

Evaluating the Role of Governance in the Management of *Prunus africana* (Hook.f.) Kalkman in the Adamawa Region of Cameroon

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How to cite this paper: Tassiamba, S. N., Betti, J. L., Temgoua, L. F., Kourogue, L. R., Bile, A. W. N., & Mpouam, A. R. (2022). Evaluating the Role of Governance in the Management of *Prunus africana* (Hook.f.) Kalkman in the Adamawa Region of Cameroon. *Open Journal of Forestry*, 12, 408-431. <https://doi.org/10.4236/ojf.2022.124023>

Received: August 26, 2022

Accepted: October 5, 2022

Published: October 8, 2022

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Abstract

One of the problems at the root of the poor management of forest resources in Cameroon is the lack of good governance. This study aims to evaluate the governance put in place by the government of Cameroon to ensure better management of *Prunus africana*. It takes a critical look at the three pillars of forest governance in relation to the management of the resource, which are: policy, legal, institutional and regulatory frameworks (1); planning and decision-making process (2); and finally the implementation, enforcement and compliance of regulations (3). The assessment was conducted using the guide recommended by FAO-PROFOR. Individual and focus group interviews were conducted with stakeholders involved in the *P. africana* management process. The results in the form of assessment scores revealed poor governance in the management of the resource. This is due to non-compliance with Pillars 2 and 3 on the planning and decision-making process as well as the implementation and enforcement of regulations through weaknesses in the principles of transparency, accountability, the effectiveness of management measures and stakeholder participation. These are the points on which management strategies should be based for better management of *P. africana* in the production forests of the Adamawa region.

Keywords

Forest Governance, *Prunus africana*, Stakeholders, Pillars, Components

1. Introduction

Prunus africana, commonly known as Pygeum, is a plant species endemic to

afromontane ecosystems that are highly valued for its various virtues, the most important of which is its medicinal importance (Ingram et al., 2009). Due to the international trade in its bark as well as the threats associated with its exploitation, the species is vulnerable according to the International Union for Conservation of Nature (IUCN) and as such has been listed in Appendix II of the International Convention on Trade in Endangered Species of Wild Fauna and Flora (CITES) since 1995 (Betti et al., 2016). The interest at the origin of its exploitation lies in the medicinal properties of its bark which is used in the manufacture of medicines sold on the European and American markets (Cunningham et al., 2002). These drugs are used for the treatment of prostatic hypertrophy, benign prostatic hyperplasia, glandular disorders and senescence, and hirsutism in women (Tasse, 2006). In 2008, the global male population suffering from prostate cancer was estimated to be 14%, thus impacting the need for the active ingredient and, therefore, the demand for *Prunus africana* bark (World Agroforestry Centre, 2012).

Cameroon, one of the producers and exporters of *Prunus africana*, has been affected by this demand due to an increased need for the resource, which has caused unsustainable exploitation (Awono et al., 2008; Ingram et al., 2009; Betti et al., 2016). Faced with the extent of this major threat, the European Union, through CITES, suspended exports of the species' bark from Cameroon in 2007. In 2010, the ban on the export of *Prunus* bark was lifted following the implementation of resource management mechanisms. These include the delimitation of production areas for the species, the production of Non-Prejudicial Trade Notices (NPTNs), the development of simple management plans for the resource, the definition of exploitation quotas in the three main production basins of Adamawa, the North-West and the South-West, and finally the training of forestry and customs agents on exploitation control mechanisms (Betti et al., 2016). It should be recalled that the development of NPTNs has since been supported by the joint programme of the International Tropical Timber Organisation (ITTO) and the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), known as the ITTO-CITES Programme (Akoa et al., 2010, 2011a, 2011b; Nkongmeneck et al., 2014).

Despite these management measures, many organizations such as the German Development Agency (GIZ) have reported the unsustainable management of *P. africana* in the South West region of the country. Faced with this observation, CITES, through the Plants Committee, highlighted inconsistencies in the management of this resource and formulated a certain number of short- and long-term actions to be taken by Cameroon to ensure the sustainability of the *P. africana* bark trade. These actions were outlined at the 23rd meeting of the CITES Plants Committee (Betti, 2021).

In response, the CITES General Secretariat and the Government of Cameroon, through the Ministry of Forests and Fauna (MINFOF) signed on 08 July 2019, the Memorandum of Understanding N°0059 on the "Draft Action Plan and update of the Non-Prejudicial Trade for the sustainable management of

Prunus africana, a tree species listed in Appendix II of CITES in Cameroon”. This project is part of the CITES programme on threatened tree species and conservation of the African elephant, the “CTSP” programme. It aims to lay the foundations for transparent and sustainable management of *Prunus africana* in relation to the decisions adopted at CoP17 on this species. Specifically, it aims to gather information on research, management, exploitation and processing of the species, with a view to providing clear answers to the recommendations made by the CITES Standing Committee to Cameroon at its 70th meeting (Betti, 2021).

In Cameroon, Law 94/01 of 20 January 1994 established the regime of forests, wildlife and fisheries (Articles 9 and 56, paragraph 2); through its implementing Decree No. 95/531/PM of 23 August 1995 classifies *Prunus africana* as a special product in the same way as Ebony (Awono et al., 2008; Ingram et al., 2009). Its exploitation is done under an agreement issued by the Prime Minister, valid for one year. Exploitation permits are only granted to operators on the basis of inventory work accompanied by simple management plans for the resource. These permits are known as Prunus Allocation Units (PAUs) and are present in all the production basins of the species. Exploitation standards have been defined at the national level, including the setting of minimum exploitable diameter, the implementation of a debarking technique, the definition of rotation period (Betti et al., 2016). Decree No. 2005/2869/PM of 29 July 2005 to lay down the modalities of application of certain provisions of CITES in Cameroon designates National Forestry Development Agency (ANAFOR) as the scientific authority for Prunus.

Despite the measures taken at the international and national levels to regulate the exploitation of the resource and to guarantee its sustainable exploitation, several observations were made that call into question the mode of governance related to the management of the resource in Cameroon (Awono et al., 2016; Betti et al., 2016). The aspects highlighted include the lack of good governance in the mechanism for allocating titles and quotas, the failure to respect defined exploitation norms; problems with the control of exploitation; problems with the mechanism for sharing the benefits arising from the exploitation of the resource, etc.

The present study focuses on the Adamaoua region as the only major production basin where exploitation of the resource is actually possible. Indeed, in the other main basins (South West and North West regions), *Prunus africana* bark exploitation activities have stopped due to conflicts. In order to lift the suspension of the export of bark from Cameroon, the remaining production basins must have simple management plans for the species and a new NPTN specific to them. This is only possible on the basis of studies on the PAUs linked to the resource. Hence the presence of such a study on governance.

This study aims to investigate existing governance mechanisms in the management of *Prunus africana* and contribute to the development of possible proposals for improving them. Specifically, it aims to evaluate the three pillars of governance of *Prunus africana* in the Adamawa region that are: policy, legal, institutional and regulatory frameworks (1); the planning and decision-making proc-

ess (2); and the implementation, enforcement and compliance of regulations (3).

2. Methodology

2.1. Description of the Study Area

The study took place in all the Prunus Allocation Units (PAUs) of the Adamawa region (Figure 1). These PAUs were created by Decision N° 0358/D/MINFOF/SG/DF/SDAFF/SN on 28 February 2012. These are PAU Adamawa 2 (Tchabal Mbabo), Adamawa 3 and Adamawa 4 (Tchabal Ngandaba). On the whole, all these PAUs are found in two departments, namely Mayo Banyo and Faro and Déo.

