

# Challenges Faced by Congolese Women Farmers to Access Agricultural Productive Resources: A Review

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## Abstract

In developing countries, the long decades of the battle against malnutrition, and poverty have placed women on the frontline because they actively play significant roles in agricultural food production, processing, and distribution to ensure food security in the communities. Using peer-reviewed papers and reports from credible organizations, this work examines women's constraints in agricultural food production in the Democratic Republic of Congo (DRC). The key findings show that socioeconomic, environmental, and institutional constraints limit women's control of, and access to necessary resources (land, credit, agricultural technologies, information). Additionally, exchanges and connection between remote rural areas and cities are increasingly limited by impassable roads. This has a negative impact on women's ability to access information on agricultural technologies, in a country where the extension services are barely functioning. While in entities close to cities, agricultural input dealers are the main source of information on agricultural technologies for farmers, in remote areas, women value only their endogenous experiences, shared among farmers. On top of these challenges, the depreciation of the local currency (Congolese francs), the volatile security situation, and the impact of COVID-19 on the international and regional trade have also led to an increase in the price of agriculture inputs (seeds, fertilizers, pesticides) and food commodities, thus exacerbating women's vulnerability. Here, we also address questions about women's limited decision-making power within households (communities), and their low participation in the management of natural resources in DRC where women are poorly represented in decision-making bodies and still have less political influence.

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## Keywords

Women Farmers, Small-Scale Agriculture, Food Security, Productive Resources, Challenges

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## 1. Introduction

The 21<sup>st</sup> century is the era of time where the entire humankind is facing many inter-linked challenges associated with rapid demographic growth, social inequality, and climate and health crisis (Rasul, 2021; Dodo, 2020; Lambert et al., 2020). In developing countries, particularly in Africa, the long decades of the battle against food insecurity, malnutrition, and poverty have placed women on the frontline. This is because women are considered a keystone of the agriculture sector and play a vital role in food production, distribution, and utilization—the three components of food security (African Development Bank, 2020; Devereux et al., 2020; Habtezion, 2012). However, women's access to productive resources remains a huge challenge. Resources are means and goods that include land, equipment, money, agricultural inputs, information and decision-making, and time. Access to resources implies the ability to get and use resources and/or benefits and to make decisions on these resources (Mare & Girmay, 2016). According to Doss et al. (2018) and Palacios-Lopez et al. (2017), more than 70% of smallholder farmers are female, poor, and own only 1% of the world's land; still, they produce 60 to 80% of the food we all eat. This should raise questions about the functioning of our societies where conservationist customs and traditions, and gender norms take precedence over distributive justice and gender equality. Gender constraints and gaps in agricultural food production are complex and not limited to unequal access to resources such as land, improved technologies, and credit (SOFA Team & Doss, 2011; Doss & Morris, 2000; Doss, 1999). They extend to other difficulties that include access to climate information (Kolawole et al., 2014), low access to agricultural and market information, and lack of political influence (Hoof, 2011; Adeniyi, 2010) as well as low participation in decision-making processes within the households when producing crops of economic interest (Okonya et al., 2019; Ochieng et al., 2014). Additionally, the interference of cultural traditions and women's restriction in decision-making processes in combination with economic constraints or/and opportunities have resulted in conflicting roles and interests between men and women in many countries when some crops that were traditionally subsistence crops and considered before to be women's crops tended to be marketable and generated cash income: e.g. beans in Uganda (Nakazi et al., 2017), groundnut in Malawi and Zambia (Tsusaka et al., 2016), vegetable crops in urban areas in DR Congo (Balasha & Nkulu, 2020; Peša, 2020a; FAO, 2010). In this latter country, women constitute more than half of the national population and the majority of them live in rural areas where agriculture is the main source of livelihood and income

