

## Reviewing the impacts of international interventions on woodfuel governance in Cameroon

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## **Reviewing the Impacts of International Interventions on Woodfuel Governance in Cameroon**

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# Reviewing the impacts of international interventions on woodfuel governance in Cameroon

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## HIGHLIGHTS

- International actors and institutions have intervened in the Cameroonian woodfuel sector seeking to increase its sustainability.
- Interventions using pathways of international norms and discourses, international rules, and direct access to Cameroonian policy processes have influenced policies and practices in the sector, the latter being the most influential.
- Most interventions ignore or don't consider in their interventions that the sector is largely governed by customary and informal market-based rules and sustainability implications.
- Positive impacts of international interventions were evidenced, but limited by weaknesses in intervention strategies, gaps and overlaps between institutions and the short-term and small-scale nature of programmes.
- Increasing the scale and continuity of interventions, focussing on both multi-sectoral and ministerial approach to woodfuel supply and demand, and participation of local people in woodfuel policy processes are recommended.

## SUMMARY

Although international actors have intervened to improve the management of the Cameroonian woodfuel sector, the impacts of these interventions have been little explored. This study investigated the influence of international interventions on policy processes and their impacts on the woodfuel actors and resources in Cameroon. Based on a systematically conducted review of English literature and five interviews, and using the international influence pathway framework as a conceptual lens, international norms and discourses, rules, and direct access were found to have influenced woodfuel governance in Cameroon, while direct access to formal laws and policies and by programmes on the ground had more positive but also negative impacts. Due to the nature of the laws and policies which were influenced, the complex national woodfuel context, and the short-term and small-scale characteristics of programmes, positive impacts on actors and resources created by international interventions were limited. These findings lead to recommendations to increase the scale and continuity of the programmes by ensuring more synergies with informal, local and international market-based 'rules', such as REDD+ and forest certification; to focus on increasing woodfuel supply and decreasing demand; and to focus more attention on involving and empowering local people in these policy processes.

Keywords: woodfuel, governance, international interventions, rules, policy impact evaluation

## Examen des impacts des interventions internationales dans la gestion du bois de chauffage au Cameroun

D. KIM et V. INGRAM

Bien que les acteurs internationaux soient intervenus pour améliorer la gestion du secteur du bois de chauffage au Cameroun, ces interventions n'ont été que peu examinées. Cette étude a considéré l'influence des interventions internationales sur les processus de politique et leurs impacts sur les acteurs et les ressources en bois de chauffage au Cameroun. Basés sur un examen systématique de la littérature en anglais et sur cinq interviews, en utilisant le cadre du chemin emprunté par l'influence internationale comme objectif de mise au point, les normes et les discours internationaux, les règles, et l'accès direct se trouvaient avoir influencé la gestion du bois de chauffage au Cameroun; alors qu'un accès direct aux lois et aux politiques formelles et les programmes sur le terrain avaient des impacts plus positifs, mais également négatifs. Du fait de la nature des lois et des politiques ayant été influencées, du complexe contexte national du bois de chauffage et de la caractéristique du court terme à petite échelle des programmes, les impacts positifs créés par l'intervention internationale sur les acteurs et les ressources étaient limités. Ces résultats conduisent à une recommandation d'accroître l'envergure et la continuité des programmes en s'assurant de la présence de davantage de synergies avec les «règles» informelles, locales et internationales basées sur le marché, telles que la REDD+ et la certification forestière, pour pouvoir se concentrer sur une croissance de la production de bois de chauffage et une décroissance de la demande, et afin d'être en mesure de porter une plus grande attention à la participation et à l'autonomisation des populations locales dans ces processus de politique.

## Revisión de las repercusiones de las intervenciones internacionales en la gobernanza de la leña en Camerún

D. KIM y V. INGRAM

A pesar de la intervención de diferentes organismos internacionales para mejorar la gestión del sector de la leña de Camerún, las repercusiones de estas intervenciones apenas han sido exploradas. Este estudio investigó la influencia de las intervenciones internacionales en los procesos políticos y sus repercusiones en los agentes y los recursos del sector de la leña en Camerún. A partir de una revisión sistemática de la bibliografía en inglés y cinco entrevistas, y utilizando el marco de la vía de influencia internacional como lente conceptual, se descubrió que las normas y discursos internacionales, las reglas y el acceso directo habían influido en la gobernanza de la leña en Camerún, mientras que las repercusiones del acceso directo a las leyes y políticas formales y de los programas sobre el terreno fueron más positivas, aunque también negativas. Debido a la naturaleza de las leyes y políticas que se vieron influidas, a la complejidad del contexto nacional de la leña y a las características a corto plazo y a pequeña escala de los programas, las repercusiones positivas sobre los agentes y los recursos creadas por las intervenciones internacionales fueron limitadas. Estos hallazgos llevan a recomendar que se aumente la escala y la continuidad de los programas garantizando más sinergias con las “reglas” informales, locales e internacionales del mercado, como REDD+ y la certificación forestal, que se centre la atención en aumentar la oferta de leña y disminuir la demanda, y que se preste más atención a involucrar y empoderar a la población local en estos procesos políticos.

### INTRODUCTION

Woodfuel<sup>1</sup> has high socio-economic importance in Sub-Saharan Africa (SSA). It is the source of energy for cooking and lighting for more than 70% of the population of the region (Schure *et al.* 2013, Sola *et al.* 2017). It is also a major source of income for hundreds of thousands of people in the region, with an estimate that the charcoal industry will provide jobs to more than 12 million people by 2030 in SSA (World Bank 2011).

This socio-economic importance of woodfuel is reflected in Cameroon (Figure 1), situated in the Gulf of Guinea with a population of 25 million people consisting of more than 250 ethnic groups. Cameroon is rich in natural resources: about 40% (19 million hectares) of its total area is forested, comprised of lowland, montane, and mangrove forests (Cerutti *et al.* 2009, FAO 2015, Ngnikam 2009). The provision of energy sources such as electricity, liquified petroleum gas (LPG) and hydropower is increasing but is limited: it was estimated that 10 million people did not have access to electricity in 2013, and the electrification rate in rural areas was 17% in 2016 (Abanda 2012, Muh *et al.* 2018). Due to these social and ecological conditions, woodfuel is the most widely used household energy source for the majority of Cameroonians. Around 83% of the population in Cameroon rely on woodfuel for cooking. It is the predominant sources of energy in rural areas. With an estimated 2.2 million metric tons of fuelwood and 356 530 metric tons of charcoal consumed annually in urban areas, demand for woodfuel is expected to continue to rise at around 3% per annum (Eba’a Atyi *et al.* 2016). The sector was valued at 35 million Euros in 2016, providing around 90,000 full time jobs (Eba’a Atyi *et al.* 2016).

In spite of the socio-economic importance of woodfuel, its production, trade, and consumption are associated with multiple negative social and environmental problems in Cameroon.

