other benefits which obtained a score of more than 80%.

For the unimpressed group, it is not just the skill acquisition which they are unsatisfied with but also the lack of autonomy in negotiation and the time involved. The initiatives should therefore be strengthened in some of the other dimensions which will make them more attractive to the minority as well. For example, farmers could be allowed to determine price levels which they would like to sell their kola instead of current system which normally involves negotiations between representatives of farmer organizations and traders. This would ensure that farmers play a more active role in the price negotiation process. It is expected that this will not only influence the minority to join but will also further consolidate the gains made with the positive oriented group and increase overall participation.

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References


Participatory analysis of vulnerability and adaptation to climate change (PAVACC)

By John C. Weber and Carmen Sotelo Montes

Introduction

Many global circulation models predict a hotter, drier and more variable climate in the West African Sahel this century, and this threatens the livelihoods of rural poor communities in the region. Strengthening the capacity of rural communities and other institutions to conduct participatory analysis of vulnerability to climate change and develop participatory adaptation plans is one of the priority activities of an IFAD-funded project in Burkina Faso, Mali and Niger (Parkland Trees and Livelihoods: Adapting to Climate Change in the West African Sahel). Livelihoods of rural communities are based on their capital assets (human, social, natural, physical, financial and political), so these should be considered when analyzing vulnerability and developing adaptation plans. In addition, vulnerability differs between men and women and age groups, so adaptation plans should respond to their specific vulnerabilities. In this section, we briefly describe a methodology developed by ICRAF and partners in the project.
Summary of PAVACC methodology

1. General assembly of men, women and children from a group of neighboring villages

1.1. Introduction

The facilitators of the meeting explain the objectives of the PAVACC process, discuss certain terms that will be used (e.g., vulnerability, adaptation, threat, cause, effect and consequence), ask the villagers to describe these terms in their local language and to describe their perceptions about climate change. It is important to discuss the terminology in the local language: for example, in some cases there was no distinction between effect and consequence in the local language so these terms had to be distinguished in local terms.

1.2. Historical changes in the landscape around the villages

The objective of this step is for people to visually see how the landscape has evolved around their villages, and to decide if the changes are due primarily to human activities or natural events beyond their control. One facilitator asks the villagers to describe the resources in the landscape (a) before the villages were established, (b) when the villages were established, (c) in the transition period and (d) today. These include natural and physical resources such as flora, fauna, rainfall, water sources, people, houses, crop lands, roads, etc. Another facilitator makes a drawing of the landscape at each point in time, using symbols to illustrate the abundance of each resource. When the drawing is completed, a facilitator lists the resources in Table 1 and asks the villagers to decide if the changes were caused primarily by human activities or natural events.

Table 1. Historical changes in the landscape

<table>
<thead>
<tr>
<th>Resource</th>
<th>Current situation</th>
<th>Natural event</th>
<th>Human activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parklands</td>
<td>Decrease in trees in parklands</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Rainfall</td>
<td>Decrease in rainfall</td>
<td>O</td>
<td></td>
</tr>
<tr>
<td>Etc.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1.2. Manifestations of landscape changes and adaptation plans

In this step, a facilitator writes the current situation of the resources (from Table 1) in Table 2, and asks the villagers to describe the causes, effects and consequences of the changes. After these are recorded, a facilitator asks the villagers for at least one adaptation plan to eliminate the cause and/or minimize the negative effects and consequences.

