

Private Telecommunication Companies and Climate Finance in Niger Republic: A Call for more private climate actions in West Africa Sahel region

this word has been used quite loosely, without highlighting its true import

Abstract

Private telecommunication companies play a major role in financing climate actions. Though the contribution of private telecommunication companies in financing climate actions in West African countries is not well documented. This study aims to examine the contribution of private telecommunication companies in supporting the efforts of the government to implement climate actions in Niger Republic. Accordingly, a systematic review was carried out and secondary data were collected from Web of Science, Google Scholar and the blog page of the websites of the key private telecommunication companies operating in Niger Republic. The findings of the study showed that the three main private telecommunication companies (Orange, Moov and Airtel) operating in Niger executed several initiatives such as installing solar energy in rural areas, planting trees, delivering cash and in-kind assistance to vulnerable groups and building schools. These initiatives played an important role in fighting against unemployment, poverty, desertification, population illiteracy and food insecurity, which support the country effort to achieve the United Nations Sustainable Development Goals. However, these private telecommunication companies should promote other climate actions such as financing climate change education at schools and green cities to significantly support the efforts of the country in alleviating the adverse impacts of the climate change.

Keywords: Climate actions, private telecommunication companies, climate adaptation and mitigation, climate finance

1. Introduction

Climate change has become a great threat for worldwide economy and ecology. Hence, the climate change affects negatively the private sector and therefore hinders its financial performance (Sun *et al.*, 2020). Accordingly, the private sector could play a key role in financing change adaptation and mitigation (Ahenkan, 2020; Canevari-Luzardo, 2020). However, only few companies such as private telecommunication sector gave importance in financing climate actions, to respond to risks and associated to the climate change over the world.

Private sectors play a great role in financing climate actions. For instance, the private sectors finance the adaptation to climate change in order to reduce climate risks, alleviate poverty and enhance the socio-economic and ecological resilience (Biagini et Miller, 2013; Crick *et al.*, 2018; Canevari-Luzardo, 2020). Added to that, the private sectors financed climate change adaptation in many urban areas (Klein *et al.*, 2018). Furthermore, public-private partnerships has been reported to a great policy response to climate change (Buso et Stenger, 2018) such as a partnership for adaptation (Klein *et al.*, 2018). In addition to that, the private sectors play a major role in reducing the greenhouse gases and enhancing carbon sinks (Joyce, Okrasinski et Schaeffer, 2010; Kuronen *et al.*, 2010; Wang et Sueyoshi, 2018; Ahenkan, 2020) by investing in sustainable forest management (Chipeta et Joshi, 2001; Tomaselli, 2001). In Niger, the private telecommunication companies implemented several initiatives and some of them are shown on Picture 1, 2, 3, 4 and 5. The picture 6 showed job creation related to the women.



Picture 1. Food distribution Airtel Niger, floods 2020) in Niamey).



Picture 2. Primary school built by Airtel Niger



Picture 3. Moov Niger Monetary assistance to fight against COVID-19.



Picture 4. Orange Niger Solar energy in the commune of Dantchandou).



Picture 5: Tree planting initiative (One Airtel employer, one tree)



Picture 6: Woman phone repairer in Niamey

Source: See the reference.

However, there is very little research has done in the selected region such as West Africa Sahel. For instance, as far as the West Africa Sahel is concerned, there is no study that assess the role of private telecommunication companies in financing climate actions.

Niger is one of the West African Sahelian countries that has been highlighted as vulnerable to the climate change due the country **high rate of poverty and illiteracy**, the **weakness of the system of the governance in combatting corruption**, **lack of climate planning and the dependency of the country**