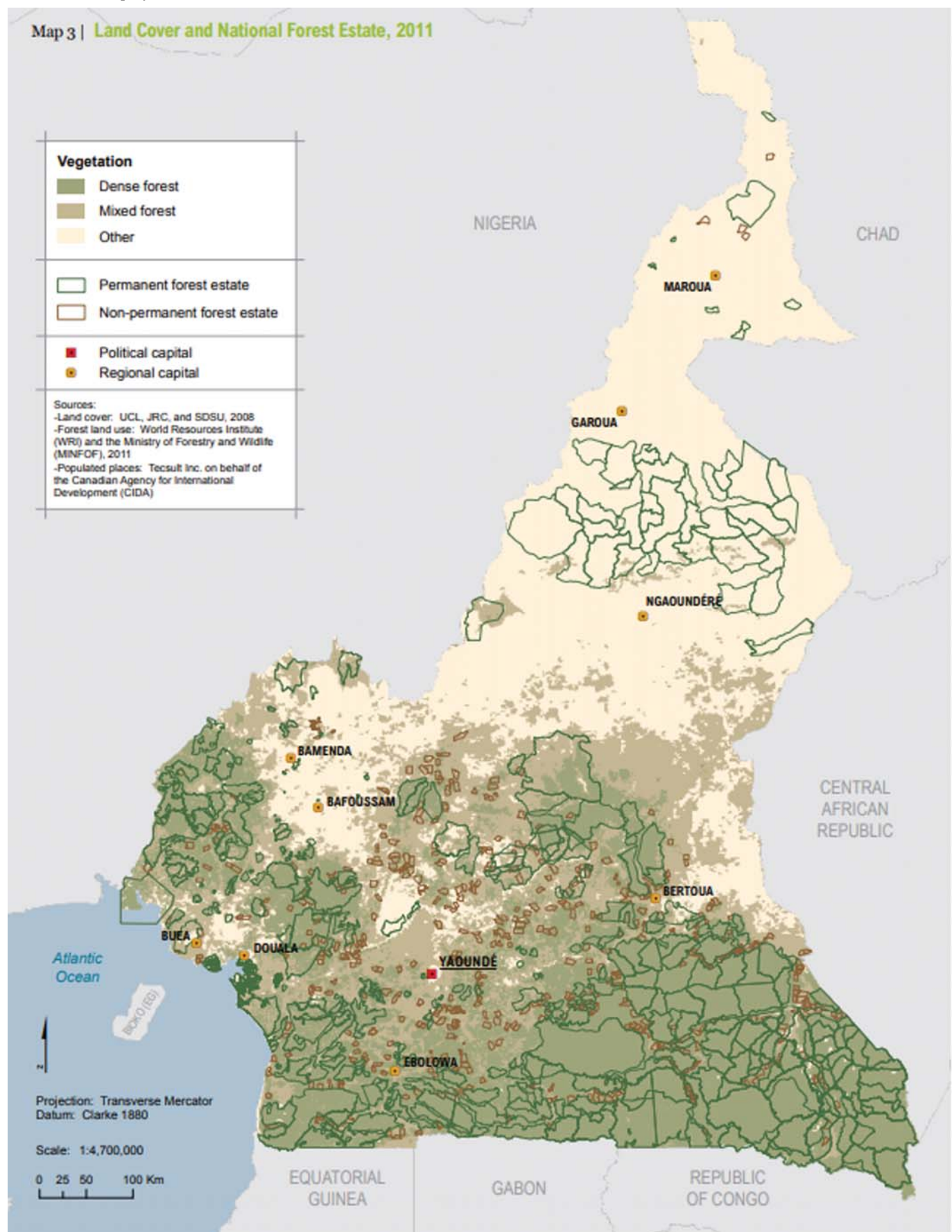
The exploitation for fuelwood and charcoal has led to deforestation and degradation of mangrove forests in the Littoral region, and in forests near highly populated urban areas across the country (Feka *et al.* 2009, Simon 2018). Cameroon is one of countries globally identified as having a significant rate of deforestation, a high proportion of which is attributed to charcoal production (FAO 2017). Burning woodfuel for cooking causes reduced lung function and other respiratory symptoms, especially for women who are the main societal group using woodfuel for cooking (Nghahane *et al.* 2015). These problems are highly relevant to contemporary global agendas, such as Sustainable Development Goals (SDG) (e.g. SDG 5: Gender equality, SDG 7: Affordable and clean energy, SDG 13: Climate Action) and food security (Jin *et al.* 2017). However, woodfuel also has a high potential as a socially and ecologically sound renewable source of energy, if well managed (GIZ 2015). Therefore, international actors and institutions have made purposeful efforts to intervene in the woodfuel sector in Cameroon to solve these issues and to improve its sustainability, comprised of direct and indirect actors in the value chain.

Despite the socio-economic importance of woodfuel in Cameroon, there are few scientific studies on woodfuel sector in Cameroon (Eba’a Atyi *et al.* 2016) and international interventions in the woodfuel sector in Cameroon and SSA in general have been underexplored. While studies have investigated the governance of woodfuel sector and their impacts on local people and forest resources in SSA countries, including Cameroon (Ingram 2017, Schure *et al.* 2013, Schure *et al.* 2014, Sola *et al.* 2017 and Sola *et al.* 2019), there has been no extensive analysis of the influence of international actors and institutions on the woodfuel sector.

Understanding how international interventions have influenced the woodfuel sector is important as it can provide insights regarding the design of effective international intervention

<sup>1</sup> Woodfuel refers to fuels originated from woody biomass, and classified as fuelwood and charcoal: fuelwood (or firewood) is wood energy in which original form of wood is preserved; charcoal is a solid black energy-dense residue produced by carbonisation of woods (FAO 2004).

FIGURE 1 Map of Cameroon with land cover (WRI/GFW and MINFOF 2011)





and/or cooperation strategies which seek to improve how the sector is governed and managed in collaboration with national and local strategies. Therefore, this study aims to provide a systematic investigation of the types of international interventions in the woodfuel sector in Cameroon, their influence on woodfuel policy processes, governance and practices, and their social and environmental impacts. Given this context, this study sought to answer the following questions:

- (1) How have interventions by international actors and organisations in the woodfuel (fuelwood and charcoal) sector in Cameroon affected governance and institutions, policy and practices?
- (2) What impacts have these international interventions had in terms of the sustainability of forests and for people relying on woodfuel?

## ANALYTICAL FRAMEWORK

The analytical framework is built on the concepts of governance and institutions, and the international influence pathway framework (Bernstein and Cashore 2012). This aids the conceptualisation of woodfuel governance and four vertical pathways of international interventions in the sector. This framework guided the data collection (i.e. selection of literature and construction of open-ended interview questionnaires), and the analysis of data.

### Woodfuel governance

Governance refers to the diverse ways of decision-making on societal issues (Arts and Visseren-Hamakers 2012). Integral elements of governance arrangements are institutions, which are defined as “humanly devised constraints that shape human interaction” (North 1990) and have diverse origins. In this case concerning the governance of the woodfuel sector (henceforth referred to as woodfuel governance), institutions regulate the access of woodfuel actors (i.e. individuals and organisations involved in the growing, harvest, production, transport, trade and consumption of woodfuel) to woodfuel resources (i.e. sources of woodfuel, such as farms, fallows, forests and woodlands); shape the relationships between actors; and affect the production, transport, trade, and consumption of woodfuel (Schure *et al.* 2013). These institutions can be classified into *formal*, *informal* and *market-based institutions*. State or formal institutions include officially codified laws and policies enacted and enforced by central and local government, informal institutions refers to unwritten norms and conventions (e.g. customary or traditional rules) that are socially accepted, created and enforced (Schure *et al.* 2013, Wiersum *et al.* 2014) and non-state, market-based institutions refers to where the private sector and civil society create drive

norms, standards and rules, such as voluntary sustainability certification (Auld *et al.* 2009) as well as standards and norms of trade and practices in value chains (Ingram 2014). In Cameroon, woodfuel is mostly produced in-country, transported, traded and consumed, though a small proportion is traded from and to neighbouring countries such as Chad, Nigeria and the Central African Republic. Thus in this research, woodfuel governance in Cameroon is viewed as the governance of a largely domestic (i.e. national and local) sector and value chains.