(Dontsop-Nguezet et al., 2016; Chaussé et al., 2012; Lebailly & Muteba, 2011). In urban and periurban areas, even if agriculture has been persistently framed as an informal, subsistence, and feminized activity (Peša, 2020a), to date, growing crops within cities is perceived as one of the resilient responses to urban poverty and food insecurity in this era of global health and climate crisis where food production and supply chains are disrupted (Devereux et al., 2020; Béné, 2020; Adhikari et al., 2021; Rattan, 2020). In addition, while farmers perceive climate change as a potential threat to agricultural food production, the situation has recently worsened with the COVID-19 pandemic which has disrupted input supply chains and the planting calendar (Rasul, 2021; Ayanlade & Radeny, 2020). Given the growing concern about gender inequality, global health, and climate crisis, this review summarizes recent information on women's constraints in agriculture and explains how climate change and COVID-19 severely affect local agricultural food systems largely conducted by women.

## 2. Methodology

Information was collected from peer-reviewed papers and reports of credible organizations, using Mendeley and Google Scholar. This paper is divided into 4 sections. The first section highlights the strengths, opportunities, and challenges of Congolese agriculture, affected by multi-dimensional crises. The second section addresses the role of women in agriculture and analyzes the socioeconomic and institutional as well as environmental constraints they face to access strategic resources (land, credit, and, information, improved technologies, market). Third, this paper explains why and how the combined effects of climate change and COVID-19 affect agricultural food production and food security, especially among farmers' households. Finally, we conclude and highlight the lessons learned so far from these crises.

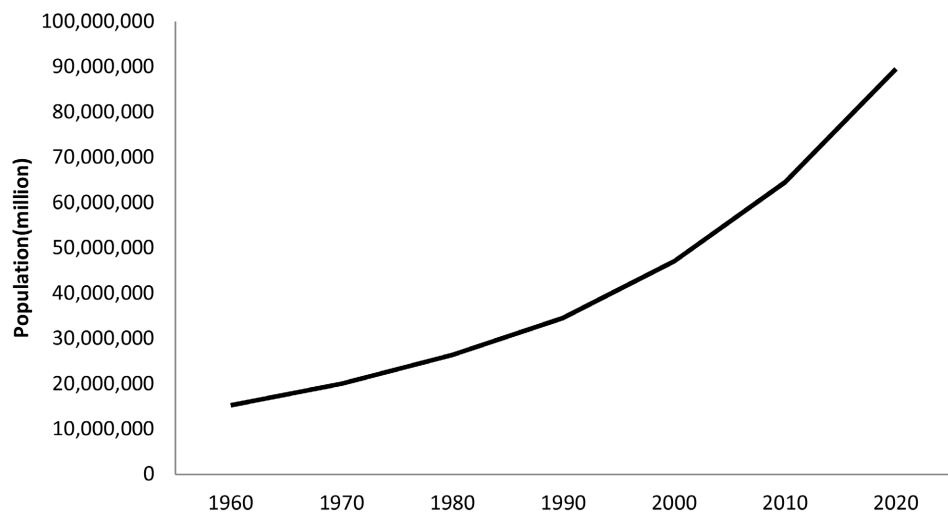
## 3. Congolese Agriculture: Strengths, Opportunities, and Challenges

In the democratic republic of Congo, agriculture has long been placed at the center of poverty reduction strategy, and many times it has been declared a priority of priorities of different governments (Dontsop-Nguezet et al., 2020; Tollens, 2015; Chaussé et al., 2012). Politics even made the agriculture sector a campaign slogan to get the vote of poor people. They promised to open agricultural feeder roads and increase investment in agriculture and process agricultural harvests to increase added value to local products. We all believed in these promises for many reasons. First, agriculture is a promising sector of development and pro-poor economic growth (Murhula et al., 2020; Ferraton & Touzard, 2009; Kydd et al., 2004). Second, in DR Congo, almost 70% of the population lives in rural areas, and agriculture is a livelihood and often the main source of income for many households (Tollens, 2015; Chaussé et al., 2012; Lebailly & Muteba, 2011). Also, there is an urgent need and challenge of feeding Congolese increasing population, esti-

mated at nearly 90 million in 2020 as illustrated in **Figure 1**.