The relief of the area consists of a succession of hills forming the Tchabal Mountains. *Prunus africana*, it should be recalled, is only found at high altitudes from 1500 m in this area. PAUs are the Tchabal Mbabo and Tchabal Ngandaba Mountains at maximum altitudes of 2460 m and 1960 m respectively. The climate is of the Sudano-Guinean type characterised by two (2) seasons of almost equal duration: the dry season from November to March of the year and the rainy season from April to October of the year. The average annual rainfall varies from 1000 mm to 2000 mm (MINFOF, 2018).

In Adamawa, the economy is essentially characterised by livestock and

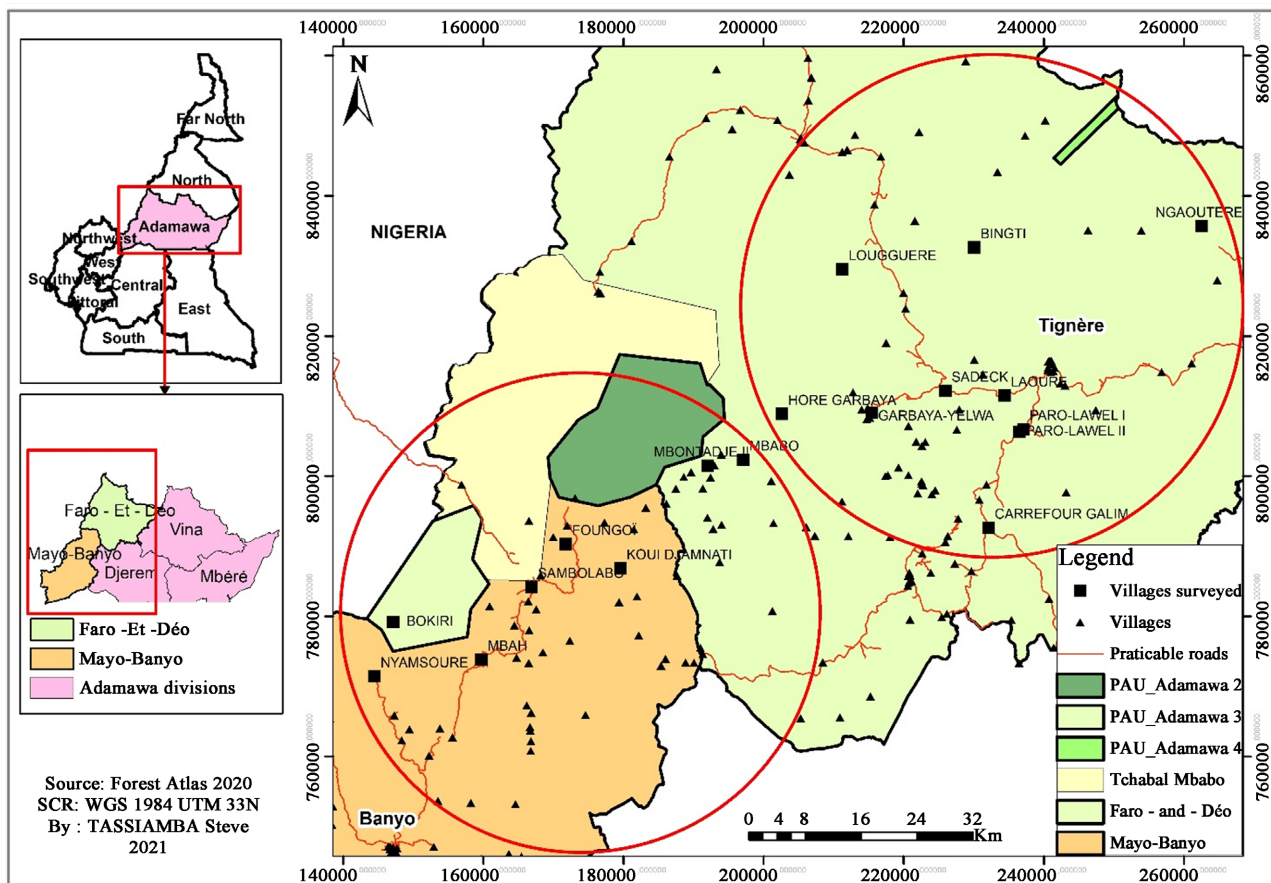


Figure 1. Location map of Study sites and sampled villages.

agriculture. In addition to these main activities, there is trade in commodities and forest products (honey and poaching products). Livestock rearing is mainly practised by the indigenous people (Bororo and Foulbés) in the plateaus and plains. Agriculture is practised on the plains after the flood waters have receded and along the rivers. Maize, taro, groundnuts, orange trees, avocado trees, potatoes, onions, cassava, sorghum, millet, yams, macabo, and banana are grown (MINFOF, 2018).

2.2. Conceptual Framework

Forest governance can be described as the modus operandi by which officials and institutions, together with other stakeholders exercise their authority in the management of forest resources to sustain and improve the well-being and quality of life of people whose livelihoods depend on these resources (Rotillon, 2010). Good forest governance can be assessed against the assessment framework developed by the Food and Agriculture Organization of the United Nations (FAO) and the World Bank's Program on Forests (PROFOR) (FAO-PROFOR, 2011). According to this framework, a pillar forms the basis of good forest governance. Thus, good forest governance rests on three pillars, namely: policy, legal, institutional and regulatory frameworks, the planning and decision-making process, and finally the implementation, enforcement and compliance of regulations.

According to the framework, good forest governance is based on six principles: participation, accountability, equity, effectiveness, efficiency and transparency (Figure 2; Table 1).

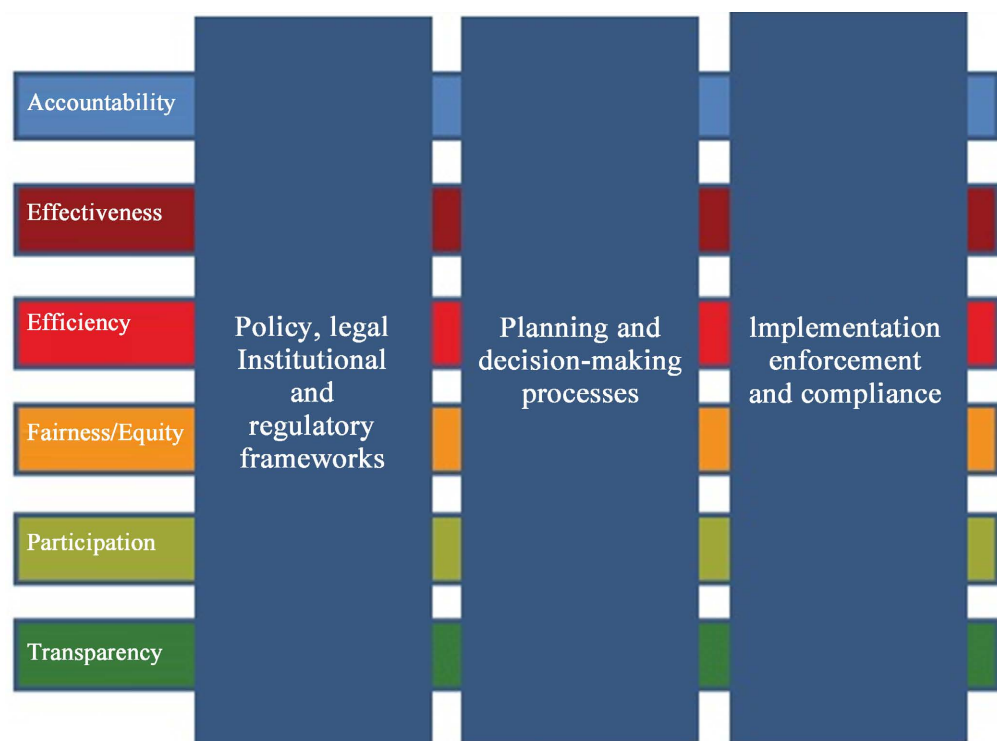


Figure 2. Pillars and principles of forest governance (Source: FAO & PROFOR, 2011).

