



Strengthening Climate Resilience Series

**LESSONS ON ENGAGING WITH THE
PRIVATE SECTOR TO STRENGTHEN
CLIMATE RESILIENCE IN SENEGAL**

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Abstract

Senegal is vulnerable to several natural hazards, particularly coastal erosion, droughts, floods, and locust invasions. Climate change is exacerbating natural hazards in Senegal. Average annual temperatures could rise by 1-3°C by 2060, with faster warming rates in semi-arid regions and the central basin and more frequent hot days and nights.

Many private sector actors in the country already see the increasing impacts of climate change as a major threat to their business. There have been multiple private and public sector initiatives, including those focusing on dissemination of crop insurance, which contribute to enhancing the climate resilience of businesses in the country. Yet, businesses, especially micro, small and medium enterprises (MSMEs), still faces significant challenges to understanding how the impacts of climate change may influence their business profitability and continuity over time, and how they can manage climate risks they face.

This case study focuses on how the national and local governments of Senegal and development co-operation providers have been engaging with private sector actors and other non-state actors, to address the constraints they face and strengthen their resilience to the negative impacts of climate change. The paper identifies good practices of and draws lessons from the experience of the Senegalese governmental entities and development co-operation providers in supporting MSMEs for climate resilience. It explores how the government and development co-operation providers can further enhance such engagement through strengthening domestic institutions and public-private sector networks, policy frameworks, climate and weather data and information, and financing mechanisms.

Foreword

This case study is an annex to an OECD Development Co-operation working paper, *Lessons on engaging with the private sector to strengthen climate resilience in Guatemala, the Philippines and Senegal* (Casado-Asensio, Kato and Shin, 2021^[1]). Both papers informed the OECD report, *Strengthening Climate Resilience: Guidance for Governments and Development Co-operation*, developed under the Development Assistance Committee (DAC) and the Environment Policy Committee of the OECD (<https://oe.cd/climate-resilience>). The case study is based on desk research and builds upon the conclusions of an OECD mission to Senegal in January 2020, where OECD officials held about 27 meetings with a range of stakeholders, including governmental and non-governmental actors at national and sub-national levels, the private sector, academia, and bilateral and multilateral providers of development co-operation.

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Abbreviations and acronyms

ADEPME	Agency for the Development and Supervision of Small and Medium Enterprises
ANACIM	National Agency for Civil Aviation and Meteorology
ANSD	National Agency for Statistics and Demography
APIX	Promotion of Investments and Major Works
BICIS	Banque Internationale pour le Commerce et l'Industrie du Sénégal
BMN	Modernisation and Upgrading Bureau
BNDE	National Development Bank
CNAAS	National Agricultural Insurance Company of Senegal
CNES	National Confederation of Employers of Senegal
COMFISH	Collaborative Management for a Sustainable Fisheries Future in Senegal
COMNACC	National Committee on Climate Change
COMRECC	Regional Committee on Climate Change
CSR	Corporate Social Responsibility
DEEC	Ministry of Environment and its Department of Environment and Classified Establishments
G12	Group of Twelve
G50	Group of Fifty
ECOWAS	Economic Community of West African States
FONGIP	Guarantee Fund for Priority Investments
FONSIS	Sovereign Fund for Strategic Investments

GDP	Gross Domestic Product
GIE	Groupements d'Intérêt Économique
MSME	Micro, Small and Medium Enterprises
NFCS	National Framework for Climate Services
PAP	Plan d'Action Prioritaire
PSE	Plan Sénégal Émergent
UPIC	Union of Chambers of Commerce, Industry and Agriculture of Senegal

Executive summary

Senegal is highly exposed and vulnerable to various types of natural hazards, particularly coastal erosion, droughts, floods, and locust invasions, including those triggered or exacerbated by climate change. Enhancing the resilience of the private sector, especially micro, small and medium enterprises (MSMEs), against the impact of climate change and other external shocks is crucial to achieving sustainable development for Senegal. There have been encouraging policy developments that support the resilience of MSMEs in the country. For instance, consideration about MSMEs' resilience is being integrated into Senegal's policy priorities for private sector development. The country has also recently introduced economic incentives for purchase of solar panels and energy efficiency equipment through policy reforms. This experience suggests further opportunities for Senegal to develop a national narrative that businesses could economically benefit from investing in measures that can strengthen their climate resilience (such as agroforestry, drought-resilient crops and solar-powered water pumps).

Enhanced engagement between the private sector, the government and its development co-operation partners is essential to address some of the outstanding challenges and seize those opportunities in Senegal. For instance, there remains limited participation of the private sector, notably of MSMEs, in policy dialogues on climate resilience with the National Committee on Climate Change (COMNACC) and other relevant government bodies. Financial and technical constraints prevent many sub-national institutions from providing MSMEs with the support needed to build their capacity to adapt to climate change. The government and development co-operation can help empower the Regional Climate Change Committees (COMRECCs) through fostering exchange of information on good practices and factors for success between COMRECCs and local MSMEs.

The current institutional arrangements that support MSMEs in Senegal are complex and often operate in parallel to the arrangements that deal with climate policies in the country. MSMEs often wish to seek the government's support, including technical and financial support for improving their capacity to prepare for climate risks or respond to disasters. Many MSMEs are however lost amid the complexity of the current institutional landscapes. The COMNACC ought to empower line ministries to integrate climate resilience concerns into sectoral development through engagement with public and private sector stakeholders. However, the complex institutional landscape makes it difficult for the COMNACC to ensure its counterparts are able to carry out such integration. The government and development co-operation providers can push for greater clarity, coherence and co-ordination across various institutions responsible for different policy agendas. Establishing a one-stop shop platform where MSMEs could more easily find information on support measures to enhance their climate resilience could be effective.

Senegal has adopted the overarching policy framework called the *Plan Sénégal Émergent* (Emerging Senegal Plan, PSE). This plan already reflects climate change issues, providing high-level recognition of the importance of climate and environmental risks to the country's development agenda. The implementation plans of the PSE, called the *Plans d'Actions Prioritaires* (PAPs), on the other hand, have only included a growing, yet still limited, number of concrete policy measures related to climate resilience of MSMEs.

The government, with the support of development co-operation providers, can use the PSE and PAP processes as a practical entry point for incorporating climate-resilience considerations into specific policy

actions in other thematic areas, including private-sector competitiveness and local economy development. The government has also been making substantial efforts to update several sectoral policy frameworks such as on youth employment, women's economic empowerment and food security. These ongoing policy reforms can provide the government with an opportunity to integrate considerations about climate resilience of MSMEs into the updates of such thematic policy frameworks

The quality and availability of weather and climate data and information have been improving in Senegal in recent years, but there remains a significant gap in terms of their granularity and regional coverage, and their accessibility and affordability for MSMEs. The National Agency for Civil Aviation and Meteorology (ANACIM) has started providing targeted information and data directly to MSMEs through the National Framework for Climate Services (NFCS) developed in 2017. ANACIM often joins forces with other governmental institutions that support MSMEs. ANACIM has also collaborated with various development co-operation providers to develop locally-relevant climate data and information. For instance, a pilot programme that started in 2011 to provide farmers with training and workshops in Kaffrine revealed strong demand from farmers for climate data and information. However, requests to scale-up the pilot were declined.

Such initiatives are encouraging and should continue, possibly through broader engagement between ANACIM and private-sector mobile network operators in the country. Such engagement could support the delivery of affordable, targeted and accessible climate information to MSMEs, building on pilot projects such as the one in Kaffrine. Development co-operation could provide further support by expanding the meteorological station network, conducting maintenance of existing weather stations, and providing relevant stakeholders with technical assistance for such maintenance and operation.

Access to finance is often among the greatest challenges preventing MSMEs and institutions from taking action on climate resilience. The government has created multiple financial institutions to support MSMEs under the PSE (e.g. the National Development Bank, the Sovereign Fund for Strategic Investments and the Guarantee Fund for Priority Investments). Their mandates and investment criteria however do not yet explicitly include resilience considerations. The same challenge also applies to commercial banks in Senegal, except for the *Banque Agricole* which has recently introduced a condition requiring borrowers to purchase agricultural insurance to take out commercial loans.

The National Agricultural Insurance Company of Senegal (CNAAS) has introduced crop insurance, which covered 10% of the farmers in the country at the time of writing. The CNAAS is already breaking even by providing widespread insurance in the Senegal River Valley. CNAAS's crop insurance is also being deployed in more regions. New insurance tools are also being piloted (e.g. flexible risk transfer options such as insurance-for-assets programmes). The CNAAS can further engage with the agriculture and livestock sectors to increase the dissemination of insurance through financial education activities, awareness raising and information campaigns, and continue to explore options for other sectors such as fishery.

Bilateral and multilateral providers of development co-operation have been supporting climate action in Senegal for many years. These providers have directly and indirectly supported the government's efforts to strengthen MSMEs' resilience through investing in the country's institutional and policy frameworks, ensuring better weather and climate data and information, and supporting financial mechanisms. Going forward, development co-operation providers may increase their direct engagement with the private sector in co-ordination with public-sector stakeholders. Each development co-operation provider could also consider improving the policy coherence between climate resilience and other development agendas within their own portfolio. These agendas include climate change mitigation, gender, industrial and trade policies. The green economy pillar that has been included in the second implementation plan of the PSE (2019-2023) can guide the efforts of development co-operation providers to enhance policy coherence for climate resilience of MSMEs and other development priorities in Senegal.

1 How to enhance engagement with the private sector to build climate resilience in Senegal

Senegal is vulnerable to several natural hazards, particularly coastal erosion, droughts, floods, and locust invasions. Climate change is exacerbating these hazard risks, especially for MSMEs. MSMEs represent up to 90% of Senegalese companies and contribute towards 30% of the country's Gross Domestic Product, as well as employ almost 60% of the economically active population. Hence, it is important to strengthen the resilience of MSMEs against looming climate-related risks to ensure Senegal's ability to pursue a sustainable development pathway in the future. Although adaptive capacity is key for the country's socio-economic fabric, the ability of MSMEs to adapt to climate change is limited. This is particularly true for MSMEs that are small, not organised around co-operatives, which usually operate in remote areas and are led by women.