### International interventions in woodfuel governance in Cameroon

Woodfuel governance involves the interactions of actors and institutions at international levels that embrace environmental and social issues. The focus of this research is a review of the international interventions in woodfuel governance in Cameroon –where international actors and institutions fund and/or implement actions that impact institutions, actors and resources in woodfuel governance in Cameroon. These interventions are conceptualised using the international influence pathway framework of Bernstein and Cashore (2012), which identifies four pathways of influence – *international rules*, *international norms and discourses*, *markets* and *direct access to the domestic policy process*. International rules refers to issue-specific treaties and agreements and policy prescriptions of international actors, with binding effects made through coercion or consent of domestic actors; international norms and discourses affect domestic policies and practices by defining appropriate behaviours or providing utility in obeying them; market pathways encompasses market mechanisms, direct action (e.g. boycotts) to create pressure on exporters, and indirect actions (e.g. product certification) to increase social and environmental values within a market; direct access includes financial and technical assistance, education and capacity building efforts from international actors that aim to influence the domestic policy or behaviours of domestic actors, and may also take place via partnerships with domestic actors (Bernstein and Cashore 2012).

International interventions using one or more of these pathways may influence formal institutions (i.e. induce changes in laws, policies or strategies) or practices<sup>2</sup> of production, trade and consumption of woodfuel (e.g. how actors manage the forests used for woodfuel production). If the goal of international interventions is to induce changes in formal institutions or practices (i.e. bring in new laws, policies and practices or improve the existing ones) (Bernstein and Cashore 2012) and they are successful in realising such goals, they can be considered as ‘influential’.

The changes in formal institutions or practices created by these interventions may further create impacts on the ground (i.e. observable, evidenced and plausibly attributed impacts

<sup>2</sup> Following the definition of practice – “how people relate to other people and to things, artefacts, and other forms of life in their environment” (Behagel *et al.* 2017), practice in this research is operationalised as the diverse behaviours that actors in woodfuel governance utilise resources to produce, trade, and consume woodfuel and form relationship between themselves.

on actors and resources, such as increased incomes for local people producing and selling woodfuel or decrease forest degradation when forests managed for woodfuel) and new or changed practices. These relationships between international interventions and the woodfuel governance are graphically illustrated in Figure 2 and form the analytical framework for this research.

Informal and market-based institutions in woodfuel governance are included in analytical framework as they play a significant role in forest and woodfuel governance in Cameroon (Ingram 2014, Schure *et al.* 2013, Sola *et al.* 2019) and potentially influence the international intervention pathways. However, data and literature specifically on woodfuel informal and non-state governance and how international interventions sought to influence these arrangements was scarce. Fieldwork to interview or observe interventions by international actors was not possible due to restrictions related to the covid pandemic, as most international organisations left

the country and the border was closed. The international influence pathway framework presupposes Multi-Level Governance (MLG), in which inter-level interventions and horizontal interactions (e.g. actors and institutions of other domestic sectors affects the woodfuel governance) occur. However given the focus on international interventions, these interactions were not included in the scope of this study.

## MATERIALS AND METHODS

### Data collection

The main data collection method consisted of a review of literature. Documents relevant to woodfuel governance in Cameroon included peer-reviewed articles and grey literature including MSc and PhD theses, reports and documents from international organisations. The selection of the documents was conducted systematically to minimise selection bias. A search was made in English using Web of Science core collection (WoS) and Google Scholar (GS), using the search strings guided by the analytical framework, shown in Table 1.

Strings 1 to 4 were used to search for literature in WoS. String 1 focuses directly on literature about woodfuel sector. String 2 aimed at finding literature about sectors and themes related to woodfuel, but not necessarily about forests, such as energy, SDGs and food security (sometimes referred to as nutritional security). String 3 searches for documents on value chain, management or governance of Non-Timber Forest Products (NTFPs), as woodfuel is often classified as a type of NTFP. String 4 sought literature about (1) forest management, as woodfuel management is one of such activities, and (2) forest governance, as woodfuel is often seen as a sub-sector of the forest sector. While ‘international interventions’ and associated terms such as influence, programs and projects are core terms in the analytical framework, this term or similar ones were not used in the search strings as an initial review found no studies or reports whose main topic was international interventions in the woodfuel sector.

FIGURE 2 Analytical framework: international interventions in woodfuel governance

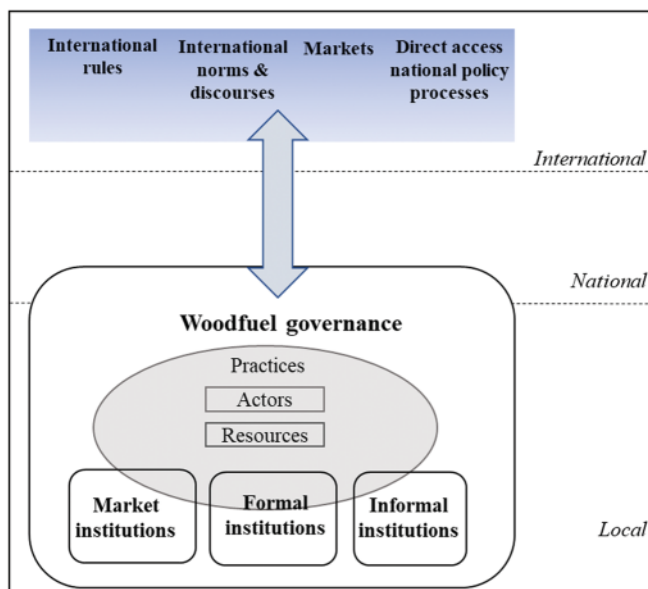


TABLE 1 Search strings used in the literature review

Criteria	Search string	Key words
Woodfuel	1	("wood fuel" OR woodfuel OR fuelwood OR firewood OR charcoal OR wood energy OR wood energy OR biomass energy) AND (Cameroon OR Cameroun)
Development (interventions) in Cameroon	2	("sustainable development" OR "sustainable development goals" OR "SDGs") OR ("food security" OR "nutritional security" OR "nutrition security") AND (energy) AND (Cameroon OR Cameroun)
Woodfuel (NTFP/ forest value chains) in Cameroon	3	("NTFPs" OR "NTFP" OR "Non timber forest products" OR "Non-timber forest products") AND (management OR governance OR "value chain" OR "value-chain") AND (Cameroon OR Cameroun)
Woodfuel governance in Cameroon	4	("Forest governance OR "forest management") AND (Cameroon OR Cameroun)
	Search string for Google Scholar	Must include: Wood fuel AND Cameroon OR Cameroun At least one of the words included: governance OR institution

Note: search string 1, 2, 3, 4 were used for WoS

For GS, a simpler and inclusive search string (5<sup>th</sup> row in Table 1) was used, as GS has limited search capacity and tens of thousands of documents are yielded per search, making it less useful to use the aforementioned search strings. Additionally, websites related to woodfuel sector in Cameroon were visited and searched for relevant documents.