Table 1. Definitions of the principles of forest governance (FAO & PROFOR, 2011).

Principles	Definitions
Accountability	duty of political actors to answer for their actions and decisions to all members of society.
Effectiveness	production of results that meet needs, producing desired outcomes.
Efficiency	optimal use of human, financial and other resources, without unnecessary waste or delay.
Equity	equal opportunities for all members of society to improve or maintain their well-being, including through the impartial application of regulations.
Participation	involvement of citizens and stakeholders in decision-making, either directly or through legitimate intermediaries representing their interests.
Transparency	Clarity and free flow of information allowing all members of society to access, understand and follow processes, institutions and data.

The evaluation of governance in the management of *Prunus africana* was carried out according to the FAO-PROFOR evaluation framework. Specifically, it involved:

- Identifying the roles/responsibilities of the different actors involved in the governance of resource management in Adamawa;
- Analysing the policy, legal, institutional and regulatory framework related to Pygeum management in order to assess its relevance to the sustainable management of the species (forestry policies and laws on the resource; legal framework to support and protect land tenure, ownership and use rights; concordance of general development policies with forestry policies; financial incentives, economic instruments and benefit sharing);
- Analysing the planning and decision-making process (stakeholder participation; transparency and accountability; stakeholder capacity and empowerment);
- Analysing the implementation, enforcement and compliance with regulations (completion of inventories, existence of a benefit-sharing mechanism, stakeholders' perception of how the resource is managed, significant contribution of the resource to the development of beneficiary communities, etc.).

The FAO-PROFOR (2011) framework proposes components that allow for the assessment of each pillar of governance. These components are made up of indicators that can be quantified by a point scale ranging from the lowest score of the component to the highest possible score proposed as an indicator of the component. Following this approach, an assessment interview guide was developed to collect data in the selected localities in each cluster. The point scales or ranks for the sub-components varied according to the number of corresponding indicators. The sub-components were written into the interview guide as questions. **Figure 3** describes the methodological approach used to analyse the data collected for each pillar. It should be noted that the framework proposes to modify the components according to the objective sought. The assessment score of the components is the average of the scores of the sub-components of the component. For the pillar, its score is determined by the average of the scores of its components. Thus, each pillar at the end of the evaluation scored out of 20.

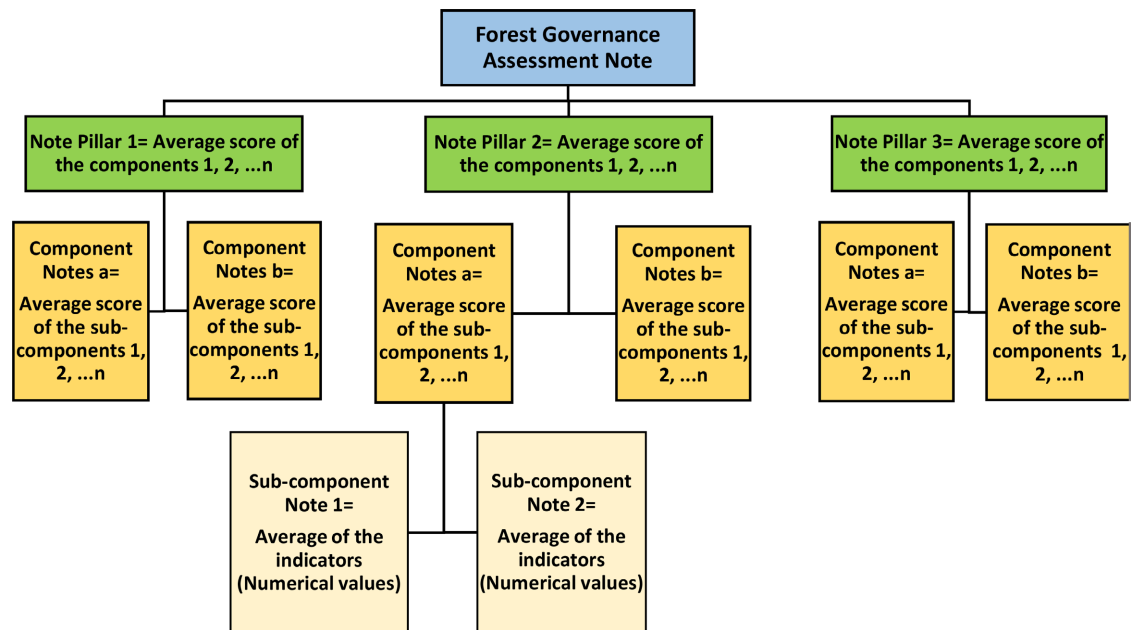


Figure 3. Summary procedure for forest governance assessment (Source: Authors).

The accepted score validating the hypothesis of good governance is the one that is greater than or equal to 10/20. It results from the average of the scores of the three pillars. The evaluation score of a pillar is therefore equal to the average of the scores of its sub-components. For an in-depth analysis, the analysis was based on these sub-components in order to better justify the results obtained for each of the pillars of forest governance.

2.3. Data Collection

Data were collected from 1 November to 1 December 2021, through individual and focus group interviews with stakeholders in the Prunus sector in the Adamawa region, and more specifically with those involved in the management of Prunus production forests (PAUs) in this region. The literature review provided information on the different stakeholders involved in the exploitation of the specie's bark in Cameroon in general (Awono et al., 2016). The actors targeted for individual interviews included State structures such as MINFOF, National Forestry Development Agency (ANAFOR), Ministry of Environment, Nature Protection and Sustainable Development (MINEPDED), Communes; Non Governmental Organisation and civil society organisations; local organisations (producers' association, local nurserymen, traditional authorities, producers' associations (if present); government agencies, universities and research institutes; economic operators (exporters, permit holders, special product unions, research consultancies) involved in the chain in Adamawa; representatives of community organisations involved in the exploitation of *P. africana*.

The riparian communities at the PAUs studied were approached with the help of authorisations issued by administrative authorities in the areas, and with the help of the administration in charge of forests in each division. Due to accessi-

bility constraints (poor roads and high water levels) to the villages bordering the Pygeum production sites, the low variation in information from one group of villages to another, and the reluctance of riparian communities due to cultural constraints (Foulbé, Nyem-Nyem and Hausa), the cluster sampling technique was adopted (Dufour & Larivière, 2012). Within each cluster, villages accessible by road were surveyed. **Table 2** summarises the villages surveyed per cluster. For the interviews, the sampling method was non-probability, based on the availability of respondents, as these communities are very reluctant to provide information.

For the economic operators (private sector) to whom these PAUs are allocated, namely Société Africaine des Médicaments (AFRIMED S.A), Société Générale des Produits (SGP) and Pharmacy Africaine (PharmAfric), the interviews took place with the General Managers of these companies, as well as the workers involved in the exploitation process (barkers, transporters, etc.). For the AFRIMED S.A and SGP groups, the interviews took place in their factories based in Bafooussam in the western region of the country.

For the riparian communities, who could only respond to the second and third pillars on aspects related to participation in the management process as well as the sharing of benefits from the exploitation of *Prunus*, the interviews and focus groups were held in the presence of the Djaouro. These are the local chiefs of the villages in these regions.

Thus, in all, 37 individuals were interviewed on *Prunus* governance, distributed as follows: state structures (13), communes (2), economic operators or farmers (3), NGOs and civil society organisations (2), research institutes (2), representatives of riparian communities (14), and community organisations (1).

The interview guide was designed using Sphinx version 5.0 software (**Figure 4**). In order to highlight the roles and responsibilities of the actors, secondary data were obtained through existing documentation on the management of *Prunus africana*, namely the *Prunus* Non Prejudicial Trade document produced by ANAFOR, the scientific authority designated by CITES to conduct research on the species.

In order to validate the perception of the various stakeholders, the preliminary results of the governance assessment obtained were presented to the various stakeholders during a workshop in Ebolowa (South Cameroon) on March 3, 2022. This workshop brought together: the administration in charge of forests

Table 2. Villages sampled in clusters around the PAUs.