agriculture **on the rainfed** (Moussa and Abasse, 2021) . It is estimated that the climate mitigation and adaptation in Africa regions requires about 10 billion U.S. dollars yearly (Pan African Climate Justice Alliance [PACJA], 2009). In addition to that, the Africa needs \$7-15 billion yearly to adapt to climate change according to the (African Development Bank, 2021). However, the contributions of the African countries could not be enough to meet the needs of the mitigation of climate change in the developing countries such as Niger that experience low financial resources to tackle the effects of climate change (CNEDD, 2016). In fact, Niger is a signatory of Paris Agreement so that it has great national ambition to combat the adverse effects of the climate change. Though Niger Republic experiences a lack of finance to implement its national climate finance plan. In fact, the inclusion of the private sectors such as private telecommunication companies in financing climate actions could contribute significantly to cope with adverse impacts of the climate change on the country. The private sectors have been acknowledged as an important contributor in supporting the society to adjust to climate change. Yet, the role of private sectors, especially the private telecommunication sector in West Africa Sahel region is well explored by the scholars. Likewise, the role telecommunication sections in financing Nationally Determined Contribution (NDC) in Niger Republic has not been subject to any study. Accordingly, this examines the role of private telecommunication companies in financing climate actions in Niger Republic. It ends with some recommendations to help the policymakers to integrate the contribution of such sector in the country's climate action plans and therefore it provides a baseline study for future studies. Accordingly, main questions of the study are:

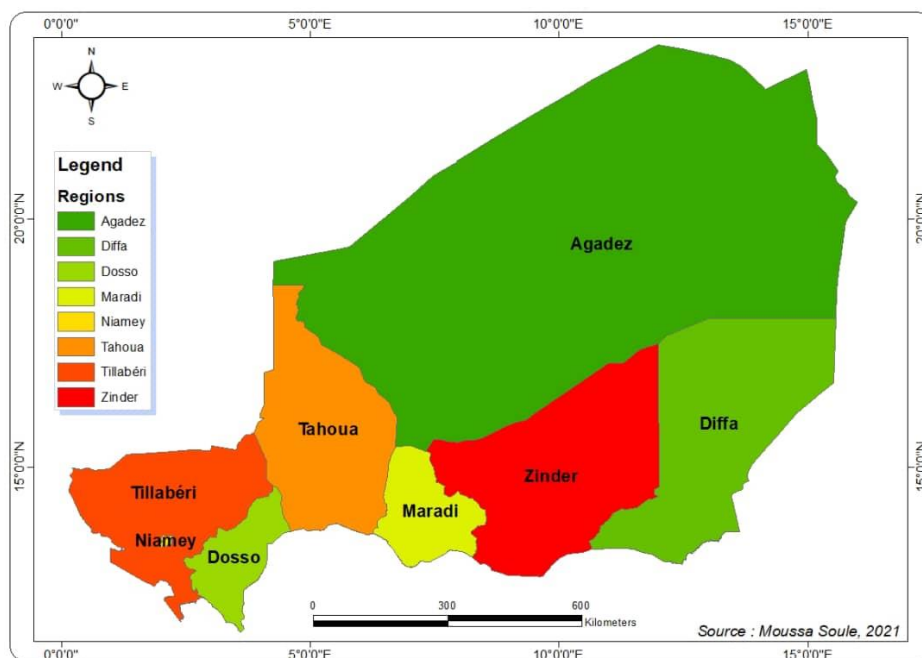
1. What are the **initiatives implemented by the private telecommunication companies** in Niger Republic? towards what?
2. **Which of these private Telecommunication companies** executed initiatives are climate change adaptation/mitigation strategies?
3. To which extend these initiatives contribute to climate actions?

2. Materials and Methods

2.1 Study area

This study was carried out in Niger republic. The Niger Republic is located between longitude 16°N and latitude 8°E and account a population estimated at 21 161 749 inhabitants (INS, 2020). Additionally, the Niger Republic is one ^{of} the poorest countries and that ^{it} recorded the highest population growth rate 3.9% (INS, 2020). Recently, the Niger Republic faced other numerous challenges such as food crisis, famine, conflicts and insecurity and terrorism. The administrative map of the Niger Republic is shown in Figure 1.