Third, land and climate are favorable for growing diverse crops. The agricultural potential is 80 million hectares of cultivable land, of which 4 million irrigable and only 10% of these lands are currently cultivated; a diversity of climates (very humid and humid) and soils, with the abundance of water, several crops can be grown per year (Chaussé et al., 2012). Valuing these assets including abundant unemployed human resources, the DR Congo will be able to strengthen its food security, create job opportunities, and reduce food imports which cost billion US dollars every year. For example, food import cost 1.5 billion US, i.e. ¼ of the national budget in 2018 (Tshomba et al., 2019). In addition, it is important to acknowledge that agriculture can lead to economic growth and significant impact if substantial resources are invested in it.

In 2003, at the African Union Summit on Agriculture and Food Security in Africa in Maputo, the DR Congo is one of those countries that committed to allocate at least 10% of its national budget to achieve 6% agricultural growth (African Development Bank, 2013; African Union, 2003), yet the share of the national budget allocated to agriculture has been insignificant: 1.8% up to 4% (Ministère des affaires étrangères de la RD Congo, 2020; Tollens, 2015). The situation is likely to worsen with the COVID-19 pandemic and the political instability in eastern DRC and Ituri, which disrupts government plans and its sources of income (mostly from mineral exports). It is also important to remember that in DR Congo, while the decline of the agriculture sector began especially with the Zairianization of 1973, this period was late followed by decades of episodes of civil strikes, conflicts, wars and insecurity that devastated the national economy (DSU, 2019; Tollens, 2015; Bucekuderhwa & Mapatano, 2013; Cox, 2011). On top of these problems, we can also add land dispute and land grabbing (Mathys & Vlassenroot, 2016; Leeuwen et al., 2020), corruption, and embezzlement of funds allocated to social projects, including agriculture (Oakland Institute & CEDEN, 2019). In mining areas like Katanga, the situation has been critically



**Figure 1.** Trend of the demographic growth in the democratic republic of Congo.

alarming because it is not the only pollution from mining activities and its impact on local communities and their livelihoods that worry scholars (Peša, 2020b; Brusselen et al., 2020; Kalala et al., 2015), but also the huge concessions granted to mining companies for exploration and exploitation have left many peasants landless (Geenen & Hönke, 2014; Kasongo, 2009). Still, reconciling agriculture and mining remains a huge challenge in DRC where environmental impacts and conflicts of interests between mining actors and farming communities are regularly reported (Peša, 2020b; DSU, 2019; Geenen & Hönke, 2014).