Sampled village cluster	Villages
Cluster 1	Banyo, Sambolabo, Nyamsouré, Kouï, Bontadji, Mbah, Bokiri (Gnagneri)
Cluster 2	Tignère, Galim-Tignère, Kontcha, Louguere, Paro Lawel I, Paro Lawel II, Gassaguel, Garbaya Djiré, Sadeck, Laoure, Bingti, Ngaoutéré, Mbabo, Horé Garbaya, Yangaré and Foungoï.

Questionnaire sur l'évaluation de la gouvernance dans la gestion *Prunus africana*

01 au 28 Novembre 2021 - Par TASSIAMBA N. Steve

Monsieur/Madame, ce questionnaire est réalisé dans un but scientifique afin de contribuer à la gestion durable de *Prunus africana* dans ses bassins de production. Toutes les informations seront de ce fait purement confidentielles et limitées à cette étude.

INFORMATIONS GENERALES

<p>1. Catégorie d'acteur</p> <p><input type="radio"/> 1. Administration (MINFOF, MINEPDED,...)</p> <p><input type="radio"/> 2. Opérateur économique (AFRIMED, SGP, PHARMAFRIC)</p> <p><input type="radio"/> 3. ONG et Société Civile (FODER, TRAFFIC, ...)</p> <p><input type="radio"/> 4. Organisation communautaire (Associations)</p> <p><input type="radio"/> 5. Institut de recherche (IRAD,...)</p> <p><input type="radio"/> 6. Communautés riveraines</p>	<p>2. Genre</p> <p><input type="radio"/> 1. M <input type="radio"/> 2. F</p> <hr/> <p>3. Age</p> <p><input type="radio"/> 1. 20-29 <input type="radio"/> 2. 30-39 <input type="radio"/> 3. 40-49 <input type="radio"/> 4. 50-60 <input type="radio"/> 5. 60-+</p> <hr/> <p>4. Avez vous déjà vu ou entendu parlé du <i>Prunus africana</i>?</p> <p><input type="radio"/> 1. Oui <input type="radio"/> 2. Non</p>																																								
<p>5. Quel est selon vous le niveau d'appréciation des politiques, lois et réglementations régissant l'utilisation et la gestion de <i>Prunus africana</i></p> <p><input type="radio"/> 1. Mauvais <input type="radio"/> 2. Passable <input type="radio"/> 3. Moyen</p> <p><input type="radio"/> 4. Bon <input type="radio"/> 5. Excellent</p>	<p>12. Cohérence entre droits formels et informels en matière de la ressource en <i>Prunus africana</i></p> <p><input type="radio"/> 1. Pas d'accord du tout <input type="radio"/> 2. Plutôt pas d'accord</p> <p><input type="radio"/> 3. Plutôt d'accord <input type="radio"/> 4. Tout à fait d'accord</p>																																								
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<p>1.2 CADRE JURIDIQUE VISANT À SOUTENIR ET PROTÉGER LE RÉGIME FONCIER, LA PROPRIÉTÉ ET LES DROITS D'USAGE</p> <table border="0" style="width: 100%;"> <thead> <tr> <th></th> <th style="text-align: center;">1</th> <th style="text-align: center;">2</th> <th style="text-align: center;">3</th> <th style="text-align: center;">4</th> <th style="text-align: center;">5</th> </tr> </thead> <tbody> <tr> <td>10. Mesure dans laquelle le cadre juridique reconnaît et protège les droits de propriété liés aux forêts dans laquelle <i>Prunus africana</i> se retrouve</td> <td style="text-align: center;"><input type="radio"/></td> <td style="text-align: center;"><input type="radio"/></td> <td style="text-align: center;"><input type="radio"/></td> <td style="text-align: center;"><input type="radio"/></td> <td style="text-align: center;"><input type="radio"/></td> </tr> <tr> <td>11. Mesure dans laquelle le cadre juridique reconnaît les droits coutumiers et traditionnels des populations autochtones, des communautés locales et des usagers traditionnels des forêts à <i>Prunus</i></td> <td style="text-align: center;"><input type="radio"/></td> <td style="text-align: center;"><input type="radio"/></td> <td style="text-align: center;"><input type="radio"/></td> <td style="text-align: center;"><input type="radio"/></td> <td style="text-align: center;"><input type="radio"/></td> </tr> </tbody> </table> <p>Mauvais (1), Passable (2), Moyen (3), Bon (4), Excellent (5).</p>		1	2	3	4	5	10. Mesure dans laquelle le cadre juridique reconnaît et protège les droits de propriété liés aux forêts dans laquelle <i>Prunus africana</i> se retrouve	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	11. Mesure dans laquelle le cadre juridique reconnaît les droits coutumiers et traditionnels des populations autochtones, des communautés locales et des usagers traditionnels des forêts à <i>Prunus</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>																							
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Figure 4. Illustration of a part of the questionnaire used during the interviews.

(MINFOF), economic operators (AFRIMED S.A, SGP and PharmAfric), operators' unions, research organizations (Ministry of Scientific Research and Innovation called MINRESI and Universities), consulting firms involved, as well as the German Agency for International Cooperation (GIZ).

2.4. Analysis

The data were analysed using Excel 2013 spreadsheet in order to extract descriptive statistics (means, standard deviations and charts). The data were imported into R software for inferential statistics. At this level, the Wilcoxon test which is a non-parametric test to the Student test was used to test the evaluation score of each pillar as well as the final or average evaluation score. The choice of this test is justified by the fact that the data collected are qualitative variables which were quantified by point scales or ranks (ordinal scale). This test, also known as the rank test, aims to compare the average evaluation obtained with the median (which is a position parameter).

For the mean and standard deviation of the sub-components, the formulas used were as follows:

$$\mu = \frac{\sum p_i x_i}{\sum p_i} \quad \text{and} \quad \sigma = \sqrt{\frac{\sum (x_i - \mu)^2 p_i}{\sum p_i}}$$

where: μ = mean or an average of the sub-component; p_i = weights applied to the values of x (value quantifying the indicator of the assessment); x_i = number of citations of the indicator; σ = standard deviation

For the mean and standard deviation of components and pillars, the formulas used were as follows:

$$\bar{x} = \frac{\sum x_i}{N} \quad \text{and} \quad \sigma = \sqrt{\frac{\sum (x_i - \bar{x})^2}{N}}$$

where: \bar{x} = mean of the component; x_i = value of the average of a sub-component; N = number of sub-components of the corresponding component.

The latter formula was also used to determine the average for each pillar, following the same approach as for the components.

3. Results and Discussions

3.1. Results

3.1.1. Description of the Mode of Governance of *Prunus africana*: Roles and Responsibilities of Actors Involved in the Management of the Resource in the PAUs of Adamawa

Interviews with the various actors in the management process of *Prunus africana* in Adamawa made it possible to characterise the stakeholders involved. This consisted in identifying them and highlighting their roles and degree of influence in the governance mode put in place by MINFOF to manage the resource. Six (6) main stakeholders are involved in the management of the resource in the PAUs of the said region. **Table 3** describes their roles and responsibilities in the

Table 3. Roles and responsibilities of stakeholders in the management of Adamawa's UAPs.