Fig 1: The administrative map of the Niger Republic



2.2 Data collection and analysis

This study was carried out based on a **systematic review**. Accordingly, it addressed the current state of knowledge related to the climate finance with a focus on the Niger Republic. Previously, Ford and Pearce, (2010) indicated that systematic review focuses on clear questions, clear reformulation, and well defined criteria to select significant studies. Hence, a systematic review includes a full reporting of search terms and the criteria for inclusion and exclusion of articles. In this view, this study based on secondary data from **Web of Science, Google Scholar, social media and the blogs of the Websites of key private telecommunication companies** to select all initiatives implemented by the private telecommunication companies that contributes to finance climate actions in Niger Republic. The defined **inclusion and exclusion criteria for searching literature** are summarize in Table 1. French and English languages were used for the online search. We established the list of the key climate actions financed by Airtel, Moov and Orange in Niger and their key implications.

include the search strategy and library databases the researchers used.

the period covered and the No of articles categorised, per cent analysis of the same are totally missing.

Table 1. Summarize of used inclusion and exclusion criteria

Inclusion criteria	Exclusion criteria
Any initiatives implemented by one of the three key Private telecommunication companies in Niger Republic	Any initiatives implemented by other private companies not related to Airtel Niger , MOOV Niger, Orange Niger in Niger Republic
Any initiatives implemented by Private telecommunication Companies in Niger Republic that contribute to climate change adaptation	Not relevant to the initiatives implemented by Airtel Niger , MOOV Niger, Orange Niger in Niger Republic that contribute to climate change adaptation

A qualitative analysis of the themes and the manner of coding etc. is missing.

How were the duplicates handled.

As per Preferred Reporting Items for Systematic Reviews how many systematic reviews were included not clear. Also the period covered is not known.

Any initiatives implemented by Private Telecommunication Companies in Niger Republic that contribute to climate change mitigation	Any initiatives implemented by Airtel Niger , MOOV Niger, Orange Niger in Niger Republic that contribute to climate change mitigation	Not relevant to the initiatives implemented by Airtel Niger , MOOV Niger, Orange Niger in Niger Republic that contribute to climate change mitigation
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Source: The authors

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trade-offs between climate change mitigation and adaptation policies are not known

3. Results

According to the types of climate actions (adaptation, mitigation), the authors designed Table 1 to give an overview about the types of initiatives implemented by the private telecommunication companies and their contribution to climate actions in Niger Republic.

Table 2. Key climate action initiatives implemented by the three private telecommunication companies in Niger

Name of private telecommunication companies	Initiatives	Types of climate actions		Contribution to climate actions
		Adaptation	Mitigation	
Airtel Niger	For instance installation of solar panels		X	Reduction of Carbon dioxide (CO ₂) emission
	Construction of primary schools	X	X	Increase the literacy rate (education) which key to fight poverty, climate change. Through education you can build the capacity of young generation to become good leaders to manage climate change, gender education.
	Planting trees	X	X	Adaptation (fruit consumption to fight hunger and malnutrition, poverty (planting fruit trees is an income generating activities) and mitigation (planting trees is an option of augmenting carbon sequestration potential and biodiversity conservation).
	Drugs and mosquito net distribution to the flooded people	X		Fighting malaria (climate change disease) is an option of increasing the resilience of the society and reducing their vulnerability to climate change disease
	Petit commerce (phone charging using solar panels in the rural areas, mobile money transfer, phone repairing)	X	X	This activity is a source of income to fight poverty thus increasing the adaptive capacity of the people. It creates jobs and promotes social cohesion
	Guarding activity Airtel equipment	X		Jobs creation, which provides an economic opportunity to fight poverty hence to reduce the people vulnerability.
	Food items distribution to the flooded people	X		Combating hunger and malnutrition in order to increase the resilience of the flooded people