There is a lack of general information on how MSMEs are faring in the field of climate resilience. While there are several ministries or agencies that support MSMEs, no governmental entity is yet mandated to monitor developments in this area. Research to date shows that most MSMEs are aware of climate risks, but MSMEs have not yet taken actions due to various constraints. Enhancing the resilience of MSMEs is slowly being integrated into the country's private sector development, yet a clear business case to accelerate action is still missing. It would be beneficial for Senegal to develop a national narrative that presents climate resilience as an area where MSMEs can produce economic returns, as the country recently achieved with climate mitigation investments. Other parts of the Senegalese private sector could also embrace climate resilience through Corporate Social Responsibility, with larger companies or banks ensuring that their value chains are resilient, starting climate-specific credit lines for MSMEs or by providing the nascent start-up sector with the tools to support MSMEs that promote climate resilience. The current COVID-19 crisis provides Senegal with an opportunity to integrate MSME resilience issues into the crisis recovery package, although early evidence suggests that MSMEs may not be well represented in the bodies designing the recovery.

This case study examines how the Senegalese national government and development co-operation providers collaborate with the private sector to strengthen resilience of MSMEs to manage negative impacts of climate change and variability. This study considers the governance arrangements, policy frameworks, data and information, as well as financial mechanisms that support MSMEs in the face of short- and long-term climate risks in Senegal.

Institutional arrangements

Despite greater political stability and better governance than other countries in the region, both general and specific governance challenges remain to facilitate actions to strengthen climate resilience and its integration into the activities of MSMEs in Senegal. Among the general challenges are difficulties for the national government to lead reforms due to limits in enforcing legislation and executing the budget, as well

as leadership turn-over in ministries and agencies. Specific challenges include limited participation of the private sector, notably of MSMEs in the National Committee on Climate Change (COMNACC), the domestic institution that could support MSMEs on climate resilience issues; a sub-national institutional setup that is unable to deliver support to MSMEs due to capacity and financial constraints; a dense ecosystem to support MSMEs that may include environmental considerations but not climate resilience, and that runs almost in parallel to the governance arrangements to deal with climate change. As a result, MSMEs are often lost in the current governance arrangements. The government of Senegal, with the support of providers of development co-operation, could:

- Implement the recommendations from the COMNACC assessment report to ensure the Committee becomes an autonomous, financially independent and authoritative source on climate-related issues in Senegal. The reform needs to be extended to the local level and needs to ensure that a regular dialogue is established with the private sector, notably MSMEs.
- Support the on-going plans to reform the MSME ecosystem to create a one-stop shop for MSMEs, as an opportunity to enhance coherence and co-ordination across structures, including on climate resilience issues; ensuring that the activities reach out to the local level, too.
- Ramp-up the capacity of the institutions supporting MSMEs at local and national level to deliver information and training programmes, to share available climate resilience solutions and measures, to facilitate access to domestic and international climate funding, as well as to assess and develop business plans for MSMEs that incorporate climate-related risks.
- Develop a platform where MSMEs and Regional Climate Change Committees (COMRECCs) can exchange information on good practices and factors for success (e.g. why and how they achieved results and engaged the private sector in some of the operational COMRECCs).

Policy frameworks

The overarching policy framework in Senegal, the *Plan Sénégal Émergent* (PSE) is increasingly reflecting climate change issues, thus providing high-level visibility to the topic at a time when perceptions around the environment and climate change are changing. However, concrete policy proposals in the PSE implementation plans, the *Plans d'Actions Prioritaires* (PAPs), are still limited in terms of climate resilience. Beyond the PSE, other policies appear to operate in parallel across sectors and thematic areas. The private sector can be involved in the process of policy development (as it is the case with the National Adaptation Plan process). Yet, the participation of MSMEs in the implementation and enforcement of policies has been very limited to date. While the Intended Nationally Determined Contribution notes that climate change adaptation is of national preoccupation, and outlines sectoral adaptation objectives, projected costs by 2035, obstacles and key to success, none of which mentions the private sector, let alone MSMEs. Several sector-level frameworks and tools are being updated and could incorporate climate resilience considerations; while other frameworks promoting youth employment, women's economic empowerment or food security could also be fleshed out in ways that promote MSME resilience. The government of Senegal, with the support of providers of development co-operation, could:

- Use the PSE and PAP processes to develop a narrative on climate resilience that would permeate all other policy frameworks. For this narrative to reflect MSME considerations, the concerns of the local level need to be included.
- Promote coherence across policy areas, such as those on disaster risk management, climate change adaptation and resilience, as well as MSME sector development.
- Mainstream climate resilience in the areas that are being updated, in collaboration with environmental and climate actors and MSMEs. These areas include women's economic empowerment, youth, food security; as well as specific legislation on the environment, fisheries, forestry and waste management.

Climate and weather data and information

Climate services are improving in Senegal but remain insufficient for MSMEs in terms of detail and granularity, regional breadth, accessibility and affordability. The National Agency for Civil Aviation and Meteorology (ANACIM) through its National Framework for Climate Services, developed in 2017, has started providing targeted information and data directly to MSMEs, often joining forces with the governmental institutions that support MSMEs. These changes are usually driven by providers of development co-operation. For example, ANACIM worked with USAID to develop the National Framework and with Canada and others to deploy meteorological stations in a number of regions, dramatically improving the information available. To continue improving the climate services for the benefit of MSMEs, the government of Senegal, with the support of providers of development co-operation, could:

- Build on the lessons learnt from on-going projects in delivering climate services to develop a nationwide narrative on the benefits of using climate services, the appeal of traditional values and experience, and which may relate to adaptation and resilience.
- Engage systematically private sector operators, such as Orange/Sonatel, Expresso, Tigo or Free, in a dialogue with ANACIM and other public authorities to deliver affordable, targeted and accessible climate information. This has been done in pilot phases (e.g. Jokolante, MyAgro) but could be systematised. Companies could, e.g., scale up the financing for the ANACIM services, with participation of COMNACC, organise scientific exchanges and other activities at the local level and the government could promote such action through corporate social responsibility.
- Continue expanding the meteorological station network, prioritising the maintenance of existing stations, and continue delivering training to maintain and operate this equipment, as well as on recent climate-related scientific advances to relevant stakeholders.

Finance

A public financial landscape to support MSMEs is developing but it does not incorporate climate resilience issues sufficiently. The PSE created three institutions to support MSMEs financially, but these have yet to support informal sector MSMEs, which comprise a significant portion, and need to ensure their investments incorporate resilience considerations. The same can be said of most commercial banks in Senegal, except for the *Banque Agricole*, which has recently changed its operating model and now integrates resilience issues, not least by making agricultural insurance obligatory before signing a loan.

The Senegalese insurance sector is delivering promising results on resilience, but the business model stands on shaky grounds. Despite reticence from farmers and fisherfolks and limited awareness and support from public authorities, the National Agricultural Insurance Company of Senegal (CNAAS) managed to cover 10% of the farmers in the country in a few years. The CNAAS is already breaking even by providing widespread insurance in the Senegal River Valley, thus enabling economic activities and resilience to bloom there. New insurance tools are being piloted in other areas (e.g. fisheries sector; flexible risk transfer options such as insurance-for-assets programmes) and across regions, including the use of satellite-based insurance indexes. New domestic actors are also entering this space – providing opportunities to foster resilience quickly; and new ways to raise awareness are being piloted (e.g. the CNAAS uses the regional network of the *Banque Agricole*; radios promote insurance through an ‘insurance day’; awareness is done in several local languages).

Other forms of financing also need to be explored, notably remittances, which could be harnessed to support resilience. In addition, accessing international climate finance can also be a relevant endeavour, and would require a partnership across relevant institutions. Concretely, the government of Senegal, with the support from providers of development co-operation, could:

- Explore incorporating climate resilience considerations across the business models and strategies of the three financial bodies created under the PSE (for example, reorganisation of technical processes, and development of new products). This needs to go hand in hand with a reinforced mandate and funding for these institutions to support MSMEs more generally.
- Work with the agriculture and livestock sectors to ensure that index-based insurance takes off and continue to explore options for the fisheries sector. To do this, insurance companies, such as the CNAAS, must continue adapting their products to MSMEs, running culturally-sensitive dissemination and perception-changing campaigns, while the government and development co-operation providers can create incentives accordingly. The CNAAS could become a regional leader if it were able to develop a more sustainable business model (e.g. by scaling up operations, having more robust finances).

The role of development co-operation providers

For a long time, providers of development co-operation have been investing in climate resilience in Senegal: according to OECD DAC statistics on official development assistance an average USD 43 million annually between 2012 and 2018. In fact, providers have often been the driving force behind this agenda and the building of MSME resilience through investments in the governance, policy frameworks, ensuring better climate services, and supporting financial mechanisms for resilience. Notwithstanding this comprehensive support, providers could set up their engagement through:

- Directly engaging with MSMEs, in co-ordination with public stakeholders, despite the perceived risk in investing directly, as well as working with domestic commercial banks, whose clients are mainly MSMEs, and learning from on-going projects and experiences in this area.
- Use the policy coherence for sustainable development angle to ensure that their development co-operation, industrial and trade policies align with each other to the benefit of Senegal, by ensuring that climate resilience issues are integrated across the board. Such alignment could support the broader concept of policy coherence for sustainable development.
- Promoting digitalisation and digital technologies to engage with the youth, who are more receptive to changes, and who could lead the way in climate resilience and climate change issues more generally.
- Invest in the green pillar of the second implementation plan (2019-2023) of the Plan Sénégal Émergent, as well as mainstream climate resilience considerations across their own activities.