As the strings show, the documents were limited to those that include Cameroon as a case. All the documents were limited to those written in or translated into English. This was a practical consideration given the first author's language ability. Whilst some French language publications were consulted, this is recognised as a limitation and bias which could lead to potentially relevant literature not being used, as Cameroon is officially bilingual.

The steps and results of literature scanning and screening are shown in Figure 3. The WoS search resulted in 168 studies, of which 10 documents were considered relevant as meeting all the criteria in Table 1. The search in GS resulted in 14 400 hits, in which the first 200 were selected for review. These 200 were screened for duplicates, which were then removed, followed by a screening by title and abstract, screening of the introduction and conclusion, and finally full-text screening. Twenty-two documents were retained for in-depth analysis as meeting the search criteria. From a search of the references of these 22 documents, four additional documents were deemed as meeting the criteria and were included in the final review, resulting in a total of 26 documents for coding and analysis.

Summarised in Table 2, the analysed documents included peer-reviewed articles and grey literature. Classified by the main topic, they focused on forest governance and energy, with just one on climate change. Among the documents on energy and climate change, 12 discussed mainly woodfuel, five included charcoal and seven both fuelwood and charcoal. Classified according to location, just over half were exclusively about Cameroon, and just under half covered SSA or Central Africa. In these documents, Cameroon was included as a case, or it was indicated that the information was applicable to Cameroon. The majority of documents included information on international interventions, although nine did not mention interventions but provided information about woodfuel governance in Cameroon, or recommendations on interventions or policy and practices.

Interviews with five academics and staff from development organisations active in the woodfuel sector in Cameroon were conducted, out of eight people identified from the literature review and based on knowledge of the second author. This small number of interviews was due to limited availability during covid pandemic and as the interview was conducted in English. The objective of the interviews was to gain recent and detailed information about Cameroonian woodfuel governance that may not be found in the documents and to verify the findings from the literature.

Each interview lasted about 30 to 45 minutes. A semi-structured interview guide was used to conduct the interviews, which introduced the research questions and was based on

FIGURE 3 Literature scanning and screening process

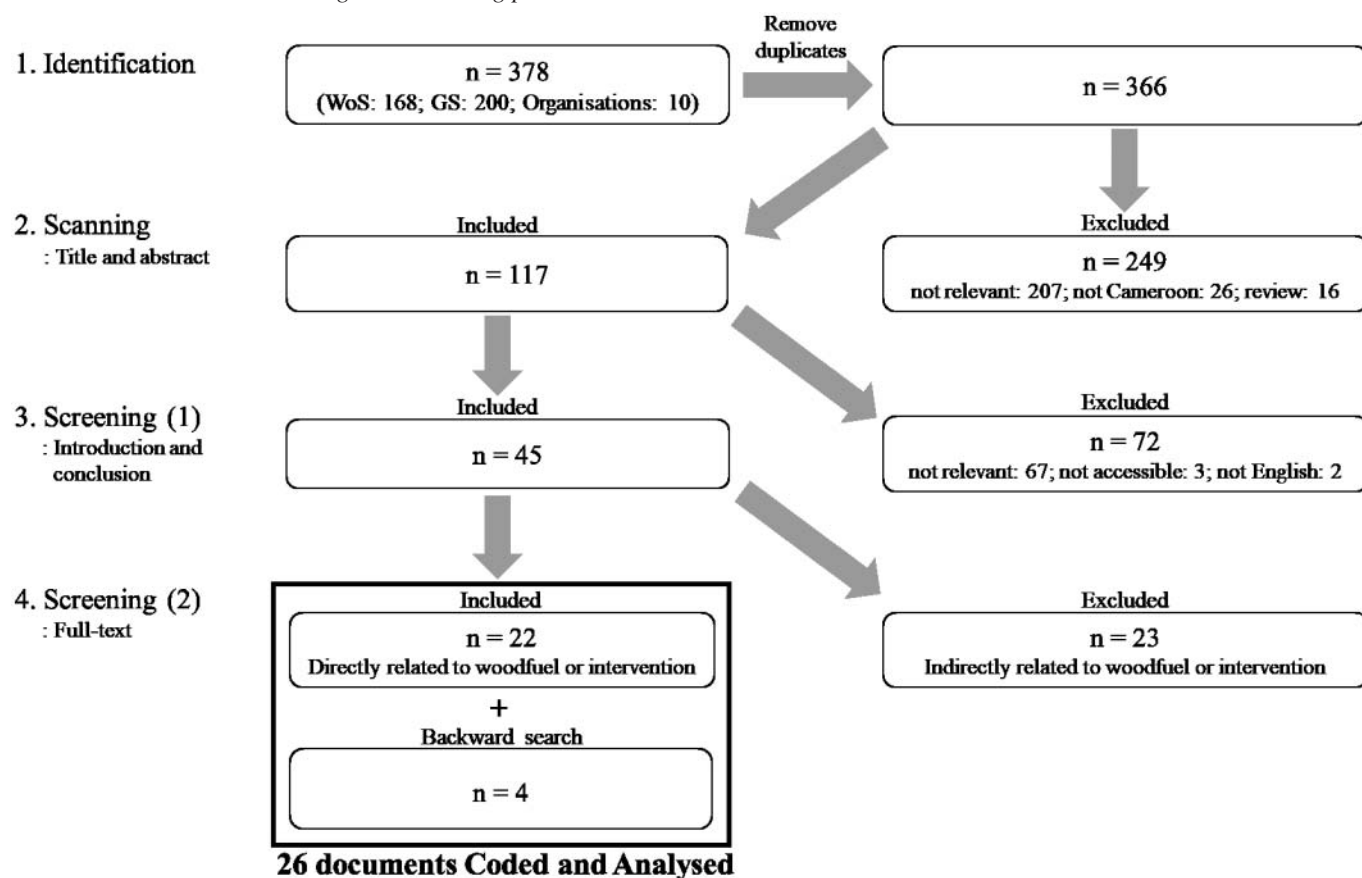




TABLE 2 *Classification of the analysed documents*

Document type	N	Study area	N	Topic	N	Intervention	N
Peer-reviewed	13	Cameroon	14	Forest governance	13	Yes	17
Grey literature	13	Sub-Saharan Africa	12	Energy	12	No	9
				Climate change	1		
Sum	26		26		26		26

the analytical framework (formal governance arrangements, characteristics of wood fuel value chain and markets, perceptions of woodfuel sustainability and interventions, contribution of international actors to sustainability, and recommendations for interviews and literature). No further English language literature or interviewees emerged from the interviews. Notes were taken and were transcribed prior to analysis.

### Data analysis

The documents and interviews were analysed and coded using a deductive qualitative coding system. Using the analytical framework, a coding scheme was used to identify (1) formal institutions in Cameroonian woodfuel governance, (2) four pathways of international interventions in Cameroonian woodfuel governance, and (3) changes in formal institutions and practices, and their impacts on the ground. Relevant information from the literature and interviews was extracted using these codes and synthesised. The interviews were used to interpret and deepen understanding of the findings of the literature review.