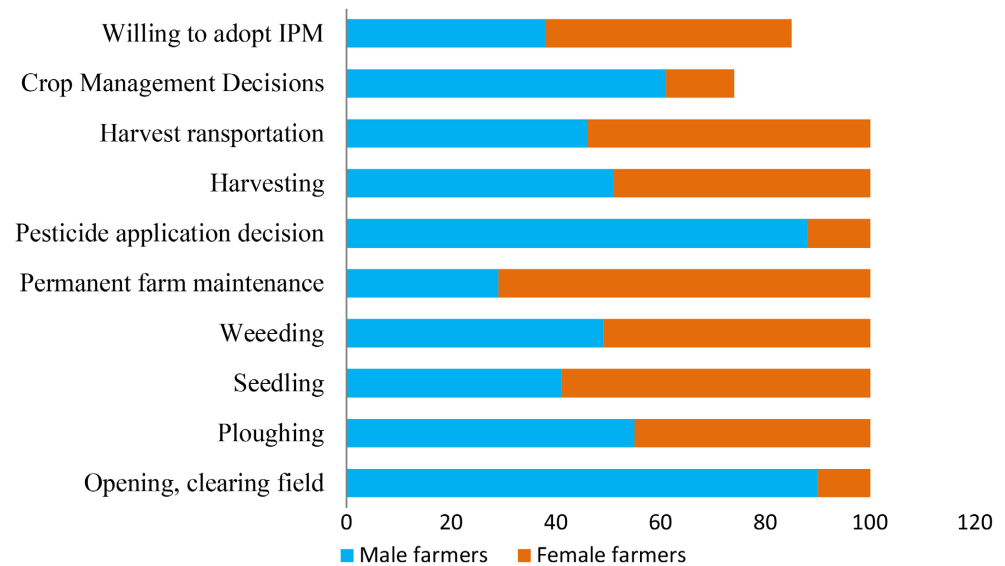
## 4. Women in Agriculture in DRC

### 4.1. Socioeconomic and Political Context with Limited Opportunities

Words are scarce when it comes to describing African women and their roles, and particularly Congolese farmers whose case is examined in this paper. In short, these women can be introduced as nurturers, caregivers, brave entrepreneurs, and a source of comfort and support for their families, even when everything changes, as during COVID-19 (Balasha et al., 2020). Numerous experts such as Doss et al. (2018); Muthoni (1988); Bukh (1979) explain how these women carry out subsistence activities fighting on two fronts:

First, against the strenuous demands of their productive activities as mothers, caregivers, and then against difficulties in their access to productive resources such as land, labor, credit, education within conservative societies where men are likely privileged compared to women. For example, referring to women farmers in Kenya, Muthoni (1988: pp. 24-25) describes the overloaded daily agenda of most African women, which still applies today. “They wake up early morning, clean the house and yard, wash and get children ready. Then they go farm and work, carry back firewood and food crops—which are very heavy. Reaching home, they go search for water at long distance, then they pound corn and cassava sometimes with children on their back”. In addition, women actively participate in farming, processing, and marketing of agricultural products to improve the food security, income, and well-being of their families, with expected positive impacts on children health and education (Medagbe et al., 2020; Moyo, 2017; Mare & Girmay, 2016; Maass et al., 2012). However, despite the key role played by women in the agricultural sector in developing countries, men continue to dominate farm decision-making functions, even in areas where women are the largest providers of farm labor (Okonya et al., 2019; Ochieng et al., 2014). **Figure 2** illustrates the rate of participation of men and women in the agricultural production process where certain activities such as seeding, weeding, harvesting place women at the top position.

Experts believe that agricultural production is critical for achieving global food security and poverty alleviation if male and female farmers have equal access to the same resources (Hill & Vigneri, 2014; Abi-Ghanem et al., 2013). In some areas of the DR Congo such as Lubumbashi, Bukavu, Kinshasa, Likasi, and



**Figure 2.** Participation of men and women in agricultural food production (%). Graph designed by the authors using data from Balasha et al., 2015; Balasha, 2019; Otieno, 2019; Kishor, 2007; Okonya et al., 2019; Ochieng et al., 2014.

Kisangani, women are made up of married, widows and single mothers with an age varying from 16 - 75 years old, raising small livestock and growing various crops for their consumption and markets (Balasha & Nkulu, 2020, 2021; Tambwe et al., 2011; FAO, 2010). Assessing and understanding the nature of female involvement in cash activities such as livestock and crop products is important because this holds significant potential as a means by which rural and periurban households can improve their welfare (Hill & Vigneri, 2014). Also, agriculture is accepted to have a strong potential in growth and employment creation in Africa because 1 dollar growth in agricultural income typically translates into an increase of 2.5 dollars in total income in the society as a whole (Adeniyi, 2010). In DRC, Hoof (2011) and Chaussé et al. (2012) have been advocating for an agricultural development in favor of peasant and disadvantaged categories such as women because they are actively involved in agriculture and poverty reduction. However, many agricultural projects in DRC did not lead to successful results because they did not take into account small farmers who produce most of the food consumed by the population. For example, in 2014, the DR Congo government launched a program to create 22 agro-industrial parks throughout the country. The first of these parks was set up in the same year in Bukanga Lonzo and collapsed in 2017, after spending US\$ 100 million of public funds and leaving behind 5000 people from 9 villages landless (Oakland Institute & CEDEN, 2019). One of the experts in food security policy analysis even warned that this type of project will marginalize smallholder farmers, who will only be converted into simple labor (Tollens, 2015). To date; Congolese expect a lot from the ongoing investigations to figure out the cause of failure of this project and hopefully recover the embezzled funds.