Despite its size, Senegal is an influential regional partner, notably for Western Africa. Other countries in the region copy successful projects and programmes developed in Senegal. The Economic Community of West African States (ECOWAS) countries, in particular, holds regular meetings on climate resilience and lessons learnt, good practices and the successful experiences made in Senegal. These could be replicated at sub-regional level or brought to scale when engaging one or more countries.

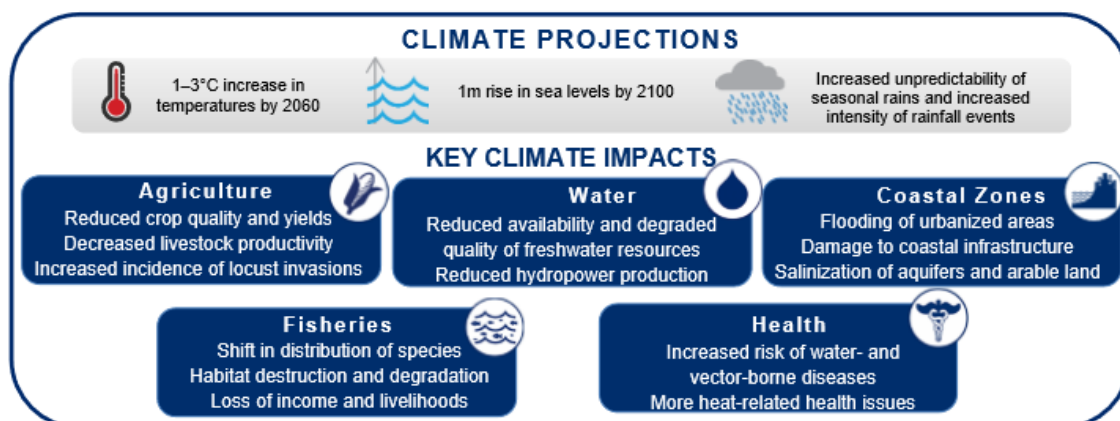
2 Climate risks for the private sector in Senegal

Context and objective of the study

Senegal is one of the most politically stable West African nations and is often perceived as a regional leader (OECD, 2017^[2]). Despite burgeoning economic growth, with Gross Domestic Product (GDP) rising from 4.3% in 2014 to 6.0% in 2019, Senegal still faces major development challenges (African Development Bank, 2020^[3]). As a least developed country, Senegal ranks 118th out of 170 in the United Nations Development Programme's Sustainable Development Index (UNDP, 2018^[4]). In 2018, net official development assistance (ODA) totalled USD 991 million, accounting for 4.2% of gross national income and 19% of central government expenses (Country Economy, 2020^[5]) (OECD, 2020^[6]).

Senegal is vulnerable to several natural hazards, particularly coastal erosion, droughts, floods, and locust invasions. Climate change is exacerbating natural hazards in Senegal. Average annual temperatures could rise by 1-3°C by 2060, with faster warming rates in semi-arid regions and the central basin and more frequent hot days and nights (Crick et al., 2018^[7]). Greater climate variability will cause greater unpredictability of seasonal rains and more intense rainfall events (Crick et al., 2018^[7]), potentially increasing the frequency of locust infestations (USAID, 2017^[8]). If these changes materialise, Senegal is likely to face a reduction in crop quality and yields, as well as more livestock diseases (USAID, 2017^[8]). Droughts impact the arid and semi-arid Sahel regions of northern Senegal regularly. Since 1980, droughts have affected more than 3 million people (Lo et al., 2018^[9]). Desertification already affects the Sahel and is, to a large extent, causing the rural-urban exodus to the capital, Dakar. In fact, Senegal's urban population has almost doubled in recent decades, rising from 23% in 1960 to 43% in 2013, and is projected to reach 60% by 2030 (World Bank, 2016^[10]). Flooding affects 200 000 people annually, with losses of USD 89 million (Cissé and Sèye, 2016^[11]). Flood risk is exacerbated by uncontrolled urbanisation, insufficient drainage and sewage infrastructure. Slow onset events like rising sea levels and extreme weather events such as storms and cyclones will increase the frequency and intensity of coastal erosion and flooding (Kamal-Chaoui and Robert, 2012^[12]; Paulais, 2012^[13]). About 74% of coastal-area housing is vulnerable to erosion (USAID, 2017^[8]). All in all, Senegal could lose between 13 and 18% of its Gross Domestic Product (GDP) because of climate change by 2050 (Crick et al., 2018^[7]); (Kompas and Van Ha Pham, 2018^[14]). Figure 2.1 summarises the main climate projections in Senegal.

Figure 2.1. Key climate projections and impacts in Senegal



Source: (USAID, 2017^[8]), Climate Change Risk Profile: Senegal, <https://www.climatelinks.org/resources/climate-risk-profile-senegal>.

This case study examines climate change adaptation and risk reduction issues in Senegal, and how MSMEs engage in these issues. The country has various climatic zones, each with specific climate-related impacts for MSMEs, namely:

- The arid and semi-arid regions in the Sahel experience more frequent and longer droughts, reducing crop production (FAO, 2016^[15]), scarcity of raw materials (forests, pasture, fishing stocks), new animal diseases and conflicts among farmers (Tall, Coulibaly and Diop, 2018^[16]). Most of the MSMEs are smallholder farmers and stockbreeders, with a limited level of organisation. Dry climatic conditions make such economic units more used to adaptation and stakeholders interviewed for the report note that resilience may be higher than in other regions, despite changing conditions.
- The southern regions have a tropical climate and are experiencing erratic rain patterns, with droughts and more frequent floods, as well as growing scarcity of raw materials. MSMEs there tend to be smallholders, cash crop and rain fed farmers, with a burgeoning agricultural transformation industry. Economic units in this region are less used to climatic impacts (World Bank, 2012^[17]).
- The coastal areas are prone to erosion and changes in sea currents, acidity and temperature levels affecting fish stocks (already affected by overfishing), sandy beaches, coastal buildings and infrastructure. Climate change will also impact mangrove forests, a vital coastal resource (USAID, 2017^[8]). These factors are negatively affecting MSMEs in the tourism, agriculture and fisheries sectors.
- The central areas are impacted by soil degradation (e.g. mainly by salinisation and wind erosion), resulting in a drop in rainfall and yields. Peanuts are grown on 40% of the arable land and employ up to 1 million people there. Models project a 5-25% decrease in yields due to climate change (Faye et al., 2018^[18]). These impacts constitute bottlenecks for MSMEs, including in peanut processing and trade.

Box 2.1. Key concepts that underpin the study

Climate resilience of MSMEs refers to MSMEs' ability to anticipate, reduce, accommodate, or recover from the effects of a hazardous event or trend caused by climate change in a timely and efficient manner, based on the IPCC (IPCC, 2014^[19]). The scope of the study also covers options for dealing with residual risks which remain even after efforts for climate change adaptation change are made. Such options to foster climate resilience through managing residual risks include, among others, climate and disaster risk financial instruments and mechanisms as well as social safety net schemes (GIZ, 2017^[20]).

The study uses the term **private sector engagement** for activities that involve the active participation of private enterprises for development outcomes. This includes private sector collaboration and partnerships, as well as private sector development activities in partner countries in which private enterprises are actively involved beneficiaries. **Private sector collaboration and partnerships** refer to the direct collaboration between governments, development co-operation providers and the private sector to promote the twin goals of achieving a business' given objective while meeting development outcomes. **Private sector development** is the term for all the activities carried out by governments and development co-operation providers with the objective of promoting the development of the private sector in developing countries. This includes activities to enable the framing for private sector growth, such as promoting a conducive policy environment, addressing market imperfections (e.g. through value chain development) and direct firm-level interventions (e.g. capacity building, access to finance and market) (Crishna Morgado and Lasfargues, 2017^[21]).

This case study examines how the Senegalese government and development co-operation providers collaborate with the private sector to strengthen resilience of MSMEs to manage negative impacts of climate change and climate variability. This study considers the governance arrangements, policy frameworks, data and information, as well as financial mechanisms that support MSMEs in the face of short- and long-term climate risks in Senegal. Strengthening the resilience of MSMEs requires both, reducing exposure to climate-related hazards and increasing their adaptive capacity to climate change, as well as mechanisms to transfer risks (e.g. insurance).

MSMEs are a key driver for Senegal's sustainable development

Senegal defines MSMEs as companies having between 1 and 250 employees (République du Sénégal, 2008^[22]). MSMEs represent up to 90% of the economic fabric of Senegal, in line with other Sub-Saharan African countries (OECD, 2017^[21]). MSMEs also contribute towards 30% of Senegal's GDP and employ almost 60% of the economically active population (Crick et al., 2016^[23]).

A large share of Senegalese MSMEs operate in the informal sector, which restricts their access to finance, insurance, markets and public sector services (Fjose, Grunfeld and Green, 2010^[24]). A rural-urban divide emerges when it comes to informality: many MSMEs in rural areas working in agriculture, livestock and trade are informal, while four out of five formal MSMEs are located in the urban area of Dakar (Crick et al., 2018^[7]). Although the informal sector is typically viewed as small and unorganised, the informal sector in Senegal also includes large businesses (OECD, 2017^[21]). Large informal businesses usually are privately owned by a single owner with a small number of permanent staff and a large number of temporary staff. These larger informal enterprises remain in the informal sector because of a poor business climate and environment, including high taxes, high compliance costs and burdensome business regulations (Benjamin and Mbaye, 2012^[25]).