Direct Actors	Roles and Responsibilities
Administration	
Centrale administration (MINFOF)	<ul style="list-style-type: none"> • Approves survey devices; • Approves inventories; • Approves management plans; • Prepares and signs the development/operating agreement; • Prepares and approves the technical standards for exploitation and inventory; • Approves the annual quota; • Issues the annual operating permit; • Controls the exploitation activities unannounced and annually; • Ensures the payment of taxes related to the exploitation; • Ensures the traceability of bark and derived products; • Ensures that all stakeholders are involved in the management and that they receive the shares as defined in the specifications; • Issues the operating and transport documents; • Takes sanctions.
Regional Delegation of MINFOF for the Adamawa	<ul style="list-style-type: none"> • Controls the execution of delimitation and inventory work in the field; • Approves the inventory and delimitation results; • Issues certificates of conformity of inventory and delimitation work; • Ensures the regular control and monitoring of exploitation activities; • Reports to the Minister in charge of forests on the evolution of exploitation activities; • Technically supports the operator and the populations through advice; • Ensures the traceability of bark and derived products; • Ensures routine control and quarterly exploitation activities; • Facilitates collaboration between the operator, the populations and the communes of Banyo (Mayo Banyo) and Kontcha (Faro and Déo); • Raises awareness of the economic and scientific importance of <i>P. africana</i>.
Divisional Delegations of MINFOF for Mayo Banyo and Faro and Déo	<ul style="list-style-type: none"> • Initial consignment notes and site books; • Ensure the involvement of all stakeholders in the development and sharing of the benefits of the operation; • Play an arbitration role between stakeholders; • Provide technical support and advice to stakeholders; • Periodically monitor operating activities; • Ensure the traceability of bark and derived products.
Economic operators	<ul style="list-style-type: none"> • Carry out inventory and demarcation work; • Harvest bark according to the techniques in force; • Ensure the proper maintenance of transport and exploitation documents; • Ensure the traceability of bark and derived products; • Pay the taxes due to the State and the royalties to the populations and the Communes as defined in the specifications; • Support the communes and the populations in the regeneration of <i>Prunus</i> and the realisation of basic infrastructures; • Finance research activities; • Involve local populations in exploitation activities.
Councils (Banyo, Tignère, Kontcha)	<ul style="list-style-type: none"> • Facilitate collaboration between the operator and local populations; • Maintain the road and socio-economic infrastructures with the support of the operator; • Participate in the regeneration of <i>P. africana</i> through the supply of seedlings to the populations; • Receive a share from the exploitation activities.

Continued

Local populations	<ul style="list-style-type: none"> • Enjoy their user's rights on the resource or in the PAUs; • Participate in exploitation activities (inventory, delimitation and harvesting of bark etc.); • Participate in regeneration activities; • Receive a share from exploitation activities; • Facilitate harvesting activities.
NGOs and Civil Society Organisations: Forêts et Développement Rural (FODER) and Wildlife Trade Monitoring Network (TRAFFIC)	<ul style="list-style-type: none"> • Intervene in the framework of the COGESPA project (project to support the conservation and participatory management of the Tchabal Mbabo forest massif); • Build the capacity of communities on <i>Prunus</i> exploitation methods.
ANAFOR	<ul style="list-style-type: none"> • Conducts research activities in collaboration with the economic operator to define parameters such as bark recovery rate, survival rate; • Supports the populations and the communes in the establishment of <i>P. africana</i> plantations by providing quality seeds and training on the establishment of nurseries.

mode of governance related to the management of the resource.

In addition to these direct actors, there are several other actors at the administrative level who are indirectly involved in the management of the PAU. These are the Ministry of Livestock, Fisheries and Animal Industries (MINEPIA), Minister of Agriculture and Rural Development (MINADER), MINEPDED, MINRESI and MINESUP. Environmental obligations related to the exploitation of the resource are the responsibility of MINEPDED through its departmental delegations in Mayo Banyo, Faro and Déo. The PAUs are located in landscapes that are strongly dominated by pastoral activities through cattle breeding. Participatory resource management decisions involving livestock farmers require the presence of MINEPIA. At the same time, there are also agricultural activities, which thus involve MINADER. Finally, it should be noted that a multitude of research activities on *Prunus africana* has been carried out in this production basin. These activities were conducted under the direction of the National Herbarium of Cameroon, which is under the responsibility of the Institute of Agricultural Research for Development and therefore the MINRESI. As for MINESUP, it works in close collaboration with the Institute of Agricultural Research for Development (IRAD) through the universities. In fact, a great deal of research on the resource is carried out in this production basin as part of the CTSP programme.

3.1.2. Pillar 1: Policy, Legal, Institutional and Regulatory Framework Related to Pygeum Management

The analysis of the sub-components of the first pillar of governance in relation to the management of *Prunus africana* in the Adamawa region revealed the following findings (Table 4). The evaluation score for this pillar is 12.23 ± 5.52 . This is a fair rating and shows that there are overall flaws in the instruments put

Table 4. Assessment result for the first pillar of governance of *P. africana*.

N°	Sub-components for Pillar 1	Mark/20	Standard deviation
S.C1	Clarity and consistency of policies, laws and regulations governing the use and management of <i>P. africana</i>	9.05	5.85
S.C2	Feasibility of legal and regulatory instruments on <i>P. africana</i>	9.1	5.65
S.C3	Adaptability of Prunus management instruments to the realities in the area	8.15	5.75
S.C4	Consistency of management instruments with key international commitments and obligations	12	4.95
S.C5	Consideration of property rights related to forests in which <i>Prunus africana</i> is found	11,25	6,45
S.C6	Consideration of customary and traditional rights of indigenous peoples, local communities and traditional users of Prunus forests	12.75	6.05
S.C7	Coherence between formal and informal rights to the <i>Prunus africana</i> resource	10.7	6.15
S.C8	Taking into account the sustainable improvement of the living conditions of the communities around the PAU	13.8	5.45
S.C9	Legal and regulatory instruments on Prunus ensuring gender parity	13.8	6.5
S.C10	Existence of legal provisions and mechanisms for equitable revenue sharing from the exploitation of the <i>P. africana</i> resource	14.7	5.15
S.C11	Consideration of the equitable distribution of access to Prunus resources, rights and income	12.5	4.45
S.C12	Existence of economic incentives and policies to promote increased value addition and sustainable use of NTFPs such as Prunus	13.15	4.8
S.C13	Existence and adequacy of safeguards against social and environmental damage resulting from policies and activities related to the exploitation of the resource	13.55	4.95
S.C14	Consideration by the framework of positive externalities (development projects) in the villages concerned by the exploitation of the resource	16.75	5.15
Mean/average for 1		12.23	5.52

in place. Indeed, **Table 4** shows that three sub-components (S.C) have low scores (below 10), namely S.C1, S.C2 and S.C3. Thus, according to the majority of respondents:

- The policy, legal and regulatory framework governing the use and management of *P. africana* is not clear or consistent;
- There are difficulties in the feasibility of regulatory instruments;
- Finally, the legal and regulatory instruments put in place are rather global and do not take into account the specificities of the areas to which PAU belongs. There is therefore a problem with the adaptability of this framework in the Adamawa region.

However, the legal and regulatory framework for Prunus has some strong points, including the existence of a mechanism for sharing the benefits arising from the exploitation of the resource and the consideration of development projects resulting from the exploitation of the resource in the three PAUs studied. The table also shows that for the stakeholders, there are mixed opinions on two components, which do not really apply in the Adamawa PAUs. Indeed, they

have fair ratings. These are:

- The consideration of property rights related to forests in which *Prunus africana* is found;
- The coherence between formal and informal rights to the *Prunus africana* resource.

Figure 5 presents the assessment of the components of the first pillar of governance of *Prunus africana* in relation to its sub-components.

The figure shows that the first component of this pillar on Prunus policies and laws is not positively assessed by respondents. This is due to the weaknesses observed previously in its sub-components S.C1, S.C2, S.C3, S.C4. However, three components of the governance of this resource are valued above 10:

- Financial incentives, economic instruments and the benefit-sharing mechanism;
- The concordance of general development policies with forestry policies on Prunus;
- The consideration of land titles, ownership and use rights over the resource.