## 4.2. Women and Land: Understanding Legal Framework and Socioeconomic Drivers

Land is one of the most sensitive topics in DR Congo because land law and custom, as well as community traditions, interfere, resulting in conflicts of interest, exacerbated in recent years by debates around ethnicity, and consideration of females in the inheritance system. Nevertheless, the formal law land n° 73-021 of 20 July 1973 still stands, with its 1980 amendments—the state owns all the land in DRC. People and entities desiring use-rights of land can apply for concessions in perpetuity or standard concessions (RDC, 2004). Article 18 of the agricultural code says that each local community is recognized as having customary land rights exercised collectively or individually over its lands following the law (RDC, 2011).

In fact, Congolese obtain land rights through inheritance, customary land allocations from chiefs or kings, or concessions from government officials (USAID, 2010; Cox, 2011). In this country where the system of male inheritance prevails, women have been left landless (Cox, 2011, 2008). According to Deininger et al. (2017), customary systems may be biased against women, in particular by restricting their ability to inherit the land and thus their bargaining power within the households. The situation seems to be similar in sub-Saharan Africa. Many organizations such as USAID (2010) and World Bank (2014) reported that land access and ownership for women remain severely unequal compared to men even though women are active participants in the agricultural sector and provide the majority of agricultural labor. For example, a recent gender analysis of customary land allocations in Ethiopia, Tanzania, and Zambia concluded that women not only receive less land in customary systems but also less productive land (USAID, 2010; World Bank, 2014). In DR Congo, these women farmers and other landless have few options: cultivating small-sized rented plots, or selling their labor to plantations or going into illegal and artisanal mining (Cox, 2011, 2008) or/and vending agricultural commodities on streets (Murhula et al., 2020; Balasha et al., 2020). Second, since credible reports show that tenure insecurity impairs investment incentives, the higher tenure insecurity faced by women results in lower investment incentives for women compared to men (SOFA Team & Dos, 2011; World Bank, 2014). Additionally, as women are under-represented in decision-making bodies, their voice to claim their rights is little heard. Yet, members of decision-making bodies (e.g. army, government and parliament members) have easy access to resources in the DRC. This is in agreement with Goldstein & Udry (2005) who find that individuals in positions of power in the local political hierarchy have more secure land rights and, as women are rarely in positions of power, they face more insecure property rights. For example, unsecure modes to access land, such as rental and *bwasa*<sup>1</sup> in South Kivu, prevent women farmers, from engaging in sustainable agricultural practices and adopting climate-adapted technologies, e.g. agroforestry and soil conservative practic-

<sup>1</sup>In south Kivu, within Bashi community, *bwasa* is a rental contract which gives the borrower the right to use land for a short duration only for food crops (cassava, beans or vegetables) and the rental price is called *Ntumulo*, calculated a posteriori in proportion to the profits or harvests collected.