The agricultural sector - including fishing, forestry and animal husbandry - accounts for about 12% of Senegal's GDP, but employs 60% of the workforce. Agriculture is the primary source of employment in rural areas and mostly is carried out by MSMEs, often smallholder farmers, which may be organised around co-operatives, producer organisations and *Groupements d'Intérêt Économique* (GIEs). Other MSMEs are poor fishermen, also organised around producer organisations and Fishing Councils (IED Afrique, 2018^[26]). Most of these tend to operate in the informal sector and are associated with low productivity levels, reduced competitiveness and limited innovation capacity (Crick et al., 2018^[7]). Local value chains are being developed and organised around some goods, notably peanut, cashews, mangoes, rice or fish processing, with MSMEs producing, transporting and transforming them. However, most of these value chains are nascent, and result from recent governmental plans to develop them (OECD, 2017^[2]).

Female entrepreneurs in Senegal face additional obstacles, compared to their male counterparts, in operating MSMEs. Most women entrepreneurs have to manage climate change impacts both at household and business levels, while facing problems to access and manage resources, land, technology and information due to cultural reasons and prejudices (Diop et al., 2018^[27]). As a result, women are largely confined to informal micro-enterprises, with limited growth potential (Bardasi, Blackden and Guzman, 2007^[28]); (Crick et al., 2016^[23]). Although they represent about half of the agricultural workforce (47% in 2010), women only own 9% of Senegal's arable lands (OECD, 2017^[2]), and fewer than 10% of manufacturing enterprises with over 10 employees are owned by women (Bardasi, Blackden and Guzman, 2007^[28]).

While all these challenges are primarily of concern because of their impact on the economic performance of MSMEs, they are also important factors that undermine the ability of these economic entities to adapt to the risks of climate change. This is particularly true for MSMEs that are small, not organised, operate in remote areas or are led by women. Given their relevance in the economic landscape of Senegal, strengthening the resilience of MSMEs would have significant consequences on how Senegal's pathway can become more sustainable over time.

MSMEs are aware of climate risks but their adaptation strategies may not always be sustainable

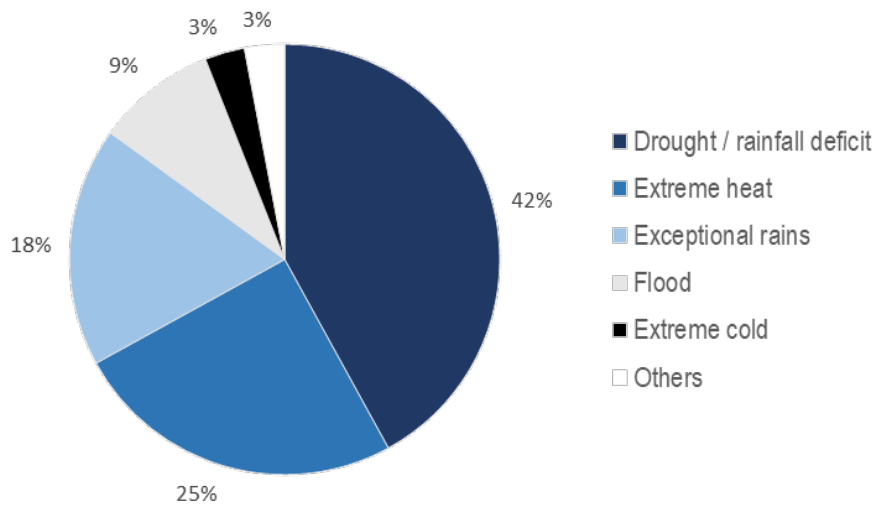
There is limited research on how Senegalese MSMEs are adapting to climate change impacts. Senegal's National Agency for Statistics and Demography (ANSD) has been studying the Senegalese private sector, including the informal sector (ANSD, 2017^[29]). However, these studies did not explicitly include climate-related aspects within the scope, which limits the amount of information readily available to understand how MSMEs build resilience and which could guide the action of policy makers. Senegalese institutions mandated to support MSMEs, environmental authorities and relevant sectoral ministries (e.g. agriculture, or fisheries) do not monitor MSME activities in the field of climate resilience. Further, there is no domestic framework to do so that emanates from any of these stakeholders.

A recent study has looked at the impact of climate hazards on 161 MSMEs in arid and semi-arid Sahel regions (Diop et al., 2017^[30]). The study found that 91% of these MSMEs were exposed to extreme climatic conditions and were aware of future climatic risks (Figure 2.2), which is in line with the findings emanating from stakeholder interviews in this study. The adaptation approaches, employed by MSMEs, are not always based on agro-meteorological technologies or information, particularly if MSMEs are led by older entrepreneurs. Instead, MSMEs follow trusted market actors who inform them about prices, costs as well as other relevant information, and hope for the good graces of God to bring a good harvest. According to stakeholder interviews, many MSMEs do not

trust or cannot understand available climate information, and thus do not use the resources already available.

Preferences of Senegalese consumers also play a role in MSMEs' adaptation choices, in addition to a variety of external factors such as market drivers, the business environment, policies and advisory services, according to stakeholder interviews. For instance, while local rice varieties in the Casamance region are being developed for domestic consumption, Senegalese consumers still prefer Asian rice varieties, which require more water and thus are less climate-resilient in the Senegalese context. Asian rice is imported and cheaper than local varieties, such that Senegalese rice varieties cannot compete, and production does not match its potential. Transforming production practices and choices for climate resilience therefore also requires changing consumer behaviours.

Figure 2.2. Main climate hazards affecting MSMEs in Senegal



Source: Adapted from (Diop et al., 2017_[30]), *Private Sector Adaptation Strategies: What sort of response for SMEs in semi-arid areas of Senegal?*, <https://www.lse.ac.uk/granthaminstitute/publication-type/policy-publications/>.

Against this background, MSMEs respond by switching and diversifying produce, adapting production processes, reducing operations and seeking financing (Diop et al., 2017_[30]; interviews). Table 2.1 provides an overview of these options.

Table 2.1. MSME responses to climate change impacts

Type of response	Examples	Challenges
Switching or diversifying produce	Farmers grow different crops (e.g. bissap, moringa); use climate-resilient seeds, some of which are developed locally (e.g. rice, with the Institute for Agricultural Research of Senegal); revert to traditional crops, such as fonio, which are adapted to local conditions; or valorise discarded products (e.g. dry previously discarded fish parts for trade).	<ul style="list-style-type: none"> Climate-resilient seeds may be sourced far away, making them unaffordable to some MSMEs. Certain endogenous solutions pose risks, e.g. the spread of fonio is hampered by its difficult transformation and the amount of energy needed to cook it (compared to imported rice, again, leading to higher costs for households).
Adapting production processes	Farmers work longer but shorter shifts and adapt their agricultural methods (e.g. higher digs to keep more water for rice, using shorter-cycle seeds); participate in mangrove recovery activities to foster fishing and aquaculture; or use cashew nut shells to reduce the salinity of soil. Fisherfolk sail further out to find fish, allegedly due to overexploitation of stocks, too. Small hotel owners use their own funds to finance protective infrastructure, while others move inland, away from the coastline.	<ul style="list-style-type: none"> Promoting the use of cashew nuts to reduce soil salinity can incentivise the spread of monoculture, which deteriorates ecosystems.
Reducing operations	Farmers reduce the number of employees or sell off company assets.	<ul style="list-style-type: none"> Assets are often sold at a loss, thus hampering the growth potential of MSMEs
Seeking financing	MSMEs obtain a loan to upgrade or renovate equipment to face climate-related risks, often through friends and family. Increasingly, rural MSMEs take insurance to manage these risks	<ul style="list-style-type: none"> Interest rates are high in Senegal, on average 12-15%, giving the impression to farmers that they only work to pay off their debts. Investing in new technology may be counterproductive. For example, solar panels are increasingly used to pump water or power drying factories, which is leading to economic savings for farmers and thus, indirectly, fostering resilience and autonomy. However, many solar panels are of low quality, which makes MSMEs distrust new technologies, affecting their perception of any new solution proposed to enhance resilience. The insurance business is currently growing in Senegal but contracting insurance is not always accompanied with resilience-building measures, limiting the possible ripple effects of this tool.

Source: Diop et al. (2017^[30]), *Private Sector Adaptation Strategies: What sort of response for SMEs in semi-arid areas of Senegal?*, <https://www.lse.ac.uk/granthaminstitute/publication-type/policy-publications/>

Notwithstanding, some 70% of surveyed MSMEs do not have a plan to deal with climate change and most MSMEs do not consider taking measures to respond to future climate risks an immediate priority (Diop et al., 2017^[30]). Most economic units still react based on their own experience of extreme climatic events and have a limited understanding of their needs, of what could be done, and of possible business opportunities linked to climate change. In fact, based on stakeholder interviews, some of the adaptation options pursued by MSMEs may not always be sustainable (Table 2.1).

The COVID-19 crisis starkly exposes the consequences of ignoring systemic risks, such as climate-related ones, and the need to build resilience. Greater MSME resilience needs to feature in Senegal's post-crisis recovery package to ensure that the country can cope better with future hazards. Hitherto, the COVID-19 response in Senegal has, however, only partially integrated MSMEs' views and needs in domestic measures and discussions (Box 2.2).

Box 2.2. The COVID-19 response in Senegal and its impact on MSMEs

In response to the COVID-19 crisis, the Senegalese government puts in place curfews and measures to encourage social distancing (Country Economy, 2020^[5]). To prevent significant job losses, the government forbids the private sector from firing employees during the pandemic. Employers must remunerate their employees with 70% of the average net salary and cannot pay wages below the minimum wage, measures that are difficult for MSMEs to implement. While digital-based MSMEs may benefit from the pandemic, most MSMEs, formal and informal, do not have a digital business. The private sector is called to contribute to the COVID-19 response, but MSMEs overall are facing significant challenges to business continuation (Government of Senegal, 2019^[31]). Moreover, the pandemic is hitting approximately USD 2 million of remittances from Europe, which is an important source of income for many families, indirectly affecting MSMEs.