## RESULTS AND DISCUSSION

### Institutions governing woodfuel in Cameroon

#### Formal institutions

As woodfuel is classified as a “Special Forestry Product” (SFP) and a “Non-timber Forest Product” (NTFP) in Cameroon, the Forest Code No. 94/01 (the 1994 Forest law) and the Decree No 95-531-PM (the 1995 Forest decree) govern the production and trade of woodfuel (Awono *et al.* 2016). In all types of forests defined in the law, except for protected areas, people are allowed to collect fuelwood for self-consumption; for commercial trade of fuelwood and charcoal, an official SFP permit is required for charcoal production, and for fuelwood, a permit for fuelwood exploitation (Awono *et al.* 2016, Schure *et al.* 2012). The forest tenure system indirectly governs the production and sale of woodfuel by local people. Legally, all forests are state-owned and divided into the permanent forest domain – that must remain as forested area, and the non-permanent forest domain – that can be converted to non-forested area. In the non-permanent domain, through an agreement with the Ministry of Forestry and Wildlife (MINFOW), a community can establish a Community Forest (CF) up to 5 000 ha in which the community members are granted right for 25 years to manage and sell NTFPs including woodfuel; for this, communities need to submit a ‘Simple

Management Plan’ (SMP) and have this approved (Awono *et al.* 2016, Expert 4 interview). As of 2019, there were 430 CFs covering 1.7 million ha, but only 264 with SMPs and the number slowly increasing (Minang *et al.* 2019). In production forests in the permanent domain, logging concessionaires can obtain exclusive rights to exploit timber through agreements with the government, when accompanied by an approved Forest Management Plan (FMP) and as part of the FMP, rights for local people to collect fuelwood (for personal consumption) are officially restricted to areas designated as production and protection areas (Lescuyer *et al.* 2012).

While there is no nationwide woodfuel policy or strategy (Sola *et al.* 2019), policies and strategies which touch on woodfuel production and consumption exist at regional and local level. The government has developed a Wood Energy Modernisation Strategy for the far North region, which includes the sustainable management of forests and valorisation of wood waste into woodfuel (Eba’a Atyi *et al.* 2016). Also, strategies for a more structured national timber market (Internal Wood Market, MIB) are being developed, which address woodfuel sales (Eba’a Atyi *et al.* 2016). In several regions, forest management strategies by local communities to ensure the stable supply of woodfuel sources have been approved by local government and are being implemented (Expert 4 interview).

#### Informal and market-based governance

Only two papers describe the informal institutions, actors, resources and practices in Cameroon, despite informal institutions and customary rules being the major form of value chain governance, as in many other central and west African countries (Schure *et al.* 2013). This situation allows large numbers of actors to be involved in the chain, but also leads to substantial unsustainable and unofficial woodfuel production, corrupt practises and loss of tax revenues for the state (Schure *et al.* 2013, Sola *et al.* 2019). In 2011, less than 1% of the estimated charcoal production was covered by formal Special Forestry Product permits and 2012 no producers around Yaoundé possessed a permit and corruption was common when passing Forestry service checkpoints (Schure *et al.* 2012).

### International interventions in the woodfuel sector in Cameroon

Evidence presented in the literature and interviews, indicated that largely formal institutions and practices in woodfuel governance in Cameroon have the target of influence, using international norms, discourses and rules, and direct access

pathways. The majority of evidence from the literature describes interventions explicitly aiming to develop and influence formal institutions related to forests and the environment.

Concerning international norms, discourses and rules, Cameroon has signed legally binding international environmental agreements on natural resources, climate and forests which have implications for the woodfuel sector. Under the Convention on Biological Diversity (CBD), the government undertakes to conserve and sustainably use biodiversity, while the Ramsar Convention on Wetlands provides a framework for national action and international cooperation for the conservation and wise use of wetlands and their resources, such as mangroves. These international rules have been translated to domestic strategies: for example, to implement RAMSAR and CBD, Cameroon developed a National Biodiversity Strategy and Action plan (NBSAP) that includes and protects specific wetlands and mangrove forests (Ajonina 2007, Ingram *et al.* 2015). The Convention on International Trades in Endangered Species of Wild Fauna and Flora (CITES) restricts the harvest and international trade of vulnerable species such as afrormesia (*Pericopsis elata*) (Amougou *et al.* 2009). However, no evidence of direct influence (i.e. rules or enforcement on the use of mangrove and threatened species as a woodfuel) was found in the literature.

Following the 2015 Paris Agreement of the United Nations Framework Convention on Climate Change (UNFCCC) (Mbatu 2016), Cameroon submitted a Nationally Determined Contribution (NDC), a national climate change mitigation and adaptation action plan, with a goal to reduce the use of woodfuel or replace it with other energy sources (e.g. biogas), although specific actions are yet to be designed or implemented (Amugune *et al.* 2017).

Cameroon participates in Reducing Emissions from Deforestation and Forest Degradation (REDD+), a mitigation strategy under the auspices of the UNFCCC that supports and compensates countries for forest-related climate change mitigation activities. In the REDD+ Readiness Preparation Proposal (R-PP) for Cameroon, woodfuel is regarded as a direct driver of deforestation (FCPF 2012) and actions such as increasing woodfuel supply, woodfuel efficiency, the reduction and substitution of woodfuel consumption are suggested as viable REDD+ strategies (FCPF 2012, Mala 2015). However, until recently, there were no specific strategies or activities that relate woodfuel management by REDD+ (Expert 2 interview).

Forest Law, Enforcement, and Governance (FLEGT) and voluntary forest certification schemes – which could also be considered as market-based pathways – are international rules that influence Cameroon's forest policies and practices, as timber export is one of the country's main economic activities (Mbatu 2016). However, while these rules could plausibly influence woodfuel governance via requirements in forest management or logging practices, or practices of selling wood processing mill residues locally (Mboumboue and Njomo 2018), no evidence of such influence was found in the literature.

Pathways through international rules, norms or discourses concerning other sectors, such as on trade and energy, were not evident in the literature.

The direct access to domestic policy process pathway was used by multiple actors, mainly development agencies, international governmental and non-governmental organisations (IGOS and INGOs), research institutes and private actors, directly accessing and seeking to influence Cameroonian formal institutions and policies concerned with woodfuel. They participated in the development and revision of the 1994 Forest Law, decrees on community forestry, SFP and NTFPs, and have supported the Cameroon government with technical and policy advice, programs and projects to make and implement policies and strategies related to or addressing woodfuel. For example, the World Bank and International Monetary Fund (IMF) also influenced the development and enactment of the 1994 Forest Law. As a condition of financial support to Cameroon to deal with the economic crisis in 1986, the World Bank and IMF requested an economic reform that includes the forest sector corresponding with the Government of Cameroon's wish to revise its 1981 Forest Law to increase revenues from the forest sector (Ekoko 2000, Mbatu 2016). Thus, the government accepted 'the new forest strategy' of the World Bank, which resulted in the inclusion of provisions related to woodfuel such as CFs and SFP permit system in the 1994 Forest law (Ingram *et al.* 2015, Mbatu 2016). Since 2009, the law has again been under reform, with multiple international actors such as the German Agency for International Cooperation (GIZ), SNV, Food and Agricultural Organisations (FAO), Centre for International Forestry Research (CIFOR) and World Agroforestry Centre (ICRAF) participating in the process (Awono *et al.* 2016, Ingram 2014). These organisations have provided suggestions and recommendations, including improving and reclassifying SFP lists; simplifying administrative processes in the permit system; inventorying NTFPs; and enhancing the participation of local communities and people in NTFP management (Ingram 2014).