es (Balasha & Nkulu, 2021; Zeng et al., 2018). In Pakistan, Akram et al. (2019) found that landowners involved in agribusiness are more likely to invest in measures to improve soil and increase productivity than land tenants. While the customary system and traditional institution may come under stress and be no longer able to ensure equitable land access, because of land reform and increasing competition due to high demand in land, especially in periurban areas, as claimed by Deininger et al. (2017), this has introduced and prioritized purchase as another form of accessing land in DR Congo (Ansoms et al., 2012; Overbeek & Tamás, 2018). Although land markets are more active, attractive, and increasing because of the reforms that facilitate access to land in many African countries (Deininger et al., 2017), still, women have less access to formal land sales and lease markets compared to men, and therefore are limited in their ability to optimize their landholding (USAID, 2010). In addition, women farmers face other challenges that include lack of money owing to poverty and limited economic opportunities (Murhula et al., 2020; Moumimi, 2010), and often need to be approved by husbands, and relatives or family in-laws to purchase land or a house. This sounds that the decision-making autonomy of women is still limited in many societies where men want to control and be consulted for everything. Also, the low education level of these women farmers has limited them to fight for their rights. In Tanzania for example like in DR Congo, the majority of women farmers are illiterate; unaware of any existing entitlements, and lacking insufficient assets to fight for their rights, and that their involvement in land administration institutions is limited (Moyo, 2017). Moreover, in DR Congo where land conflicts are a significant source of tension among different actors, many farmers, including women, have lost their land as a result of urban expansion and land grabbing by elites and politicians (Word Bank, 2018; Ansoms et al., 2012; Mathys & Vlassenroot, 2016). This undermines the agricultural sector's potential to drive inclusive economic growth, improve food security and create employment and business opportunities (Word Bank, 2014). While women's land access alone may not increase agricultural productivity, it is interesting to look at other factors that can affect women's decisions and agricultural food production.

#### **4.3. Women and Access to Agricultural Information, Technologies, and Credit**

In the last three decades, the scientific community has been actively involved in research development, resulting in the creation of technologies that can adapt to climate change, increase agricultural productivity and improve farmers' income. According to Dontsop-Nguezet et al. (2020), these technologies include improved crop varieties, improved crop and integrated pest management practices, and post-harvest technologies. For instance, *Bacillus amyloliquefaciens* has been recently found with interesting potential to be valued as a biocontrol agent against numerous plant fungal pathogens in the corn-based farm (Kulimushi et al., 2017). Reduced tillage practices have been popularized as a soil conservation technique



to protect the soil from erosion and support increased water retention (Bavorová et al., 2020). Improved maize, rice, and bean, as well as cassava varieties, have been introduced in many African countries including DR Congo to improve food security, but the adoption of these technologies has remained low, despite the higher yield potential compared to traditional varieties (Mastenbroek et al., 2021; Zeng et al., 2018; Yuko et al., 2018; Dontsop-Nguezet et al., 2016; Beyene & Kassie, 2015). Entering 2000, while urban agriculture has begun to take on a spectacular and professionalizing scale in many Congolese cities (Tambwe et al., 2011; FAO, 2010), thousands of Congolese women have been gathered within farmers “groups and field farmers” schools to learn about the integrated pest management techniques (IPM) promoted by FAO, throughout a large urban and periurban horticulture project for sustainable vegetable production (Balasha & Nkulu, 2020; Balasha, 2019; FAO, 2010). However, after the project period (2000-2012), these women have abandoned most of the learned practices and returned to their traditional production practices. This low success raises questions about women’s decision-making and barriers they face to access, control, and use in long-term agricultural innovations. In this context, a growing body of literature has identified information constraints as a potential barrier to the adoption and long-term use of agricultural technologies (Mastenbroek et al., 2021; Bavorová et al., 2020; Beyene & Kassie, 2015). This is true because if farmers do not understand the advantages associated with new product use, this can result in a low willingness to pay for it. In the D R Congo, farmers’ constraints to accessing information can be explained by several interlinked factors. First, the bridge between research institutions and farmers has been cut, if not disrupted due to dysfunction and poor endowment of extension service. According to Sulo et al. (2012), the lack of information and ineffective extension services are among others, as major hindrances to the adoption of agricultural technologies and delay the effective achievement of the set objectives of improving the socio-economic wellbeing of women farmers (Tsigie et al., 2020; Sulo et al., 2012). Second, owing to the low share of the national budget allocated to agriculture and also insecurity in rural areas, the country has not been able to set up an information and alert system, and continuously collect data to analyze and understand farmers’ issues. For example, while many studies have reported that climate change is a real threat to rainfed agriculture in DR Congo (Balasha et al., 2021; Bele et al., 2014; Kasongo & Mosombo, 2017), the lack of reliable long-term climate data has prevented agronomists from providing advice to farmers and prevent and manage climate risks. A study by Harvey et al. (2014) in Madagascar indicates that the lack of climate data does not allow experts, agricultural extension officers, and local leaders to predict weather trends, and this exacerbates smallholder farmers’ vulnerability to agricultural risks and climate change. Third, when looking at the map of the democratic republic of Congo (Figure 3), we notice that some entities e.g. Maniema, Kasai are very landlocked or isolated, compared to Kivu and Katanga which are opened to East Africa and southern Africa re-