Table 2. Manifestations of landscape changes and adaptation plans

<table>
<thead>
<tr>
<th>Current situation</th>
<th>Cause</th>
<th>Effect</th>
<th>Consequence</th>
<th>Adaptation plan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decrease in trees in parklands</td>
<td>Overcutting by villagers</td>
<td>Exposure of fields</td>
<td>Wind and water erosion</td>
<td>Practice assisted natural regeneration</td>
</tr>
<tr>
<td>Etc.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
1.3. **Vulnerability of village resources to threats**

In this step, one facilitator asks the villagers to indicate where the physical and natural resources (trees in parklands, forest, houses, water sources, etc.) of the villages are located in the landscape and their approximate dimension (i.e., percentage of landscape area), while another facilitator makes a drawing showing these resources and their dimensions in the landscape. When this visual representation of the resources is completed, one facilitator asks the villages to identify the major threats to each resource and the severity of the threat (0 = no effect, 3 = extremely severe), and another facilitator fills in Table 3.

**Table 3. Vulnerability of village resources to threats**

<table>
<thead>
<tr>
<th>Village resource</th>
<th>Threat</th>
<th>Drought</th>
<th>Flood</th>
<th>Fire</th>
<th>Insect pests</th>
<th>Etc.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trees in parklands</td>
<td></td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Etc.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. Working groups for adult men, adult women, young men and young women

2.1. **Matrix of threats to all livelihood assets and vulnerability to each threat**

Each group identifies the principal activities that contribute to their livelihoods, and the threats to the success of each activity. The facilitator then asks the group to rate the threat (0 = no effect, 3 = extremely severe) and fills in Table 4 (one table for each group).

**Table 4. Vulnerability of livelihood activities to threats**

<table>
<thead>
<tr>
<th>Activity</th>
<th>Threat</th>
<th>Low rainfall</th>
<th>Low soil fertility</th>
<th>Lack of money</th>
<th>Lack of pasture</th>
<th>Etc.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crop production</td>
<td></td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Animal production</td>
<td></td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Etc.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2.2. **Adaptation plans for threats to livelihood activities**

Each group then identifies an adaptation plan that responds to each threat to their livelihood activities, and the facilitator fills in Table 5 (one table for each group). There may be several adaptation plans they should be prioritized according to the costs and benefits.

**Table 5. Adaptation plan to reduce threats to livelihood activities**

<table>
<thead>
<tr>
<th>Activity</th>
<th>Threat and priority adaptation plan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low rainfall</td>
<td></td>
</tr>
<tr>
<td>Low soil fertility</td>
<td></td>
</tr>
<tr>
<td>Lack of money</td>
<td></td>
</tr>
<tr>
<td>Lack of pasture</td>
<td></td>
</tr>
<tr>
<td>Etc.</td>
<td></td>
</tr>
<tr>
<td>Crop production</td>
<td>Use short-season varieties</td>
</tr>
<tr>
<td></td>
<td>Use animal manure and mulch in fields</td>
</tr>
<tr>
<td>Etc.</td>
<td></td>
</tr>
</tbody>
</table>
2.3. Identification of partners for implementing participatory adaptation plans

The facilitator asks the members of the group to list the institutions that could participate in implementing the participatory adaptation plans. These could include government ministries, non-governmental organizations, research/development projects, business enterprises, etc. depending on the specifics of the adaptation plan and the interests and expertise of the institutions.

3. Synthesis and preparation of draft adaptation plans

Following the meetings, the facilitators synthesize the results and proposed adaptation plans at the inter-village level (Tables 1, 2 and 3) and by gender/age group (Tables 4, 5 and 6). They then prepare a consolidated draft adaptation plan that responds to the vulnerability of the capital assets at the inter-village level and for each gender/age group.

4. Discussion, modification and approval of adaptation plans by villagers

Facilitators lead a discussion of the consolidated draft adaptation plan in a general assembly of the villages. Villagers modify the plan if necessary, and approve a second version of the plan.

5. Implementation of adaptation plans by villagers and partners

Villagers and partners hold workshops to clarify the role of each stakeholder in the implementation process, modify the adaptation plans if necessary, and then implement the final version of the adaptation plan.