At least 15 international donor financed programs supported the establishment and management of CFs (Minang *et al.* 2019). A Simple Management Plan (SMP) is a legal requirement which is approved by the Ministry of forestry before communities can exploit a forest and the main instrument and form of devolved governance for all activities in a CF, which can include setting rules on woodfuel harvest locations and quantities, affecting the supply for a communities' own consumption. Given the detail and bureaucracy involved in putting together a SMP, it is not easy for the majority of communities to formulate a SMP by themselves, thus, in many cases, communities have been supported by international actors and local NGOs in the formulation and implementation of SMP (Awono *et al.* 2016, Dugma *et al.* 2018, Movuh and Schusser 2012, Edawa 2018, Expert 1 interview).

International actors also participated directly in the development of, and discussions about, woodfuel-related strategies and policies. GIZ supported the development of the Wood Energy Modernisation strategy in the Far North Region (Sola *et al.* 2019). Through the Congo Basin Forests and Climate Change Adaptation (COFCCA), a multi-stakeholder partnership for science-policy dialogue for adaptation, actors such as CIFOR and DFID recommended prioritising the woodfuel sector for adaptation (Sonwa *et al.* 2012). The development of

the LPG masterplan in 2016 by the government of Cameroon, in which one of the aims is to reduce the use of woodfuel by the expansion of LPG, was supported by the UN-led Global LPG Partnership (GLGLP) that promotes the use of LPG in developing countries (Bruce *et al.* 2018).

International actors have implemented programmes which directly and indirectly sought to influence practices of woodfuel governance, and took a value chain approach encompassing the production and consumption of woodfuel. In the mangrove around Douala-Edea, in the Littoral region, there have been ongoing programs by international organisations such as CIFOR, DFID, GIZ and the Netherlands Development Organisation (SNV) to support communities in the management, reforestation and afforestation of mangrove forests in order to stabilise the fuelwood supply and to conserve biodiversity (Ajonina 2007, Sonwa *et al.* 2020, Expert 5 interview). In the Eastern region, GIZ implemented programmes to increase charcoal production from 2011 to 2014, and from 2016 to date, in cooperation with logging concessionaries; these programmes are also related to the Wood Energy Modernisation Strategy. These programmes introduced wood processing waste valorisation and more efficient charcoal-making kiln technologies such as metal kilns to local communities and promoted the commercialisation of charcoal produced in this way (FAO 2017, Schure *et al.* 2019, Expert 3 and 5 interview).

Donor programmes also focussed on reducing woodfuel consumption. In Douala-Edea region, international actors supported the adoption of improved fish smoking houses to reduce the exploitation of mangroves for fuelwood (Ajonina 2007). SNV and Heifer Project International (HPI) implemented projects to replace woodfuel with biogas in five regions including Adamaoua and the Northwest (Kimengsi 2015). In the Southwest region, an LPG Adoption in Cameroon Evaluation (LACE) study was conducted by the University of Liverpool from the UK with the support of GLGLP, advising on the design and implementation of the LPG masterplan (Bruce *et al.* 2018).

Evidence from the literature describing international influences largely focusses on, i) formalisation of the sector and value chain by introducing laws, regional or national policies (Schure *et al.* 2013, Sola *et al.* 2019), and ii) addressing sustainability and over-exploitation, particularly in north Cameroon where pressure due to the climate, population growth, intense harvesting and bush fires on woodlands has led to expanding deforestation around Maroua and Garoua (Folefack and Abou 2009), leading to forest restoration, setting up protected areas, strengthening formal governance and value-adding interventions such as by the Cameroon government and German Technical Cooperation (GIZ) (MINFOF-MINEPDED 2017).

Interventions using international market pathways were little used, mainly because exports of woodfuel are generally to neighbouring countries, in small volumes and informally governed (expert interviews), and the trade in forest products internationally focuses on timber and other (non-woodfuel) NTFPs. International interventions that sought to impact local and national markets and value chains were more common,

such as the GIZ, SNV and GLGLP programs addressing adding-value, consumption and fuel efficiency.

### **The influence of the international interventions on woodfuel policy and governance**

While international agreements and ‘rules’ such as CBD, CITES and RAMSAR notionally cover the woodfuel sector, evidence from the literature that they influenced formal institutions and practices in woodfuel governance in Cameroon is scarce. The woodfuel-related strategies and policies of UNFCCC and REDD+ exist on paper but are at a very preliminary and localised stage of implementation in Cameroon. Although the goals of such international interventions have been to induce changes in formal institutions or practices (i.e. bring in new laws, policies and practices or improve the existing ones), the literature did not provide evidence of their influence on the woodfuel governance system. This can be attributed to weak government capacity and national political situation, particularly the highly fragmented, sectoral approach to policy domains which impedes the government to translate international rules into domestic strategies (Ingram 2014, Hogl *et al.* 2016, Eba’a Atyi 2021). Woodfuel is only one of the elements of the broader themes that these international rules, standards and guidelines cover.

Discourses and norms on SFM and the devolution of rights and pressure placed by international organisations such as the World Bank to reform the forest sector (Topa *et al.* 2009) influenced the establishment and text of 1994 Forest Law and its revision. This is in line with one of the propositions of Bernstein and Cashore (2012) that norms direct the policy change when the government faces external pressure to do so. Discourses about sustainability (on sustainable energy and sustainable rural development) had indirect influences on the woodfuel governance as they were coupled with direct access pathway and being mentioned in the literature as justifications for projects and programs (Sonwa *et al.* 2012, Ingram 2017).

The analysis of evidence suggests that international actors, especially development organisations from Europe (i.e. SNV), IGOs (i.e. GIZ), INGOS and research for development organisations (i.e. CIFOR), influenced the development of formal institutions by participating in activities such as the regular meeting of the Circle of Partners of MINFOF, GIZ having staff embedded in MINFOF national and regional offices, and by participating in the discussions to develop the 1994 Forest Law, its revision and woodfuel-related strategies. International actors also influenced practices in woodfuel governance via interactions with local woodfuel actors, which included capacity-building and training of forest management and woodfuel production practices, and provision of alternative energy sources. This finding corresponds with the continued post-colonial influence of international organisations in Cameroonian forest policy (Andong and Ongolo 2020, Mvouh 2012). This analysis of the literature suggests that the direct access pathway had the largest and most evidenced influence on woodfuel governance a finding which is also in line with Bernstein and Cashore’s (2012) argument that the



direct access pathway may have the strongest major influence on national policy processes of the four pathways.

### The impacts of international interventions on forests and people

Information on the impacts of international interventions on woodfuel actors' livelihoods and the sustainability of woodfuel resources including forests, as common ultimate goals of international interventions, were sought and examined in the literature and interviews. Interventions may create positive impacts if they: (1) contribute to effective institutions that both benefit actors and the sustainability of resources or limit trade-offs, and/or, (2) make direct contributions through activities (e.g. interventions, projects and programmes) locally or nationally.