The Senegalese government has launched the *FORCE COVID19* response and solidarity fund (Decree n° 2020-884; (African Development Bank, 2020^[3]). A steering committee oversees the implementation of the fund (Decree n° 2020-965). Six ministries are part of this committee, including the Ministry monitoring the *Plan Sénégal Émergent*, the Ministry of Finance and Budget, and the Ministry of Economy, Planning and Cooperation. From the private sector, the Association of Professionals of Banks and Financial Institutions and the Senegal Business Movement, which groups 300 MSMEs, are part of the committee (UNCDF, 2020^[32]). MSME representatives have criticised the limited representation by the ministries in charge of MSMEs, chambers of commerce and professional, as well as umbrella organisations. They worry that MSMEs, including informal ones and those led by women and youth, may not be part of the beneficiaries of the fund.

Enhancing the resilience of MSMEs is slowly being integrated into the country's private sector development, despite a clear business case to accelerate action

Private sector actors working in sectors vulnerable to climate change (e.g. tourism, agriculture, fisheries) are aware of and attach some importance to climate risks (Diop et al., 2017^[30]). Yet, some of the activities that MSMEs undertake to build resilience are not always perceived as “adaptation to climate change” or “building climate resilience.” In fact, the concept of climate resistance does not appear in public or private sector-related discussions. The concept of adaptation is often linked to large-scale projects (i.e. infrastructure to protect against sea-level rise), which do not affect MSMEs, except in the tourism sector, where the loss of sandy beaches has made these issues more visible. MSMEs and those working with MSMEs have a clearer conception of climate change mitigation and the fight against environmental degradation, e.g. through waste reduction, recycling and reuse.

The slow onset impacts of climate change in Senegal have slowed down the integration of adaptation and resilience issues into the activities of MSMEs. As a result, most MSMEs do not see the urgency to invest in climate resilience yet. However, recent experience with extreme events and the evident loss of sandy beaches have triggered some investments already (e.g. investing in infrastructure, promoting eco-tourism). Furthermore, MSMEs do not invest because they do not expect immediate business returns from these investments – often because the business case to do so is not yet developed in Senegal and MSMEs are focused on economic profitability and subsistence. Unlike climate change mitigation, investing in adaptation and resilience does not typically produce additional revenue streams and may even place companies in a comparative disadvantage due to higher costs. Senegalese MSMEs have been increasingly investing in resources that mitigate climate change, such as renewable energy and energy efficiency, because of the economic benefits of pursuing these investments.

The recent change in the orientation of public policies in favour of renewable energy and energy efficiency has helped to change domestic mentalities regarding climate change mitigation and the adoption of new technologies, as these are seen to deliver business benefits. This change signals an opportunity for MSMEs to invest in resilience and to seek co-benefits between climate change mitigation and resilience, as well as between resilience and other policy areas – if both public and private sector actors can make a business case for resilience activities. To strengthen resilience, the government of Senegal needs to consider the integration of climate resilience into the core of its governance arrangements, economic and development policy frameworks, data and information systems, as well as financial approaches to avert, minimise and address loss and damage for MSMEs resulting from climate change. The remainder of this report examines these four aspects.

Opportunities for scaling up MSME resilience may stem from other parts of the private sector

Contrary to MSMEs, large companies participate in national discussions on climate change adaptation and are aware of climate change issues. These companies could support MSMEs indirectly by implementing climate resilience measures across their supply chain. However, the only evidence of large companies' investing in resilience came from foreign multinational companies (e.g. telecommunications, mining). For example, Teranga Gold Corporation, a Canadian gold mining company with subsidiaries in Senegal, incorporates social and environmental considerations into its business model, including management of climate risks in the communities where they operate (Teranga Gold Corporation, 2014^[33]).

Corporate social responsibility (CSR), a nascent field in Senegal, could be another entry point for companies to invest in climate resilience. For example, using the CSR framework of the *Banque Internationale pour le Commerce et l'Industrie du Sénégal* (BICIS), a subsidiary of the BNP Paribas Group, UN Women developed credit lines for a federation of female rice producers, with the aim of making them more resilient to climate change. Such examples are, however, rare. *RSE Sénégal*, a private initiative aiming to develop CSR in Senegal, conducted a survey on the Sustainable Development Goals among Senegalese companies, revealing that 93% of the formal sector companies are unaware about what to do to implement climate resilience. Virtually all informal sector companies surveyed were unaware of or unconcerned with these issues, according to stakeholder interviews. *RSE Sénégal* has set up a CSR Charter that companies could adhere to, which includes the need to reduce the environmental impact of companies' actions (RSE Sénégal, 2019^[34]). Yet, the Charter does not include climate resilience considerations. For CSR projects to strengthen MSMEs' climate resilience awareness raising would be needed among all types of companies, as larger ones may not even be aware of the best way to provide support to MSMEs along the supply chain.

Another entry point to support MSMEs is the burgeoning start-up sector, which is leading the implementation of climate resilience initiatives and filling the gaps left by larger companies. *Make Sense*, a start-up incubator, supports social MSMEs to valorise traditional seeds and endogenous technologies, which can promote resilience. Other start-ups with the aim of ensuring that push-messages with relevant climate information reach farmers and fisherfolk, whenever problems occur with large telecommunication companies, such as Orange or Free. Similarly, despite the widespread use of mobile banking systems such as Orange Money, smaller and specialised transaction service companies are emerging. These can help farmers, especially in remote areas, to receive time-sensitive cash transfers during the lean season, promoting their resilience.

3 Institutional arrangements for facilitating private sector engagement in Senegal

Senegal enjoys greater political stability and better governance than many other least developed and low-income countries (OECD, 2017^[2]). In terms of governance, the central administration is solid and competent, and the legal and institutional framework is assessed positively (OECD, 2017^[2]). Notwithstanding, there are challenges related to the functioning of administration, notably with regards to the capacity of the state to lead reforms, limits to the implementation and enforcement of legislation, especially at sub-national level, and deficits in the budgetary planning and execution (OECD, 2017^[2]). In addition to these, stakeholder interviews pointed out that leadership changes in ministries or agencies occur frequently, making it difficult to sustain partnerships between private and public sectors, as well as with providers of development co-operation. Depending on the leadership, a project or partnership may progress smoothly or face significant delays. This was the case of the ANACIM, Senegal's meteorological Agency, which was headed by several directors, some of which did not have sufficient technical knowledge. A contrary example is provided by the National Agricultural Insurance Company of Senegal (CNAAS), headed by agronomists with good knowledge of sector needs.

Senegal's governance of climate change adaptation and resilience needs to better connect with the private sector

The Ministry of Environment and its Department of Environment and Classified Establishments (DEEC) is the key institution in Senegal on climate change issues, tasked with monitoring climate trends and ensuring environmental protection (République du Sénégal, 2019^[35]). As such, the Ministry is the institution where a national narrative on adaptation and resilience could emerge, one that would also speak to the private sector.

The Ministry hosts the National Committee for Climate Change (COMNACC), which gathers line ministries (e.g. energy, industry, finance, infrastructure, environment, agriculture, and fisheries), private sector and civil society. The COMNACC produces research, raises awareness, shares information and tools, and engages in the international climate agenda. The private sector is represented through the Union of Chambers of Commerce, Industry and Agriculture of Senegal (UPIIC), consisting of mainly large companies and the National Confederation of Employers of Senegal (CNES), which also includes MSMEs. Although a private sector representative was the president of COMNACC for several years, the participation of the MSMEs has been limited (Crick et al., 2018^[7]). For example, the CNES only attends COMNACC meetings sporadically, noting that communication with the COMNACC could be more regular for the CNES to raise awareness on climate resilience internally.

COMNACC aims to empower line ministries to carry forward climate-related concerns through sectoral platforms open to both public and private sectors. However, the dense institutional landscape, which tends

to compartmentalise competences, makes it difficult for COMNACC to carry out its mandate. Consequently, results have been limited and depend on the extent to which a given ministry is aware of climate resilience and is already connected with private sector representatives (i.e. livestock, agriculture, tourism, fisheries, but less so the institutions mandated to support the MSMEs). On top of these challenges, the COMNACC is a relatively weak body: its advice is not mandatory, links with the regional level, as will be seen, are underdeveloped, and it has no budgetary autonomy or the ability to work with providers of development co-operation.

To remedy this, a monitoring committee assessed COMNACC's capacity and provided recommendations in 2018 (COMNACC, 2018^[36]). The assessment argues that the COMNACC could become an independent agency under the Ministry's authority or under to the Prime Minister's Office (today the President's Office of the General Secretary of the President, as the position of Prime Minister disappeared). The COMNACC would need its own budget so that it can build the capacity of domestic stakeholders. Its advice could become obligatory for any activity to go forward. The assessment is still up for debate at the Council of Ministers, but its implementation could help mainstream climate resilience issues across the board in Senegal and could help to structure a regular dialogue with private sector representatives.

Building resilience at the local level is challenging given the current institutional setup and resource constraints

Senegal's policy of decentralisation started in 1972 and the process is still on-going (OECD, 2017^[2]). Regional and local authorities have seen competences transferred to them without sufficient human and financial resources, which hampered activities at the subnational level. This general picture also characterises the field of climate change, with the central government having difficulties to elaborate and implement climate policies beyond Dakar. The decentralisation process has led to a confusion of roles and responsibilities. These are attributable to multiple decision-making processes, weak synergies between horizontal and vertical governance due to concentration of power at the centre, weak inclusion and participation of local actors, weak appropriation of processes and strong dependence on external resources (Crick et al., 2018^[7]). The general impression at local level is that climate change and the financing that comes with it is virtually inaccessible to the communities.