Conclusions and follow-up

The PAVACC methodology was used in the IFAD project sites in Burkina Faso, Mali and Niger in 2011, and adaptation plans will be implemented in 2012. Results from the PAVACC indicate that vulnerability to climate change depends very much on the specific social and environmental context. Therefore, adaptation plans must be formulated to recognize these differences. Detailed methodological guidelines for PAVACC will be published in English and French in 2012.

Acknowledgements

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Local conventions:

Towards a sustainable management of natural resources in the Sahel

Kalinganire Antoine¹, Ouattara Fako Bruno², Samaké Ouodiouma¹ & Traoré Fatoumata Tata¹

Introduction

Natural resource exploitation is one of the main sources of income for the rural masses in the Sahel. However, we note a tendency towards accelerated degradation of natural ecosystems as a result of strong population growth, anarchical methods of exploitation, heavy consumption of firewood in both rural and urban areas with over 90 percent of the energy needs of households covered via wood. Such practices engender competition between the various exploiters, thus causing conflicts detrimental to local development.

With the advent of independence, various West African countries, particularly Burkina Faso, Mali, Niger and Senegal, formulated numerous Government policies on natural resource management. Such policies replaced colonial policies, though most of them remained repressive until the mid-1980s. Most development projects in the 1990s gave predominance to law enforcement, while in the rural areas, traditional systems of management held sway. It is the failure of these early policies that gave birth to a new generation of initially integrated development programs that subsequently became more participatory by involving local stakeholders such as the population and grassroots rural communities. Accordingly, local conventions became one of the mechanisms increasingly used by stakeholders to promote secured access to natural resources, thus permitting sustainable investment in them.

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It is against this backdrop that rural management programs came to birth in the Sahel, a participatory management approach decentralized down to village level. The period around 1985 also saw the emergence of non-governmental and peasant organizations and the start of the decentralization process in the four countries under study. The driving-force of the NGOs and peasant organizations was participation and involvement of the local population. Thus, the first local conventions (LCs) were enacted during this period under the impetus of development projects. Now, Local Conventions on natural resource management are the outcomes of negotiations between local stakeholders and are prepared by the local population for better management of their natural resources. They also include any agreement, written or not, between two or several local stakeholders, especially social groups (socio-professional groups, village associations or communities or factions thereof), local Government services (representatives of the State and/or local authorities), technical services and NGOs, laying the rules governing access to and use of land and/or natural resources located in a given space, with a view to ensuring their conservation as well as rational and sustainable exploitation.

Based on a study carried out by the International Center for Sociological Studies and Applied Law (CINESDA) (Ouattara et al. 2011) and a workshop on LCs organized in Bamako by ICRAF in May 2011, this report gives a summary of the types of LCs as well as their preparation procedures. LCs thus become an important tool for sustainable management of natural resources in the Sahel.

Context of the Sahel

The fresh impetus given to decentralization following the advent of multi-party democracy allowed for the setting up of local governments: the Region, the Cercle and the Commune. Each local government (LG), administered by a deliberative organ and an executive, assumes responsibility for its economic and socio-cultural development. Against this backdrop, it behoves elected organs of local governments to take initiatives aimed at finding appropriate solutions to the various development problems and to engage support bodies depending on the nature and specificity of the problem. It is thus that at the behest of their populations, the new local governments and more specifically, rural communes, incorporated in their development priorities, regulations governing access to and use of natural resources in their territories. This gave rise, throughout the country, to a multiplicity of benchmarks, intervention modes and legitimacies, including the Local Convention on the Management of Natural Resources (CL/GRN).

Legal Framework of LCs

While there is controversy about the legal character of LCs, it is obvious that they focus on resources considered as the property of the nation, that is, “public property”. This idea is captured perfectly in: « l’essai d’analyse de la prise en compte des systèmes agroforestiers par les législations forestières du Sahel » (attempted analysis of the mainstreaming of agroforestry systems in Sahel forestry legislation). Accordingly, the legal and regulatory framework here would mean all the legislation governing natural resource management, that is, the entire normative and institutional framework dealing with natural resource management in relation to LCs.