Literature which assessed the effectiveness of the affected formal institutions, such as CFs and the woodfuel permit system indicate these institutions aimed to establish a sustainable framework for woodfuel and other forest resources. However, how these institutions developed given the complex realities on the ground meant that the impact of these international interventions was limited in terms of creating sustainable woodfuel extraction, production and trade. The establishment of CFs in Cameroon in the 1990s was considered innovative, and CFs are considered by some scholars as way to develop sustainable production of woodfuel while contributing to local people's livelihoods (World Bank 2011, Mbatu 2016, Zulu 2010). However, the benefits of CFs are reported to be generally limited to specific groups within communities such as elites, due to the socio-political culture, which has led to over-exploitation and illegality in exploiting timber resources and may affect the sustainability of woodfuel production (Beauchamp and Ingram 2011, Piabuo *et al.* 2018). In many CFs, some in the community are in practice excluded from participation in CF management and obtaining direct and indirect benefits from CF activities due to unequal power relations in CF governance, and some communities experience difficulties in managing their CFs when they have been supported by elites or external actors to formulate the SMP (Piabuo *et al.* 2018, Expert 1 and 4 interview). Unsustainable management practices of NTFPs and timber have continued in several CFs (Piabuo *et al.* 2018). For example, in the Bimbia-Bonadikombo CF, Southwest region the high demand for woodfuel in adjacent urban area is unsustainable (Edawa 2018). These examples highlight that CFs do not guarantee the sustainability of woodfuel production and are not authorised to regulate its trade.

The permit system for commercialisation of fuelwood and charcoal is reported in the literature as ineffective. Obtaining a permit is difficult due to its long and costly administrative processes, and woodfuel traders often still need to pay bribes for waybills en route to market even if they have permits (Ingram 2014, Schure *et al.* 2013). As a result, the majority of woodfuel is traded without permits, illustrated by the charcoal trade to and in Yaoundé (Schure *et al.* 2013). Charcoal bans have been largely ineffective in Cameroon (and other African countries such as Kenya and Tanzania) in curbing demand

(FAO 2017). Governance of the woodfuel sector is susceptible to corruption, which can be seen as another form of governance (Ingram 2017), and it is difficult to investigate the contribution of the sector to the national economy or livelihoods of people (GIZ 2015). Although the reform of the 1994 Forest Law to address these problems began in 2009 with the support of international actors, it is still ongoing, and being a highly political process it is expected to take more time (Expert interviews 1, 2 and 4). These experiences demonstrate the difficulties of improving formal institutions through direct international interventions given the context of complex national governance, corruption acting as a plural form of governance in the forest sector and multi-sectoral, overlapping institutions.

Addressing direct interventions, shown in Table 3, the literature and interviews provided evidence that activities on the ground have contributed to positive outcomes for the well-being and livelihoods of actors and the sustainability of woodfuel resources. The programmes in the Eastern region benefitted local people by increasing the quantity of charcoal available supporting people to have control of charcoal production sites, kilns and revenues (FAO 2017, Expert 5 interview). In some CFs, direct financial and technical support on woodfuel from INGOs contributed to improve the livelihoods of local people (Piabuo *et al.* 2018). The Biogas adoption project contributed to the improvement of livelihoods and health of local people by reducing expenditures on and consumption of woodfuel (Kimengsi 2015). However, the limitations of interventions noted in the literature included their short-term, project-based and small-scale nature; that the positive impacts created appear discrete, geographically specific, small and difficult to upscale without interventions; project interventions and termination may increase complexity and undermine the livelihoods of some groups of people, such as those not included in programmes, as shown in cases of other NTFP programmes (Schure *et al.* 2013, Ingram *et al.* 2015).

### Recommendations for interventions in woodfuel chains

Neufeldt *et al.* (2015) and many international organisations (including GIZ, SNV and UN) have advocated for reforms of formal institutions as being essential for sustainable and effective management of woodfuel in Cameroon and throughout sub-Saharan Africa. The findings of this study indicate that international interventions aiming to formalise the woodfuel sector faced challenges resulting in limited success, as have interventions that aimed to improve the effectiveness of existing formal institutions. Schure *et al.* (2013) warn that formalisation can have adverse, negative effects for charcoal producers and traders when this hinders their capacity to access the resource or markets, even when formal mechanisms are in place and somewhat embedded into cross-sectorial energy and environmental policies. While these interventions demonstrate some positive sustainability impacts which suggest they should be continued, strategies to increase the continuity and scale of activities on the ground appear needed.



TABLE 3 *Livelihood and environmental impacts of interventions in woodfuel sector, Cameroon*

Intervention, locations, date	Livelihood impacts	Environmental impacts	References
GIZ & SFID logging concession Mbang, East region 2011–2014	+ 20,000 people access to 129t charcoal produced, 96t sold, + Improved cooking and charcoal production technologies & business capacities + Decreased tax on charcoal from waste timber	+ 640 t CO <sub>2</sub> reduction	FAO 2017, Interview 5
GIZ, MINFOF MINePED Ecoconsult Gestion Durable du Bois-énergie au Cameroun Far North & Extreme North regions 2016–2022	+ 33,962 improved cookstoves supplied, 400 jobs, 150000tons charcoal, valued 1,183,766 Euro +10,741.67 ha Communal forest reserves +permits + 434 charcoal producers trained + 1,200 charcoal producers trained	+ 60 farms of totalling 50 ha reforested + avoided emissions of 50,474.2 Teq CO <sub>2</sub> + avoided deforestation 4,805.1 ha dry forest.	Sola <i>et al.</i> 2017 Ecoconsult 2021
Biogas adoption project, Bui, NW region Virgin Botanicals, MINEE, SNV, Heifer International 2011–2015	+ Household cost savings (84,000 FCFA pa) on firewood consumption + Health improvements + Reduced expenditures on woodfuel + Reduced consumption of woodfuel -Low level adoption biogas		Kimengsi 2015
Dryad Financing sustainable CF enterprises DFID East, SW regions 2015–2020	+ Improve livelihoods within CFs - Some women's and societal groups excluded from CF activities, revenues & benefits + Some women participated more + Tree & tenure rights to harvest - CF authorities not authorised to regulate woodfuel trade	- Overharvesting	Piabuo <i>et al.</i> 2018, Edawa 2018 Interviews 1,4,
SNV Mangroves REDD+ Energy and Agriculture Programme (REAP) SW region 2010–2020	+ Cost reductions from energy effected fish smoking + Cheaper woodfuel + Female entrepreneurs empowered	+9 woodlots created +39% less wood used +CO <sub>2</sub> sequestration	Goes 2019
GCP/CMR/030/GFF Sustainable community-based management and conservation of mangrove ecosystems in Cameroon" FAO-GEF, 2012–2017	+Create enabling environment for sustainable mangrove Management + Developed 5 year National strategy on sustainable management of mangrove and coastal ecosystems + improvement livelihoods of local communities, including women + facilitation & formalisation grassroots community organisations	+ Creation and improved management of 3 protected areas + improvement of sustainable management of mangrove resources -Platforms and associations need ongoing support& financing -Low ability of MinFoF to monitor sitespost project	FAO 2018