3.1.3. Pillar 2: Resource Management Planning and Decision-Making Process

The average score for the second pillar is 10.49 ± 4.81 . This score is fair and shows that there are shortcomings in this pillar that need to be improved for better governance of the resource in the Adamawa production basin. Indeed, the sub-components with low scores (<10) in this pillar are S.C5, S.C7, S.C8 and S.C10 (**Table 5**).

Figure 6 shows the assessment of the components of this second pillar.

The figure shows that stakeholder participation is good, with a score of 13.56/20. Specifically, the stakeholders are informed about resource management activities in this production basin. However, many of them have little influence on the decision-making process like riparian communities. Thus, it is a

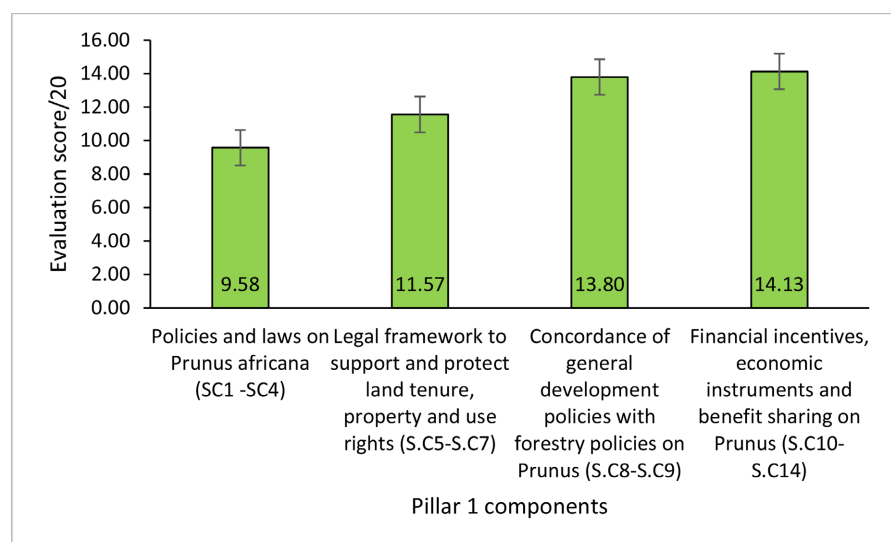
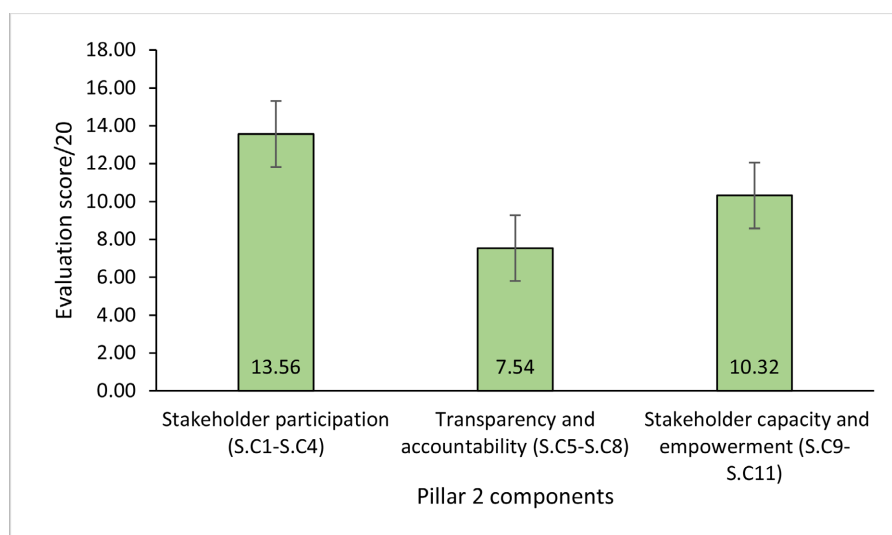


Figure 5. Assessment of the components of the first pillar of governance of *P. africana*.

Table 5. Assessment result for the second pillar of governance of *P. africana*.

N°	Sub-components for pillar 2	Mark/20	Standard deviation
S.C1	Existence and implementation of a consultation framework between the actors involved in the management of <i>Prunus africana</i>	16.1	5
S.C2	Degree of participation in planning meetings and decision-making on resource management	10.25	5.5
S.C3	Existence of interactions between stakeholders involved in the exploitation of <i>P. africana</i>	14.55	5.1
S.C4	Existence of incentive mechanisms to encourage the collaboration of different stakeholders in the <i>P. africana</i> management process	13.35	4.85
S.C5	Extent to which the legal framework facilitates public access to information, promotes scientific debate on forest policies on <i>Prunus africana</i> and imposes sanctions in case actors do not fulfil their obligations	8.45	5.05
S.C6	Quality, timeliness, completeness and accessibility of information on the resource available to stakeholders, including public documentation on <i>P. africana</i> management	10	5,6
S.C7	Transparency in the allocation of <i>Prunus africana</i> concessions (PAU), permits and user rights	9.4	4.95
S.C8	Existence and extent of internal accountability mechanisms, such as internal monitoring bodies, performance standards and performance-based incentives and penalties	2.3	2.6
S.C9	Presence of strong and independent civil society organisations, including non-governmental monitoring and control bodies	15.25	5.15
S.C10	Ability of civil society, indigenous peoples, and small and medium enterprises to participate and engage in planning, decision-making and implementation of actions related to the Prunus sector	5.7	5.55
S.C11	Adoption and implementation of voluntary environmental and social standards and safeguards by private sector actors (Operator), in particular banks operating in the sector	10	3.55
Mean/average for pillar 2		10.49	4.81

**Figure 6.** Assessment of the components of the second pillar of governance of *P. africana*.

passive or limited participation. The result is a top-down approach characterised by decision-making at the level of the Ministry of Forests and Fauna to the det-

riment of the opinions of other stakeholders, as decried by the AFRIMED and SGP groups. This figure also shows that, according to stakeholders, there is a problem with the principles of transparency and accountability. This is characterised by the absence of resource management documents in MINFOF's decentralized services, such as the Divisional Delegation of Forestry and Wildlife (DDFOF) in Faro and Déo, and the absence of simple management plans in the DDFOF in Mayo Banyo.

3.1.4. Pillar 3: Implementation, Enforcement and Compliance

Overall, the assessment score out of 20 for the third pillar of governance on the management of *Prunus africana* is 9.88 ± 5.27 (Table 6). It is below 10/20 and therefore the management of the resource in Adamawa is exposed to poor governance in the implementation and respect of the legal and regulatory framework.

More specifically certain issues/aspects are perceived by stakeholders as poor. According to them, there are problems with the effectiveness of the incentives put in place by MINFOF to ensure that Pygeum bark harvesters respect the legal and regulatory instruments; the participation or involvement of local communities in work carried out in the PAUs of this region; the availability and accessibility to stakeholders of the results of inventory work carried out in the PAUs; the extent to which laws relating to human rights, labour, safety, the environment and other fundamental laws are applied to resource exploitation activities.

Table 6. Evaluation result of the third pillar of governance of *Prunus africana*.

N°	Sub-components of pillar 3	Mark/20	Standard deviation
S.C1	Extent to which governments encourage companies and enterprises operating in the forest sector to comply with internationally recommended codes of conduct (export quotas,...), standards and safeguards	18.25	3.95
S.C2	Effectiveness of monitoring and control agents in the management of PAUs and the exploitation of Prunus	11.45	6.55
S.C3	Effectiveness of incentives for officials and agencies to enforce forest laws, including investigation and prosecution	3.95	3.95
S.C4	Integration of riparian communities in the inventory and exploitation of Prunus in the PAU	9.8	5.3
S.C5	Gender mainstreaming in Prunus resource exploitation activities	7.6	4.25
S.C6	Equitable distribution of profits from the operation of Prunus	12.6	4.5
S.C7	Availability and accessibility of inventory results in PAU-owned forests	6.25	4.3
S.C8	Extent to which forest management at field level effectively follows adopted policies, regulations and plans	10.35	8.2
S.C9	Inter-sectoral coordination in the implementation of activities related to the Prunus sector	10.55	4.4
S.C10	Extent to which human rights, labour, safety, environmental and other basic laws are applied to resource exploitation activities	8	7.25
Mean/average for pillar 3		9.88	5.27

Only sub-components S.C1 and S.C6 of this third pillar have scores far above 10. However, inter-sectoral coordination (MINFOF, MINEPIA, MINADER, etc.) for resource management is fair with a score of 10.55.