Institutional stakeholders

The institutional stakeholders connected with LCs in the Sahel are of several categories. They include:
• the State and its constituents (ministries and external services responsible for the environment, water and fisheries resources, agriculture and livestock breeding; State projects and corporations attached to the various ministries);

• the civil society (environmental NGOs, local population grouped into associations and local land management traditional authorities);

• local governments (decentralized entities such as commune, cercle and region);

• cooperation institutions such as technical and financial partners (regional institutions); and

• the population-communities or beneficiaries.

As we can see, there are many institutional stakeholders, which begs the need for coordination and proper definition of the place and role of each stakeholder at the decentralized level (commune, cercle).

Types of local conventions

Several types of natural resource management LCs with different forms and appellations have been identified. Indeed, about twenty LC appellations were identified: local conventions, local codes, code of conduct, internal rules of the territory, management rules, memorandum of understanding, management agreement, management contract, territory charter, simple management plan, prohibition of use, development and management plan, pastoral plan, passage corridor, collective village regulations, local development plan, co-management of natural resources and co-governance of natural resources. For our purposes, they are considered as local agreements between stakeholders on natural resource management.

We may also distinguish:

• LCs that aim to regulate access to a resource with a view to ensuring its conservation and sustainable use, e.g. fixing a hunting season;

• LCs that govern use by several groups of a resource with the intent to minimize conflicts, e.g. water points; and

• LCs that coordinate the multiple use of a resource to minimize the risk of conflict and rationalize productivity, such as a forest from which numerous resources may be extracted: building wood, medicines, fodder and fruits.

The main concern remains the articulation of LCs with State and institutional norms, a concern that will be addressed in a guide. The various LC types depend on criteria relating to form, nature and/or level.

Procedure for preparing local conventions

An approach via a legal and institutional audit recommends five steps as follows:

• analysis of the normative procedure with the objective of ensuring that all steps are complied with such that no obstacles are left to impede enforcement;

• analysis of the institutional procedure that aims to ensure that all implementing structures exist and are functional, that there is both vertical and horizontal architectural and functional coherence;

• analysis of the legal and statutory situation of property and resources to ascertain the real status of resources in order to determine the contracting authority or owner with intent to ensure proper management;

• analysis of support and assistance mechanisms, since it has been observed that citizens had difficulties using LCs when they did not participate in their preparation. It is also recommended that mechanisms
be developed to assist citizens in using LCs;

- calculation of the overall cost because it does not suffice simply to prepare the LC, but also necessary to ensure that it will be effectively implemented and to do so, it is necessary to calculate implementation costs.

Implementation of LCs is always by institutional bodies that are named, are spatially distributed, have a functional organization and their missions are defined. We note that in the Sahel countries, a major trend is developing whereby there is a strong demand by the local population to manage its own natural resources, admittedly with the assistance of the State, but no longer exclusive management by the State. This need for emancipation is rightly expressed through local conventions both legally and in terms of policy. Legally, there is need for modifications in the process of preparation and implementation. At the level of policy, there is need for stakeholders to change mentalities and behavior.

**Conclusions**

Description of the various implementation approaches shows that local conventions are still groping in the dark and there is need to improve the approach thereto. Legal principles exist and it is important to comply with them by seeking the assistance of qualified experts. The debate on local conventions far transcends the competence of mere development agents, though they are the initiators thereof. For now, LCs permit a more or less informal resolution of unstable legal situations. However, continuing to work in such manner will be suicidal in a world where people are increasingly inclined to claiming their rights.

Therefore, there is need to finalize and adopt a sub-regional guide as well as national guides on Local Conventions, with emphasis on the promotion of grassroots intercommunity sharing, dialog between States on laws relating to recognition and harmonization of Local Conventions governing the management of natural resources. It is also necessary to create a synergy between the various stakeholders and to facilitate incorporation of Local Conventions in national development plans.

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