+ indicates positive impacts - indicates negative impacts

The NDC, R-PP and LPG Masterplan all show that existing and draft energy strategies in Cameroon aim to substitute woodfuel with other energy sources. However, the replacement of woodfuel has proven to be difficult, exacerbated by a tendency for people revert to woodfuel use even when other energy sources are available (Lambe *et al.* 2015, Owen *et al.* 2013). With the predicted rising demand for woodfuel, it is imperative to find ways to increase supply and change trader and consumer behaviours (Expert interviews 1 and 4). Therefore, programmes to increase woodfuel supply, such as setting up woodlots, plantations, afforestation, agroforestry and valorisation of wood waste into charcoal, need to be continued

and expanded. Linking and nesting these activities into international rules such as REDD+ and forest certification can enhance synergies that increase their scale, effectiveness and continuity. In the literature, little mention was made of interventions which sought to increase effective coordination between diverse ministries and sectoral actors, highlighting a gap in interventions. The CF literature (Piabuo *et al.* 2018, Beauchamp and Ingram 2011, Edawa 2018, World Bank 2011, Mbatu 2016, Zulu 2010) and interviews suggest that in such processes, prioritising the needs of the local people to access woodfuel and continue livelihoods based upon woodfuel revenues, indicates ensuring their engagement and participation,

and empowering community members and local level organisations through knowledge transfer and granting property rights for woodfuel and/or trees can ensure the sustainability of woodfuel production. This has been demonstrated in cases in Tanzania, Côte d'Ivoire and DR Congo where local communities were actively involved in small-scale woodlots and tree plantation (Proces *et al.* 2011, Neufeldt *et al.* 2015, Expert 4 interview).

This situation in Cameroon mirrors that in many other countries around the world, where woodfuel governance is hampered by a disincentivising and incomprehensive policy framework, fragmented responsibilities between institutions and governance levels, informality, and policies on woodfuel not addressing diverse but interconnected SDGs such as climate-change, development, energy, environment, land-use and food-security (FAO 2017). Seeking more synergy across sectoral ministries, and landscape, national and regional programmes, such as the Central African Forest Commission, Congo Basin Forest Partnership and African Continental Free Trade Area (AfCFTA), and relevant international rules, could thus benefit the sector.

REDD+ has potential to improve the woodfuel governance. Efforts to meet the REDD+ requirements, such as building National Forest Monitoring System (NFMS) and safeguards for co-benefits, could contribute to formalise the woodfuel sector and benefit livelihoods of local people (Schure *et al.* 2014). With ongoing efforts by various bilateral and multilateral donors to implement REDD+ in developing countries (Watson and Schalatek 2019), REDD+ can act as an avenue for large-scale, long term and continuous financial and technical support, indicated by experiences in Tanzania and the Democratic Republic of Congo (DRC), which have formulated and been implementing REDD+ projects and strategies with a focus on sustainable management of woodfuel (Côte and Gautier 2018, Sola *et al.* 2019). International interventions that can speed up the REDD+ process in Cameroon and which include woodfuel management could support more sustainable policy and practices.

Also not mentioned in the literature was incorporating voluntary forest certification into woodfuel production as a potential strategy. Forest certification can bring multiple benefits to logging companies, such as positive images and increased competitiveness in timber markets and well as social benefits to local communities and environmental benefits (Degnet *et al.* 2018, Cerutti *et al.* 2017, Ndoumbe Berock and Ongolo 2019, Nukpezah *et al.* 2014). Sustainable management of the wood residues is one of the requirements to obtain Forest Stewardship Council (FSC) certification, and the valorisation of such residues into charcoal is an option that logging companies can take, which can simultaneously increase the supply of woodfuel and improve the livelihoods of local people (Expert 3 interview), as demonstrated in the GIZ and CIFOR programmes in the Eastern region (see Table 3). Forming partnerships between logging companies and local communities, with international or civil society organisations facilitating the process, can contribute to an increased and stable supply of charcoal and generate local employment.

## Aspects of woodfuel sustainability for further study

As informal institutions in woodfuel governance such as customary laws dominate (Schure 2013), but were not a focus due to inability to conduct fieldwork, they are underrepresented in this study. The focus on formal laws and policies in Bernstein and Cashore's (2012) conceptual framework and dependence on published documents (particularly reports of projects results which could be biased towards reporting positive results) likely leads to bias in the analysis. Considering the highly informal characteristics of woodfuel governance (Schure 2013), more scholarly understanding is recommended of customary institutions and market-based norms related to practices in woodfuel governance, such as bottom-up, community, local, landscape, and value chain approaches (Ros-Tonen *et al.* 2018).

Therefore, further studies could investigate how international norms and discourses, rules and actors affect informal and market-based institutions – for example, how customary laws or other social norms on the production, transaction and management of woodfuel and its sources are affected – and subsequent impacts on actors and resources in woodfuel governance, also using literature written in French, which could result in more literature given that and more interactive data collection methods such as field interviews. Also, studies in other locations in SSA where the use of woodfuel is high and relevant international interventions would add empirical depth and refine the recommendations, as many international actors intervene in multiple SSA countries.

## CONCLUSION

Despite various international interventions seeking to improve the governance and management of the woodfuel sector in Cameroon, the influence of these interventions in the policy process and impact on woodfuel actors and resources in Cameroon has been underexplored. The originality of this study is that it synthesized and analysed data on international interventions in woodfuel governance and applied the influence pathway framework for analysis. Thus, this study investigated the impact of international interventions on Cameroonian woodfuel governance using the international influence pathway framework. Three of the four pathways were found to have been used, with international rules, norms, and direct access being routes used to impact mainly formal institutions and practices on the ground concerned with woodfuel. Among these, direct access to formal institutions and by programmes on the ground had the most notable influences. Informal and market based institutions were not directly targeted, with discourses focussing on formalisation strategies – such as introducing national and local policies, laws and management plans. The existence of the strong informal, customary rules, corruption and market based arrangements was not mentioned in the literature. However, not recognising or ignoring this messy bricolage of governance arrangement has been shown to be critical to enable international development interventions in sustainable resource management (Ingram *et al.* 2015,

Cleaver 2017) and could be one explanation as to why interventions failed or had mixed impacts. The value chain approach to over-exploitation and forest and tree resource degradation targeted some of the actors in market based governance systems, without explicitly using terms such as a market-based approach to governance or institutions. However, the positive impacts on the actors and woodfuel resources by international interventions were limited to generally small-scale, specific localities and of limited duration related to the generally project-based nature of interventions, the limited effects of which were exacerbated by not taking account of the interrelations, gaps and overlaps between formal, informal and market based governance alongside corruption, weaknesses in national and local level formal institutions and the general socio-political setting in which they were made. Considering the important role of informal institutions in the effective and equitable governance of woodfuel sector and the critical nature of woodfuel in supplying energy in Cameroon, alongside its juxtaposition in the climate-biodiversity-forest-food security nexus, interventions in not only formal but also informal and market based governance could improve both the supply and the consumption of woodfuel. Such a plural, multi-level approach appears much needed as a complement to regional and national level interventions and local level, bottom up approaches. Simultaneously, strategies to increase the continuity and scale of the interventions that have contributed to positive impacts on the ground appear lacking, but needed. Specific recommendations to increase the positive contribution of international interventions in woodfuel governance in Cameroon include seeking synergies between international rules which address woodfuel such as REDD+ and market-based governance such as forest certification, and customary, informal institutions

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