Table 6 presents the assessment of the third pillar of forest governance related to the management of *Prunus africana* in the Adamawa PAU.

Figure 7 presents the assessment of the components of the 3rd pillar of forest governance in relation to the management of *Prunus africana*.

This figure shows that the only component that is actually being implemented is the fair and equitable sharing of benefits from the exploitation of the resource. The component relating to management measures is rated as fair. According to the respondents, particularly the heads of the post, there are difficulties related to the control of exploitation. This is due to the lack of logistical means as well as the absence of road infrastructure allowing control agents to carry out their tasks in the process. Another major fact is the low rating of the principles of transparency and accountability related to this pillar which are already equally mentioned in the second pillar. This is reflected in the absence of monitoring documents on resource exploitation inventory activities in MINFOF's decentralized services in the said region. The component on the participation of stakeholders in the exploitation process of the resource also presents a score of 09.5/20, below the accepted score.

3.1.5. Assessment Report of *P. africana* Governance

Figure 8 reports a diagram showing the assessment of governance related to the management of *P. africana* in the Adamawa UAPs.

This figure clearly shows that the first and the second pillar has a score above 10, unlike the last pillar. This might suggest that only the third pillar of governance related to resource management (implementation, enforcement and compliance) is not respected. To clarify this, the inferential statistics through the one-sided Wilcoxon rank test reveal the following result at the significance level

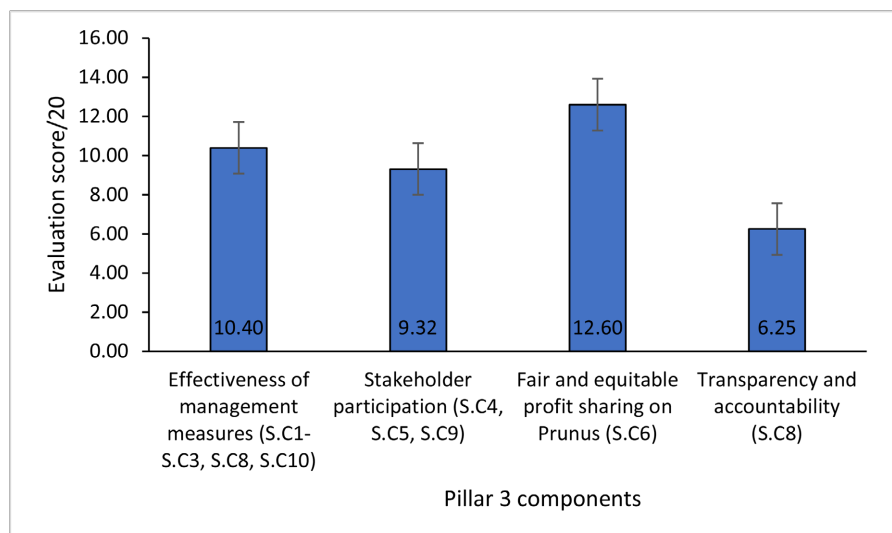


Figure 7. Assessment of the components of the third pillar of governance for *P. africana*.

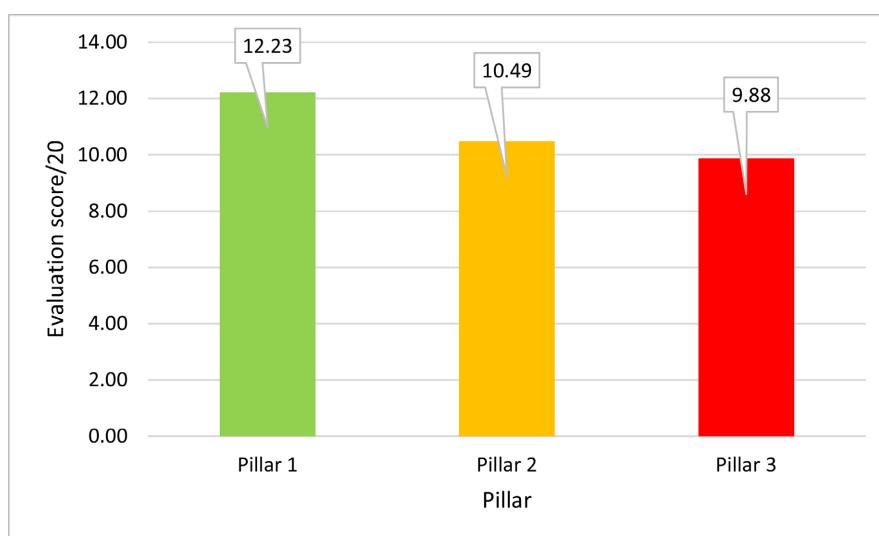


Figure 8. Assessment of *P. africana* governance in the Adamawa PAUs.

Table 7. Wilcoxon test statistic for the pillars of governance of *P. africana*.

Pillar	Min	1 st Quartile	Median	Average	3 rd Quartile	Max	P value ($\alpha = 0.05$)
Pillar 1	8.150	10.970	12.750	12.230	13.68	15.35	0.005
Pillar 2	2.300	8.925	10.000	10.486	13.950	16.100	0.722
Pillar 3	3.950	7.700	10.070	9.880	11.22	18.25	0.922
Gouvernance report	2.300	9.088	10.975	11.043	13.550	18.250	0.057

$\alpha = 5\%$ (Table 7).

This statistical analysis shows that for Pillar 1, the P-value is 0.005 (below the significance level), which confirms that the governance of *P. africana* is perceived as acceptably good in terms of the political, legal, institutional and regulatory framework. As for the second pillar, the P-value is 0.722 (above the α threshold), which means that although the average is above 10/20 for this pillar, governance at the level of the planning and decision-making process for the resource is perceived as poor. As for the third pillar, the P-value is 0.922 (also above the significance level), which effectively confirms the average obtained in this pillar as being poor and therefore reflecting poor governance in the implementation, application and enforcement of regulations on resource management in the Adamawa region.

Overall, it appears that governance is not good in terms of the results obtained. Indeed, although the final evaluation score out of 20 is 11.043, the P-value is 0.057, higher than the threshold value. Thus, although there is a legal, institutional and regulatory framework for *Prunus africana*, there are problems with the planning and decision-making processes and the implementation of this framework. The governance principles that are not respected here include stakeholder participation, transparency in the allocation of PAU, accountability, and the effectiveness of incentives. Inter-sectoral coordination also needs to be

strengthened in the area for better decision-making on *P. africana* management.

3.2. Discussions

There are several possible reasons for the scores obtained for the first three sub-components of the first pillar. The first element limiting the process of resource management in the area is the absence of simple management plans specific to each PAU, which specify the specific legal and regulatory framework for resource management in the area. According to the actors involved in the resource management process, the resource governance framework remains unclear in the sense that it does not really take into account the customary rights of indigenous peoples living near production sites. This can be justified by the fact that the limits of the PAUs, which are in the same way as the other production forests (UFA, Communal Forests), land in the private domain of the State, should be materialised. This should allow the population to respect the use rights on these lands (PAUs) which do not belong to them without creating any kind of land use conflict. In parallel, the simple resource management plans developed should clearly specify issues related to the respect of use rights for NTFP collection in PAUs, including *Prunus africana* bark on unbarked trees, in order to avoid causing any harm to the species. The absence of these management prescriptions negatively limits governance related to the management of the resource in this production area. According to the economic operators, the framework does not make any specific reference to the taxation system on *Prunus africana*. Indeed, for them, the taxation system in place is universal and does not differentiate between NTFPs like Pygeum and wood products. Taxation of NTFPs is very poorly developed in the Congo Basin countries (FAO-COMIFAC, 2006). The tax system is not clear enough, as it does not contrast artisanal exploitation with industrial exploitation, although the resource is exploited in an artisanal manner. This aspect should also be better structured in Cameroon's forestry code with regard to NTFPs.