	Cashless economy (Airtel mobile money)	X	X	It allows people to pay electricity and water bills which reduces people mobility thus less cars is used for example which goes with less CO ₂ emission. Cashless economy via Airtel money aims to promote a low-carbon society. Airtel mobile money payment is promoting zero waste.
	Financial donations for the Niger Solidarity Fund for the fight against the Covid-19 pandemic	X		Increases the resilience of the society, fight against COVID-19
MOOV Niger	Tree planting	X	X	Mitigation (CO ₂ reduction) and adaptation (use of food tree species such as fruit trees increases the resilience of the society by fighting malnutrition, hunger and poverty), biodiversity conservation
	Utilization of solar energy		X	Zero carbon emission/low carbon economy.
	Operation Moov Tabaski 2020	X		The operation supports vulnerable people to have sheep of Aid El Kebir. It is a social action which consists to offer free to poor families the sheep.
	Distribution of the food items to the inundated persons	X		Building the flooded people resilience and fighting food insecurity.
	Distribution of the drugs and mosquito nets	X		Fighting climate related diseases such as malaria.
	Job creation	X		Adaptation (poverty reduction), Fixing young people from joining the terrorism, migration
	Cashless economy (Moov mobile money)	X	X	It reduces the vehicles based transport thus zero or low carbon economy/green economy.
	COVID-19 donation	X		It aims at building the people resilience to cope with the COVID-19.

Orange Niger	Cashless economy (Orange mobile money)	X	X	It promotes low carbon emission and participates in zero waste production.
	Solar energy		X	Mitigation (Zero emission of CO ₂)/Low carbon economy.
	Planting trees	X	X	Mitigation: Increase in Carbon sink/carbon sequestration potential/. Adaptation: reducing the vulnerability of the people via food production. It is also a source of income generation via the selling of fruits, leaves of the trees.
	Income generating activities (phones charging using solar energy, phones repairing)	X	X	This aims to fight unemployment and fix the young people from join the terrorist or migration.
	Participation to the National tree planting and land reclamation competition by giving some prizes in Niger (tree planting incentive measures)	X	X	Promote tree planting which increases the carbon sequestration potential (mitigation) and increases the adaptive capacity via the restoration of degraded lands, food production, and poverty alleviation.
	Money donated to the national committee COVID-19	X		Increase the resilience of the Nigeriens to fight COVID-19 disease
	Creation of digital schools in Niger (Donation of computers, IT room and other student school items)	X		Promotion of quality education, which is central to the formation of green citizens, fight against poverty and support the most disadvantaged populations. It promotes the education of girls as means of enhancing the societal adaptive capacity.
NB: Orange, Airtel and Moov sins are used	Use of sim cards for climate information and TELE-IRRIGATION for climate information, tele-irrigation. They are all celebrating	X		Climate change education which is key to produce zero greenhouse gases emitters, sustainable water management, food production, poverty reduction

	the 3 August, Niger' nation tree day plantation			increase of carbon sequestration potential, dissemination of climate information and services.
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4. Discussion

The findings of this study showed that various initiatives that target contribute to climate actions were implemented by the key telecommunication companies operating in Niger Republic.

Table 2 showed that both 5 key telecommunication companies operating in Niger Republic have executed several initiatives contributing to climate actions. Accordingly, Airtel Niger executed a plethora of climate adaptation initiatives. These included the construction of primary schools, planting trees, in-kind assistance (distribution of drugs and mosquito net distribution to the flooded people), youth support for petit commerce (phone charging using solar panels in the rural areas, mobile money transfer, phone repairing), guarding activity Airtel equipment, food distribution to flooded people, cashless economy (Airtel mobile money) and financial donations for the Niger Solidarity Fund for the fight against the COVID-19 pandemic. These adaptation strategies could increase the resilience of Nigeriens by reducing the level of illiteracy of the population. Previously, Muttarak et Lutz (2014). and Feinstein et Mach (2020) noted that population illiteracy is an aggravating factor of climate vulnerability so that educating society represent a key climate change adaptation strategy due to it enhances the resilience of the society to a variety of climate shocks and reduce vulnerability. In addition, supporting the creation of small jobs such as card credit sellers, phones repairers, money transfer could contribute to reducing the risk that rural youths might join terrorism groups and therefore alleviating young Nigerien migration and alleviating rural poverty. Similarly, Kumi, Yeboah et Kumi (2020) indicated that the **Ghanaian private telecommunication sectors played an essential role in alleviating poverty by implementing numerous climate change adaptation capable to promote inclusivity and gender equality.**