The COMNACC co-ordinates 14 regional climate change committees, the COMRECCs, which are meant to provide climate-related information, awareness, training, facilitation in the design, financing, implementation, validation and monitoring of projects in the regions. The COMRECCs ought to inform the work of the COMNACC for it to be fully operational. However, they suffer from similar funding, capacity and knowledge constraints, especially in rural and semi-arid regions (Crick et al., 2016^[23]). In fact, to date not all COMRECCs are established and even if established, they may not always be operational, depending on how regional development agencies and local officials understand the challenges and needs associated with climate change (Crick et al., 2018^[7]). According to stakeholders interviewed, they could also depend on the support of providers of development co-operation, which cannot be sustained permanently. There is evidence, nonetheless, that the private sector, e.g. through co-operatives, producer organisations and GIEs, is participating or has participated in some of the COMRECCs that are operational, according to stakeholders interviewed for this report.

The on-going assessment of COMNACC also proposes reforming the COMRECCs, to provide them with more authority, as well as greater human and financial resources. These changes could help to engage the private sector at local levels, starting with analysis across all 14 regional areas to understand the situation, including to learn on what is working well in the COMRECCs that are operational and that have engaged the private sector in their processes.

Another avenue to promote local-level MSME climate resilience is for COMRECCs, local authorities and providers of development co-operation to work with and through non-governmental local structures and

networks, such as the Council of Non-Government Organisations Supporting Development (CONGAD). The CONGAD is present throughout the country and is active at the grassroots level, often working with MSMEs. The CONGAD has nine thematic networks, including an environment and development network and an agricultural policy and food security network (CONGAD, n.d.^[37]). As many of the COMRECCs have capacity issues, networks like CONGAD that already have established working relationships with MSMEs and GIEs can play a crucial role to empower these entities.

Institutions supporting MSMEs could incorporate climate resilience considerations into their mandates

The current ecosystem to support MSMEs is dense and runs almost in parallel to the governance arrangements to deal with climate change in Senegal. As a result, most MSMEs are often lost with the current institutional landscape, when seeking support in general, as well as specifically on climate resilience. Two Ministries work directly on MSMEs, namely the Ministry of Commerce and Small and Medium Enterprises and the Ministry for Industrial Development and for Small and Medium Industries. Other sectoral ministries indirectly touch upon MSMEs and several agencies and authorities also support, train, develop or finance MSMEs (Table 3.1).

Table 3.1. Institutional arrangements to support MSMEs in Senegal and integration of climate resilience in their activities

Ministry	Operational Arm	Mandate and integration of environmental and resilience considerations
Institutions working specifically on MSMEs		
Ministry of Trade and Small and Medium Enterprises	Agency for the Development and Monitoring of SMEs (ADEPME)	The Ministry develops the normative framework for MSMEs in Senegal. It supports and provides information, training and financial services to MSMEs, notably through ADEPME. With one environmental counsellor, the ADEPME developed an internal environmental policy, rendering environmental screening obligatory for all the business plans that MSMEs submit for review and advice.
	Modernisation and Upgrading Bureau (BMN)	Through the BMN, MSMEs of minimum one year of operation from all sectors are assisted to consolidate their business. Since 2010, the BMN includes environmental and energy efficiency components in its support package (e.g. clean production, Low Carbon and Climate Resilient Industrial Development). BMN provides financial incentives to environmentally sustainable projects.
Ministry for Industrial Development and Small and Medium-Sized Industries (MDIPMI)	Development and Promotion Agency for Industrial Sites (APROSI)	The Ministry promotes the creation of small and medium-sized industries (SMIs) as well as industries in local communities. It supports the restructuring industrial companies, encourages certification for quality improvement and prepares industrial development strategies. The Ministry is responsible for implementing standardisation processes and, together with the Ministry of Environment and Sustainable Development, oversees the monitoring of classified industrial installations. Through APROSI, the Ministry can structure its support to industrial companies in terms of site allocation and promotes any action for profitability and optimal occupation of industrial sites.
	Senegalese Association for Standardization (ASN)	The Association assists the private sector, in particular the SMEs/SMIs, in quality improvement and aims to develop synergies between government, private sector and consumers.
Other relevant institutions		
Ministry for the Promotion of Investments, Partnerships and the Development of State Teleservices (MPIPDTE)	Agency for the Promotion of Investments and Public Works (APIX)	The Ministry provides the regulatory framework for SME participation in public-private partnerships and to promote their participation in large investments, e.g. for infrastructure, notably through APIX. In fact, APIX assists entrepreneurs that have yet to start a business or early-stage SMEs in their access to finance. The APIX also provides regulatory support to SMEs.
Ministry of Agriculture and Rural Infrastructure (MAER)	Agency for the National Council on Agriculture and Rural Development (ANCAR)	Covering all agricultural sectors, the Agency promotes technical innovation in agriculture and good agricultural and rural practices, as well as trains producers, intervening in many rural communities.

	Senegalese Institute of Agricultural Research (ISRA)	The Institute is mandated to develop agricultural research to contribute to food security, agricultural production as well as sustainability. It has collaborated with CCAFS, ANACIM and USAID to promote resilience and the productivity of farmers through the provision of climate information services.
	National Society for Planning and Exploitation of the Senegal River Delta Land and the Senegal River and Falémé Valleys (SAED)	This national company promotes irrigated agriculture in the Senegal and Falémé rivers through public investments, maintenance of hydro-agricultural infrastructure, management of water resources, rural development and land security, and support of professionalisation and rural entrepreneurship. France supports this agency to reinforce capacity on adaptation.
Ministry of Economy, Planning and Cooperation	Directorate for Private Sector Development and Directorate of Finance and Public-Private Partnerships	The Ministry collaborates with international financial organisations as well as Ministry of Trade to set a quota to subcontract MSMEs in Public-Private Partnerships and to create a one-stop shop support centre for MSMEs.
Ministry of Employment, Professional Training and Trades (MFPAA)	Gender unit at the MFPAA and National service of professional orientation	The Ministry modernises, develops and promotes exports of the artisanal sector, and collaborates with enterprises for technical training. The Ministry also supports the access to finance for craft workers.
Ministry of Fisheries and the Maritime Economy (MPEM)	National Fisheries Agency	The Ministry controls industrial fishing to preserve the marine environment and helps formalise small fishing businesses, and helps valorise this sector. The Ministry issues fishing licenses with the Ministry of Economy, Finance and Planning.
Ministry of Tourism and Air Transport (MTTA)	Society for the Development and Promotion of the Coast and Tourist Areas of Senegal (SAPCO)	SAPCO develops coastal tourism. A project to do so over 1980-90, with support from the World Bank, did not include a risk assessment and now the areas promoted suffer from coastal erosion and coastal flooding, where private actors are initiating actions to protect their property.
	National Agency of Civil Aviation and Meteorology (ANACIM)	The Agency provides meteorological services conforming to the World Meteorological Organization's norms to Senegalese stakeholders, including MSMEs. The ANACIM co-ordinates and supervises meteorological activities in Senegal and has developed a National Framework for Climate Services, which targets MSMEs among other stakeholders.
Ministry of Youth	National Agency for the Promotion of Youth Employment (ANPEJ)	The Agency supports youth to find employment or entrepreneurship opportunities, including in farms and rural environments. However, it does not include climate resilience as part of its mandate.
National Food Security Council (CNSA)	Executive Secretariat of National Food Security Council (SECNSA)	The Council monitors and evaluates food security and resilience policies and programmes. It also supports information systems on food security and resilience for sustainable development.
President's Office	General Delegation to Promote the Rapid Development of Entrepreneurship for Women and Young People (DER)	The Delegation mobilises resources and helps entrepreneurs access finance. DER also accompanies female and youth entrepreneurs and helps them access the necessary means to promote socio-economic inclusion as well as territorial equity.
	National Investment Observatory (ONI)	The Observatory assists the President in developing a favourable investment environment to assure sustainable, inclusive and equitable growth, and to reinforce economic dialogue between the government and the private sector.
	Operational Monitoring Bureau (BOS)	The BOS monitors implementation of the PSE, which emphasises developing the domestic MSME and, with the second PSE implementation plan, the importance of environmental and climate change issues.

Source: Authors' elaboration.

While ADEPME and the Modernisation and Upgrading Bureau (BMN) have mandates and activities related to environmental and climate issues, their focus is mainly on local environmental protection (e.g. waste reduction, pollution control) and climate change mitigation, but not directly on climate resilience (see Table 3.1). While their mandate extends to all territories in the country, most of their activities take place in Dakar, which hampers the effectiveness of these institutions, as MSMEs located at sub-national level may not always be able to access the support services these institutions offer. For example, over one third of the MSMEs receiving support from the ADEPME are located at the regional level and are involved in agricultural or agri-food processing activities. Yet, ADEPME reaches out to MSMEs in eight out of the fourteen regions of Senegal, as it lacks capacity to intensify its activities, according to stakeholder interviews. Given this insufficient engagement, there may be missed opportunities for MSMEs. For example, mango farmers incurred in economic losses due to changes in the flowering session. They could have benefitted from official support to renegotiate their contracts with buyers to ensure these coincide with the actual harvest season, according to stakeholder interviews.

All necessary governance arrangements are in place, but institutional coherence and co-ordination would help to promote MSME climate resilience

Collaboration between the MSME ecosystem and climate resilience-related institutions tends to happen ad hoc. Moreover, when integrated, environmental or climate resilience considerations are the result of a process driven by a development co-operation provider. ADEPME, for example, introduced an environmental counsellor in 2018 with support from France. USAID has been supporting the National Fisheries Agency, including on climate resilience issues, through the Collaborative Management for a Sustainable Fisheries Future in Senegal (COMFISH) initiative since 2011. These structures are usually in place after the providers stopped directly supporting them, owing to the domestic demand and need for such structures. At the same time, the scope of providers' interventions is typically limited, with pilot and demonstration projects. A domestic push would be necessary to ensure that the ecosystem builds upon their activities, while seeking coherence and enhancing co-ordination across structures (Crick et al., 2016^[23])

The existing MSME support system in Senegal may in fact go through a reform soon. The Ministry of Economy, Planning and Cooperation and the Ministry of Finance and Budget, are both responsible, inter alia, for reviewing sector policy proposals and prioritisation, elaborating planning documents, and allocating budgetary resources. The Ministries plan to review the current MSME support ecosystem to create a "one-stop shop" to guide MSMEs and to propose a new, integrated approach to develop national and sectoral budgets, which would also help co-ordinate providers of development co-operation. These plans could be entry points to ensure that climate resilience is integrated across all MSME support systems. According to the stakeholders interviewed, the Ministries' close relations with the Presidential Office can facilitate these reforms, as including a given issue within Presidential policy agendas can trigger large-scale change.