Furthermore, for the actors, no informal rights (for people different from owners or not formally established or recognised as an economic entity or an economic operator) exist in the management of NTFPs in general and Pygeum in particular. Taking into account informal rights for stakeholders would favour the involvement of small-scale local harvesters of the resource in the value chain, who need to earn an income. Thus for the latter, exploitation is confined to economic operators with a well-defined status. With regard to property rights, according to the stakeholders, the PAUs have been defined as state-owned *Prunus* harvesting areas. Consequently, the forest galleries are located on state-owned land, which contradicts the consideration of property rights in the PAUs. Indeed, the land on which the resource is located is used for cattle breeding, a major activity of the population in the area. According to the latter, the method of allocating PAUs does not take these activities into account, which could create land-use conflicts between the herders and the permit holders

(PAUs).

The strong or medium points in the legal and regulatory framework on resource management include:

- The consideration of the sustainable improvement of the living conditions of the riparian communities in the PAUs;
- The existence of legal provisions and mechanisms for the equitable sharing of revenues from the exploitation of the *P. africana* resource. This is Law N° 2021/014 of 09 July 2021 governing access to genetic resources, their derivatives, associated traditional knowledge and the fair and equitable sharing of benefits arising from their use;
- The consideration of the equitable distribution of access to Prunus resources, rights and revenues derived from them;
- The existence of economic incentives and policies to promote increased value addition and sustainable use of NTFPs such as Prunus;
- The existence and adequacy of safeguards against social and environmental damage resulting from policies and activities related to the exploitation of the resource;
- The consideration by the framework of positive externalities (development projects) in the villages concerned by the exploitation of the resource.

There are also several possible reasons for the results obtained in the second pillar of governance of *Prunus africana*. According to stakeholders, although the resource governance framework promotes scientific debate on forest policies for *P. africana* and imposes sanctions if stakeholders do not fulfil their obligations, there is a lack of public access to information on the management of the resource. This is a limitation of sub-component 5, which falls under the principle of transparency. Stakeholders cite the absence of management documents on the local PAUs.

With regard to the allocation of PAUs, the Mayo Banyo town hall and the local communities, the primary beneficiaries of the resource, point to a lack of transparency in the process. According to the latter, they do not know by what criteria the PAUs are allocated by MINFOF to economic operators. According to the former third deputy mayor of the Banyo Commune and community leader from the Sambolabo locality, the distribution of the PAUs must take their opinion into account so that they can benefit from the sharing of the profits linked to the exploitation of Pygeum bark. The problem of transparency in the allocation of quotas or PAUs had already been mentioned by Awono et al. (2016) in a study on the Prunus sector in the North-West and South-West regions of Cameroon.

There are many reasons for the low capacity of civil society, indigenous people, and small and medium enterprises to participate and engage in planning, decision-making and implementation of actions related to the Prunus sector. As far as civil society is concerned, like FODER, this is justified by the other actors by the lack of synergy or collaboration with them. The work of this organization

carried out by the latter in the Tchabal Mbabo forest massif is, according to the economic operators, in contradiction with that obtained by the latter. Thus, although one of FODER's objectives within the framework of the COGESPA project (Support project for the conservation and participatory management of the Tchabal Mbabo forest massif) is to promote the sustainable management of *Prunus*, the actions are not shared with the other parties involved in the management of this resource.

With regard to the local populations living in the PAU, their weak capacity, which is described by the stakeholders (farmers, administration, etc.), is justified by the fact that they do not show any interest in getting involved in the resource's exploitation activities. There are no local SMEs involved in the management of this resource in this production basin. The low score of this component implies that the principle of stakeholder participation in planning and decision making on *Prunus africana* in Adamawa is questionable. Through sub-component 8, the principle of accountability is also questioned and hinders the good governance of *Prunus*. Sub-components S.C2, S.C6 and S.C11 also need to be reviewed and improved by stakeholders in this production basin.

Similarities and discrepancies with previous studies on forest governance

The issue of weak economic and financial incentives has long been mentioned as a factor limiting the proper management of non-timber forest products in Central Africa. Indeed, the taxation of NTFPs in Central Africa is very poorly developed. Moreover, there is little clarity on the taxation of NTFP management. Furthermore, at the institutional level, although a multitude of actors are involved in NTFP management, the lack of institutional leadership, human and financial resources and effective collaboration between the institutions concerned do not facilitate the development of this sector (FAO-COMIFAC, 2006). This argument goes hand in hand with the finding that collaboration between stakeholders involved in *P. africana* management is weak. According to FAO and COMIFAC, it is important to strengthen the role of government services.

Studies conducted by Piabuo et al. (2018) in 36 community forests (CFs) in Cameroon also concluded that the governance of CFs is relatively weak, which is similar to the results obtained. Among the principles decried, the author also points out the low accountability and low participation of stakeholders, including local communities, in the management process. The low participation of riparian communities in the planning and decision-making processes of forest resource management in Cameroon was also decried by Nkemnyi et al. (2016) in Tinto and Bimbia-Bonadikombo in the South West region of Cameroon. The results obtained diverge from those obtained by Oyono (2003) and Assembe (2004) in the FCs of Lomié, Dimako, Mbang, Ngola (East Cameroon) and Ebolowa and Kribi (South Cameroon). According to the latter, local and riparian populations in these community forests were excluded from the sharing of benefits from the exploitation of their forests. Identical results were obtained by Ngang (2015) in the CFs of Bakingili and Bimbia-Bonadikombo in the South

West region.

4. Conclusion

Forest governance in Cameroon has long been questioned by many authors in terms of its implementation. Forest resources have since been affected by this poor governance, and therefore if nothing is done, management decisions taken by stakeholders will always be ineffective. This study revealed that the governance system put in place by the state has many weaknesses or flaws in the management process of *Prunus africana*. The weaknesses lie in the clarity and coherence of the legal and regulatory framework, stakeholder participation, accountability, transparency in decision making and the effectiveness of resource management measures in the Adamawa region. However, it should be noted that one of the strengths of Prunus governance is the existence of a mechanism for sharing benefits from the exploitation of the resource. A framework for consultation between the stakeholders involved in the management of the PAU should be created, taking into account the opinions of the local communities, the primary beneficiaries of the benefits. The aim of this framework would be to pool ideas in order to find solutions for better governance of the resource and thus ensure its sustainability in its production basins. It would also be ideal for strengthening the control system in the production basins (at the level of inventories and at the level of exploitation itself: logistical support for control agents). In order to improve transparency, MINFOF's decentralised structures should be provided with useful documentation on the management of the resource in this production basin (Simple Management Plans). In addition, a traceability system for Prunus bark should be developed. It would also be necessary to include the certification of Pygeum bark as an incentive for economic operators. Prunus economic operators must hold their ABS permits in accordance with law N° 2021/014 of 09 July 2021. These measures will thus promote good forest governance and increase the value of the resource.

Acknowledgements

It is an honor for us to thank CITES, the Ministry of Forestry and Wildlife, ANAFOR and the National Herbarium of Cameroon, who mobilised to make this study possible, which aims at improving the governance of *Prunus africana* in Cameroon. Indeed, this study was part of the elaboration of the Notice of Non-Detrimental Trade of *Prunus africana* in the Adamawa region, a document allowing the lifting of the zero exploitation quota in the Prunus Allocation Units of the zone.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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