spectively. This openness to other countries is opportunely important for the DRC since it promotes trade in goods and services, and allows regional integration within the African continental free trade zone (Lisandro et al., 2020; Tshomba et al., 2019). However, the deterioration of roads and the weak interprovincial connection affect women farmers to get their harvested products to the markets. This can cause other problems, such as high volatility in market prices for agricultural products, and impacts local food security (Havery et al., 2014; Bucekuderhwa & Mapatono, 2013; Hoof, 2011) but also these constraints will not allow DR Congo to be effectively competitive in this free trade zone, where it is “a meeting place for exchanges”. Yet, Kalumbu et al. (2020) alert that in 20 next years, if concrete actions are not taken to boost and support smallholder farmers, the DRC will be considered for neighboring countries, as a large market in the regional exchange space, with its projected 128.76 million inhabitants by 2040.

Moreover, there is a positive relationship between access to financial resources and the improvement of food security through agriculture. This implies that smallholder farmers who get credit to purchase inputs such as improved technologies, fertilizers, and irrigation equipment improve crop yields and income. These farmers diversify their production and cope better with climate change and pest threats (Carranza & Niles, 2019; Akudugu et al., 2009). However men and women farmers do not have equal access to credit and other financial



**Figure 3.** Map showing the Democratic Republic of Congo surrounded with its 9 neighbor countries.

opportunities. The determining factors to these resources vary from one region to another (Carranza & Niles, 2019; Mmasa, 2017; Chandio, 2017; Akudugu et al., 2009). In Ghana, for example, 44% of the credit portfolios of rural banks go to women and the remaining 56% goes to men (Akudugu et al., 2009). Education, application procedures, access to land, income level, farm size, membership to economic associations, savings, type of crop grown, interest rate, and distance to the bank have been identified as the socio-economic, technical, and institutional factors that influence women farmers' access to credit (Akudugu et al., 2009). In addition, a very limited number of microfinance institutions in rural areas, long procedures to get credit, farmers' limited knowledge of loans and credit, high interests, and the lack of collateral as well as bankers' "perception of the risky nature of agricultural activities, have further complicated and disappointed farmers" willingness to seek credit or being approved for a loan (Chandio, 2017; Fidele et al., 2019; Carranza & Niles, 2019).

#### 4.4. Climate Change and COVID-19 Effects on Agricultural Food Production and Food Security

Climate change and COVID-19 pandemic are perceived as twin challenges and threats to agricultural production and food security around the world (Rasul, 2021). The combined effects of these two global threats severely affect small-holder farmers, and this result in reduced farmers' income as well as in disruption of food and agricultural input supply (Ayanlade & Radeny, 2020; Béné, 2020). In many countries like DR Congo, the impacts of COVID-19 and climate change worsen farmers' vulnerability and disrupt government agenda and efforts to fight poverty (Balasha et al., 2021; Izu & Mulolo, 2017). The threats that climate change brings to agriculture and food systems are multiple, multidimensional, and interlinked. The change in climate variables (e.g. precipitation, temperatures) exposes crops to pest and disease outbreaks and extreme weather events such as flooding and/or long drought and strong winds cause significant crop loss and land degradation (Rasul, 2021; Harvey et al., 2014; Brevik, 2013). For example, locust outbreaks in East Africa (Salih et al., 2020) and the rapid propagation of fall armyworms in DR Congo are linked to variability in climate conditions (Cokola et al., 2021). Small farmers, especially women are the most vulnerable to climate change and COVID-19 impacts for several reasons. They depend on rainfed crops for both subsistence and income (Camilla et al., 2019; Jost et al., 2016; Harvey et al., 2014). In Katanga and Kivu, for example, women's access to inputs such as fertilizer, pesticides, and veterinary products has been more difficult due to the crossing-border trade restrictions, cases of Kasumbaleza-Zambia, Bukavu-Rwanda, and Uvira-Burundi. The restrictions imposed on these women to access the market during COVID-19 to sell their crop harvests have aggravated the low capacity to access information and climate change adapted—technologies (Balasha et al., 2020). Further, these women do not access financial resources in terms of credit due to the marginalization of their activities and the lack of collateral (Fidele et al., 2019; Chandio et al., 2017). Although