4 Policy frameworks to enable private sector engagement in building climate resilience

The guiding national policy framework in Senegal is increasingly reflecting climate resilience issues but still needs to better engage and incorporate private sector actors

Senegal's *Plan Sénégal Émergent 2014-2023* (PSE) guides the country's economic and social development pathway. All policies refer to the PSE, even though the PSE only highlights a number of strategic sectors, including the development of the Senegalese private sector. A Minister is tasked with monitoring the implementation of the PSE, with support from an Operational Monitoring Office (BOS), which was created in 2015 to monitor the implementation process through 5-year priority action plans (PAP) (Government of Senegal, 2015^[38]). Senegal's dense institutional landscape often means that decisions going forward are those that come from the top. Hence, it is important to examine how the PES and its PAPs integrate MSMEs and climate resilience considerations.

The first PAP (2014-18) focuses on six priority sectors, including those vulnerable to climate change, such as agriculture, fisheries and tourism. It promotes a number of projects and structural reforms, like the development of cereal corridors, micro-projects to support traditional agriculture, restructuring the peanut industry, creating integrated agro-poles and building up an industry to transform fishing products (Government of Senegal, 2014^[39]). The PAP also introduced a number of measures to enhance MSMEs' access to credit (e.g. creation of a national development bank, investment fund and guarantee fund). However, the first PAP integrated climate resilience issues insufficiently and with limited links on the activities of MSMEs. This PAP noted a financing gap for climate change adaptation, climate resilience, risk and catastrophe management, but did not elaborate on how to fill this gap (Government of Senegal, 2014^[39]). Evaluations of the first PAP show, inter alia, substantial rural development, notably in the onion, peanut, fruits and vegetables sectors (OECD, 2017^[2]). However, implementation was focused on reaching certain production objectives, without sufficient attention to resilience issues, such as developing post-harvest infrastructure or promoting nature-based solutions to develop priority sectors.

The second PAP (2019-23) has a clearer environmental dimension, with the introduction of a 'green PSE' pillar, more references and proposed actions to foster climate change adaptation (e.g. resilient infrastructures action plan, reforestation, resilient agro-business value chain) (Government of Senegal, 2019^[31]). According to stakeholders interviewed, the 'green PSE' could have been more ambitious (e.g. proposing an update of coastal building codes) and, based on the experience of implementing the first plan, it is unclear how this PAP will be operationalised, including on the role of MSMEs. Stakeholders also commented that, despite including issues that may be in line with building long-term climate resilience, most resources were prioritising short-term visibility projects. Furthermore, being a top-down process, any measures that pertain to resilience may not benefit from inputs from the ground or be able to rely on strong local networks for implementation.

Links across climate change adaptation and disaster risk management frameworks are being developed, but they still largely operate in separate spaces

Senegal's National Adaptation Programme of Action (NAPA) dates from 2006 and the country started working on its National Adaptation Plan (NAP) in 2016, led by the Ministry of Environment and Sustainable Development and the COMNACC, with support from UNDP and USAID. While the NAP inscribes itself within the PSE, the PSE or the PAP 2019-23 do not take the NAP process into account, which shows how resilience-related processes often operate in parallel in Senegal.

The Senegalese NAP takes a sectoral approach, with sector plans for agriculture, fisheries, health and tourism, and a general disaster risk management component focused on floods and droughts, as well as climate information. The NAP process started from the bottom-up, using existing concertation platforms and local committees, as well as with local adaptation plans informing the development of the NAP – on fisheries see (Government of Senegal, 2016^[40]). Once the sectoral adaptation strategies are developed, they are validated at national and local levels, through the COMNACC and COMRECCs, followed by an analysis on how all plans connect with each other. Once the plans are complete, adaptation actions will be prioritised and the costs will be estimated. Despite some emerging good practices, such as the engagement of local level private sector actors (e.g. Local Artisanal Fishing Councils), stakeholders interviewed commented that some of the sectoral NAP did not engage MSMEs.

Besides the NAPA and NAP, Senegal had a Plan for the Civil Security Response Organization (Plan ORSEC) since 1994, which was updated in 1999. This plan defined how public institutions are involved in the plan, how they co-ordinate and the general conditions and organisation to trigger the Plan, with the Minister of Interior leading this process. The Plan was updated in 2012 through a Risk and Disaster Management and Climate Change Adaptation Project, with the support of the World Bank (Ministry of Interior, 2015^[41]). There are three variants to the plan: the National, Regional and Departmental ORSEC Plans, which are used for a number of hazards, including responding to food insecurity and flooding (UNISDR, 2008^[42]). For example, a Ten-Year Flood Management Programme (2012–2022) aims at mainstreaming disaster risk management into urban planning, establishing appropriate financing mechanisms, and developing and operating a risk monitoring and evaluation system.

These Plans are often promoting resilience but tend to operate in silos. For instance, the Plans are not linked with the platform for agriculture and food security that was launched in 2014 to support resilience when bad seasons occur. When that happens, the Ministry of Agriculture launches an alert and releases short-term cycle seeds and proposes product diversification. Lacking national-level co-ordination, however, production and market price swings are frequent, which affects the incomes of farmers, as well as the whole supply chain with oversupply of certain products. More generally, the role of the private sector is often solicited after a natural disaster, especially after floods, but the sector usually supplies in-kind materials and services during the emergency response phase or participates in reconstruction activities (e.g. infrastructure). However, these activities are not co-ordinated with public actions, nor are they monitored or recorded, so it is difficult to understand the role and impact of MSMEs, but it is unlikely that these led to the building of resilience over time.

Most other sector-level frameworks and tools need updating to incorporate climate resilience

Sector-level frameworks aimed to support the development of businesses, including MSMEs, and those on climate change adaptation and resilience do not refer to each other, or operate in a coherent manner. For example, the Fisheries Code mentions the principles of precaution and sustainable resource management, and introduces measures to stop overfishing, restore fish habitats or promote aquaculture – all activities that promote adaptation and resilience. Yet, these activities are not developed through

concrete legislation and the enforcement of the Code has proven to be difficult due to capacity constraints at the Ministry of Fisheries. Another example is the National Strategy for Food Security and Resilience, led by the Ministry of Agriculture, where resilience is a key element to ensure food security through agriculture. MSMEs are engaged in such processes, along with other Ministries (e.g. the Ministry of Water Infrastructure) or the PRACAs (Programme to Accelerate the Rhythm of Agricultural Production), but these follow a value chain rationale (for 16 different goods). Sector frameworks could be more closely weaved together, promoting coherence, with positive consequences to the climate resilience of MSMEs. In fact, climate resilience measures need to be in line with other types of environmental sustainability measure, or else MSMEs are likely to suffer the consequences (Box 4.1).

Box 4.1. Incoherent frameworks can have dire consequences for MSMEs

Decision-making and action on nature-based solutions for adaptation require coherence across policy areas (Wetlands International, 2017^[43]). Nature-based solutions for adaptation need to take account of the interactions within and between ecosystems and the distribution of potential beneficiaries and impacts. Otherwise, actions taken to reduce vulnerability in some locations may exacerbate it elsewhere. For example, dams built to store irrigation water and/or generate hydropower on the Upper Senegal river have degraded downstream wetlands critical to the livelihoods of farmers, herders, and fisherfolks of the region, resulting in hardship, migration, and conflict. Information and decisions at hydrological basin scale are equally important for the use of such nature-based solutions in coastal zones because sediment loads have critical impacts on reefs and other marine ecosystems, thus impacting upon the livelihoods of fisherfolks and tourism.

There are several opportunities to ensure that climate resilience is integrated across sector-level frameworks and tools. For example,

- Environmental Impact Assessments (EIAs) are now obligatory for large investments in the country and could be one way to integrate considerations on climate resilience. However, so far, those performing these assessments may not have enough experience on climate change and, to date, foreign companies are the ones implementing most projects. The government aims at promoting more domestic investments, including from MSMEs, which would also extend the practice of EIAs to these economic units. However, for the EIAs to be effective tools in building resilience, further regulations would be necessary around the assessment system (e.g. inclusion/exclusion of project types, checklists, criteria of climate-sensitive areas and thresholds). There are no guidelines to screen for climate change effects, no method for calculating emissions, or practices to mobilise stakeholders engaged in an assessment, including for MSMEs, which often have limited resources and capacity.
- The Environmental Code is currently under revision and the Ministry of Economy, with the Ministry of Environment and Sustainable Development, as well as the other ministries, institutions and stakeholders are engaged in the process. The Code could integrate climate resilience issues for MSMEs, turning what is often perceived as a complex piece of legislation into an area that delivers business opportunities for MSMEs through resource efficiency gains, circular economy solutions, or risk mitigation and transfer. Similarly, under the 'Green PSE', the Waste and Forest Codes are going to be updated and could also provide entry points to enhance resilience for MSMEs. The 'Green PSE' also aims at creating a new Reforestation Agency, which could help to close the current gaps between agriculture and agro-ecology, i.e. develop farming practices that enhance soil fertility, recycle nutrients, optimise the use of energy and water, and restore and strengthen ecosystems – areas that could support the resilience of MSMEs.