Also MOOV Niger executed several initiatives that can be ranged into climate change adaptation strategies that contribute to climate actions. These include promoting solar energy, food assistance to inundated persons, distribution of drugs and mosquito nets, Cashless economy (Moov mobile money), planting trees, promoting numerous income-generating activities (phones charging using solar energy, phones repairing), Operation “Moov Tabaski” and donation for the COVID-19 pandemic. Planting trees is an initiative that could improve the mitigation of the adverse impact of climate change and enhance the different ecosystem services. These results are aligned with those of Clark et Nicholas (2013) who reported that planting tree is **an umbrella climate change adaptation strategy** as the trees constitute a myriad of ecosystem services able to reduce the negative effects of climate change and therefore promote the sustainability. Previously, Akbari (2002) highlighted that planting trees create urban forest and reduce significantly the consumption of energy therefore lowering carbon dioxide emission. In addition to that planting tree by the three private telecommunication companies is key to enhancing carbon sequestration of potential and biodiversity conservation. On the other hand, Orange Niger implemented numerous multi-purpose (climate adaptation and mitigation strategies) initiatives that contribute to climate actions. They encompass cashless economy (Orange mobile money), solar energy, planting trees, supporting income-generating activities (phones charging using solar energy, phones repairing), participation in the National tree planting and land reclamation competition as key sponsor (tree planting incentive measures), monetary donation to the national committee COVID-19 pandemic, promoting digital schools in Niger Republic (donation of computers, IT room and other school materials for students). Recently, Orange Niger initiated the use of sim cards for climate information and TELE-IRRIGATION. Initiative such as promoting TELE-IRRIGATION could significantly contribute to the emergency of smart agricultural Gardens (Greenhouse) that would enhance the country food security through the increase of agricultural production and products

quality. Also the use of mobile phone could contribute to sharing climate information such as meteorological information, which would raise the awareness of the population about climate change adaptation. This result is similar to those of Funk (2015) who noted that the mobile phones spread awareness about climate change adaptation.

5. Conclusions

The study showed that the private telecommunication companies have executed numerous initiatives that are significant contributions in climate change adaptation and mitigation. These initiatives included food distribution, construction of the schools, planting trees, use of phones for climate change information and communication and monetary assistance to the government to fight COVID-19 pandemic. Accordingly, they constitute climate change adaptation and mitigation strategies. From the findings of the study, the government of Niger Republic should collaborate with the private telecommunication companies to scale up climate change financing and investment in Niger. Additionally, the private telecommunication companies' investment in greenhouse gas emissions and promoting other initiatives such as solar and wind energy, could be a way to exploit the adverse impact of climate change to promote developing solar and clean energy technology.

COMPETING INTERESTS DISCLAIMER:

Authors have declared that no competing interests exist. The products used for this research are commonly and predominantly used products in our area of research and country. There is absolutely no conflict of interest between the authors and producers of the products because we do not intend to use these products as an avenue for any litigation but for the advancement of knowledge. Also, the research was not funded by the producing company rather it was funded by personal efforts of the authors.

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Source of the pictures

Picture 1: <https://www.actuniger.com/societe/16740-solidarite-important-don-d-airtel-niger-aux-sinistres-de-harobanda-niamey.html>

Picture 2: Moussa Soule, 2021, fieldwork in Maradi city.

Picture 3: <https://www.actuniger.com/societe/16202-lutte-contre-le-covid-19-moov-niger-contribue-au-fonds-de-solidarite.htm>.

Picture 4: Orange Niger Solar energy in the commune of Dantchandou, Moussa Soule, fieldwork, 2021.

Picture 5: <https://www.facebook.com/airtelniger/posts/3841120639233342/>

Picture 6: <https://web.facebook.com/birdsondansounsou>