COVID-19 is a health crisis that has negatively affected the lives of billions of people, it also has affected and reveals the weakness of global food systems (Rasul, 2021; Béné, 2020). For instance, strict lockdowns and restricted mobility have impacted food transportation and the availability of agricultural labor and planting dates in many countries where these COVID-19 control measures were strict and coincided with the harvest or seeding period. This situation has led to food shortage, an increase in food waste, particularly of perishable commodities like vegetables, and food price volatility. The effects of COVID-19 and its economic ramifications suggest that 265 million people in low-income and middle-income countries were expected to suffer from acute food insecurity by the end of 2020, thus increasing by two times the number of already existing victims (Lancet Planetary Health, 2020). Many experts have admitted that the effects of climate change and COVID-19 are linked directly or indirectly, as agricultural production, transportation and processing affect both human health and climatic conditions in various ways, as they can catalyze the spread of infectious and zoonotic disease like coronavirus (Rasul, 2021). In combination with other stressors such as conflicts and poverty, climate change and COVID-19 are expected to exacerbate women's vulnerability if appropriate actions to reduce inequalities and strengthen farming communities are not undertaken now. Here, we argue that the resilience program aiming at increasing farmers' knowledge of water, soil fertility, and pest management is crucial. Additionally, improving land tenure right and women access to land will help build egalitarian and inclusive societies where men and women participate in the development of the country.

## 5. Conclusion

This review addressed women's challenges in accessing productive resources in their battle for food security and poverty reduction. Despite the significant roles that women play in agriculture and food security in the democratic republic of Congo, they continue to have limited control of, and access to a range of productive resources, including, land, information, improved technologies, and financial resources. Most of the constraints identified are of socio-economic, environmental, and institutional nature. A case-by-case analysis from other countries helped to understand that these difficulties are interlinked. In some areas, depending on the community traditions, these difficulties are exacerbated by gender norms, especially within many conservative communities where men have long been placed at the top decision-making position. Further, We understood that the challenges faced by women to access land and other agricultural inputs were not the only barriers for female farmers, but also the lack of rural roads, information systems about the market, and climate trends have prevented farmers from getting their harvested products to consumption centers, anticipate and manage risks and develop suitable adaptation strategies. The combined effects of climate change and COVID-19 are linked directly or indirectly, since agricultural production, transportation and processing involve men and women,

and their activities affect both public health and climatic conditions in various ways, as human activities and climate change can catalyze the spread of the COVID-19 virus and other diseases that can affect human, animal, and plants. The lesson learned from these two global issues is to finally realize that Congolese food security and local food production systems are fragile and vulnerable to home and exogenous shocks as well as to environmental challenges. This is due to its food and agricultural inputs dependence on sub-regional countries and Asia. Also climate change effects on smallholding farming increase vulnerability among rural communities, already traumatized by persistent insecurity and violence of armed groups. Although a change in favor of women farmers is necessary, we advocate targeting both men and women in any project or program aimed at building farmers' resilience to the challenges faced. However, women should define their priorities.

### Conflicts of Interest

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

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