- Incubators, accelerators and co-working spaces have flourished in Senegal in recent years. They represent an opportunity to identify and professionalise start-ups and bottom-up initiatives, including MSMEs that have already identified climate resilience as a business opportunity in the country. A new Start-up Act, promoted by Senegalese start-up incubators, conforms with PSE and “2025 Digital Senegal” Strategy and focuses on innovation and productivity gains (République du Sénégal, 2020^[44]). While the focus of this bottom-up legislation is not on climate resilience per se, it could also help support these MSMEs providing them with capacity-building, technical assistance and access to technology and finance.
- Youth employment, digitalisation, women’s economic empowerment and food security are priority areas for the Senegalese government. Mainstreaming climate resilience across these areas, through collaboration among relevant ministries, environmental actors and MSMEs, could promote more resilient MSMEs. For example, in Senegal’s recent women’s economic empowerment strategy, prepared with UN Women with support at the highest political level, climate resilience is not featured. This strategy could be fleshed out and refer to green jobs, which are emerging in Senegal (e.g. agro-ecology, energy efficiency, renewable energies, domestic biogas, solar-powered water pumps). As these jobs are not yet influenced by the country’s gender norms (i.e. they are not perceived as ‘wrong’ for women), they could push female-led MSMEs towards resilient activities.
- Dakar developed an Urban Resilience Strategy, with support from the Rockefeller Foundations’ 100 Resilient Cities Programme. The private sector, both formal and informal, is a key pillar of the Strategy. It can invest and forge partnerships for the delivery of the resilience initiatives listed in the Strategy, but also through the creation of employment opportunities. However, the private sector is not sufficiently empowered to fully play this role, according to stakeholders, due to an investment environment that is not yet incorporating climate resilience. The Programme has been suspended but the Strategy could be further developed, as a promising avenue to develop urban resilience. This would require dialogue with local MSMEs, e.g. in the fisheries and artisanal sectors.

5 Data and information for strengthening climate resilience of micro, small and medium enterprises

Climate information and data are improving in Senegal

Climate services have improved over time in Senegal, notably after a hurricane in 1999 that caused substantial deaths and losses, according to stakeholders interviewed. ANACIM, the National Agency for Civil Aviation and Meteorology, is responsible for the collection and dissemination of climate services in Senegal. The Agency is located under the Ministry of Tourism and Air Transport, a ministry that became gradually aware of climate risks in Senegal, notably through tourism. This has traditionally hampered the work of the agency to supply relevant climate information and data to other stakeholders.

Notwithstanding, the ANACIM has been piloting the delivery of climate services that are adapted to farmers since 2011 (see Box 5.1), with support from the World Food Programme's 4R Rural Resilience Initiative as of 2016, which also included modules on insurance and capacity building (WFP and ANACIM, 2018^[45]). In 2017, the government of Senegal signed a decree establishing the country's NFCS, an outcome of the Climate Services for Increased Resilience in the Sahel project, funded by USAID. The NFCS helps to deliver climate services that are credible, reliable and tailored to the needs of decision-makers and users. For example, the Frepromais, which is the Senegalese Federation of Maize Producers, now uses climate information to adjust their production levels and to reach optimal quality standards to honour their international contracts (USAID, 2017^[8]).

Box 5.1. ANACIM's climate services for farmers

In Senegal, the CGIAR Research Program on Climate Change, Agriculture and Food Security has worked closely with the ANACIM to develop locally-relevant climate information services, and to enhance the capacity of partners to communicate information to farmers (CCAFS, 2014^[46]). The work began as a pilot in 2011, with farmer training and planning workshops in Kaffrine. The pilot revealed a strong demand for climate information, and requests were made to scale up the pilot. Rural radio was used to scale up into new regions in Senegal, accessed through a partnership with the Union of Rural Radio (URAC), a federation of NGOs and the Institute of Agricultural Research of Senegal. Scientists worked with ANACIM to provide seasonal and 10-day forecasts tailored to farmers. A special programme communicated this information through URAC's radio station network. Journalists from 40 radio stations were trained to understand and communicate climate information. The interactive radio

programming allowed listeners to share feedback, including additional information, views, and requests for clarification (Lo and Dieng, 2015^[47]).

A recent evaluation estimated that 560 000 rural households now have access to climate information services in Senegal as a result of this effort (Ndiaye et al., 2013^[48]). The study showed that farmers are changing their management practices in response to the information. But more work is needed to understand how these changes impacted livelihoods. Evidence suggests that the pilot connected with strong demand among farmers, by providing locally downscaled information, in a process that engaged rural communities in meaningful dialogue with climate and agricultural experts. Partnering with URAC proved an effective and low-cost way to respond to demand and provided substantial access to local farmers, across all regions and in local languages, and its interactive format helped engage listeners.

ANACIM presides an Inter-ministerial Council on Climate Services that ensures that evidence-based climate information and predictions are integrated into the planning and policy frameworks of participating ministries (USAID, 2017^[8]). The Council also reviews the 10-day meteorological forecast and the status of the rainy season, run-off in the main rivers, and issues related to food security, health, disaster risk management, energy, water management, vegetation growth, and the state of the sea in coastal areas and trade (WMO, 2018^[49]). Ministries supporting MSMEs, however, do not participate in this Council.

Training on climate services for various sectors in Senegal is also in the pipeline. ANACIM has been working closely with various user groups of climate services in the country to ensure that their needs are met. A National Consultation identified priority interventions for the agriculture, health and energy sectors, as well as the capacity development needed in these areas. ANACIM itself also benefited from climate training, e.g. with the support from Italy, USAID or the World Meteorological Organization.

Other platforms also provide Senegalese stakeholders with relevant data and information. For instance, Senegal participates in the RainWatch-Africa initiative. This initiative provides free information on rainfall and temperature in various areas in Senegal and other African countries. The data is available online with a readily usable graphics interface (RainWatch, n.d.^[50]). This platform has the potential to improve the communication and decision-making of national and regional officials, non-governmental organisations, academia and think tanks, and even farmers. According to the stakeholders interviewed, the amount of information is not sufficiently granular, while the interface may not be sufficiently user-friendly for MSMEs in the agriculture sector.

Climate services remain insufficient for micro, small and medium enterprises

ANACIM has been riddled by frequent management changes, which delayed the implementation of several projects, including some related with MSMEs. As a result, climate services may not always be channelled in ways that are useful to MSMEs. ANACIM prepares weather reports that are broadcasted through television and radios, yet these may not be sufficiently granular, local- or sector-specific for MSMEs to take informed decisions on how to manage risks. Services tend to be delivered during the rainy season, but farmers would prefer to receive such information throughout the year (WFP and ANACIM, 2018^[45]). With several local languages in Senegal, diffusing the information only in French may not always be appropriate to reach all MSMEs. Moreover, with low literacy rates in Senegal (UNESCO, n.d.^[51]), written climate services are also an insufficient means to reach MSMEs.

As seen, ANACIM has started changing its approach to deliver these services, often with support from providers of development co-operation. Beyond the first pilots on delivering relevant climate services and the development of a national climate services frameworks, providers have been instrumental in other areas. For example, the USAID is supporting ANACIM to develop a push alert system in French, Wolof, Peulh, Sérère and other local languages for farmers (either by SMS, which are preferred as they can be shared with other farmers, or by calls for illiterate farmers). ANACIM worked with Global Affairs Canada and others to deploy meteorological stations

in a number of regions, dramatically improving the amount of information available for the benefit of farmers. This has improved the climate services in these parts of the country, with subsequent developments to heighten resilience through the provision of index-based insurance by the national insurance company (CNAAS). IFAD has created an interactive Facebook community platform with ANACIM to connect agricultural entrepreneurs, share pertinent information and communicate on resilience and risks.

The Ministry of Environment and Sustainable Development is aware of the needs for climate-related information across sectors, not least because the various pilots issued clear recommendations on how to improve these services (WFP and ANACIM, 2018^[45]). These recommendations included the need to reach out to communities in their local language and develop a glossary on weather forecasting and the climate; to provide climate services that go beyond rainfall information; train and raise awareness among rural communities on climatic events; establish an early warning system to ensure preparedness; and ensure women's needs are taken into account when designing those needs, as well as those of the youth and of herders. With the COMNACC and other line ministries, including those mandated to support MSMEs, the ANACIM and the Ministry of Environment and Sustainable Development could build upon these to perform a diagnostic of private sector needs, which would include an assessment of technology needs to ensure the effective delivery of climate services. This could be one of the pieces laying the ground for making the 'business case' for MSMEs to invest in resilience.

The role of technology deserves to be carefully studied as this may be a double-edged tool for Senegalese MSMEs. Many economic units are not used to (or even trust) mobile-delivered meteorological information to take informed decisions, despite the growth of mobile solutions nationwide that could help develop climate resilience overall (Box 5.2). Private sector operators, such as Orange or Free, are key in providing climate services – yet their fees to send push alerts may not always be affordable for end-users. Other farmers may prefer receiving the information through TV and radio forecasts – but delivering climate services through these means cannot be rolled out across the country, as there are limits to the network coverage, including of mobile technology (WFP and ANACIM, 2018^[45]). Another general challenge with the introduction of modern technology relates to the maintenance of equipment over time, which is not guaranteed due to capacity and financial shortages (e.g. weather stations have an expected life of ten years).

Box 5.2. Potential use of mobile solutions for building climate resilience of MSMEs

The need to find innovative ways to facilitate the market access to MSMEs has been the subject of debate in various forums organised in Senegal. The country has adopted a digital transformation strategy, the 2025 Digital Senegal Strategy, which aims to make the country a hub for digital transformation in the region and beyond (CNAAS, 2020^[52]). In this context, mobile-fuelled financial and insurance technologies are relatively new in Senegal, but have the potential to help financing MSMEs' investment in climate resilience. Senegal has over 15 million mobile phone lines. According to the World Bank's Global Findex 2017 database, ownership of a mobile money account in Senegal has reached 33% and now more people have a mobile money account than an account with a financial institution. This provides low-income people with access to an account through which additional financial services such as savings, credit and insurance could be offered, in partnership with financial institutions. Financial and insurance technologies can help MSMEs to overcome traditional financial access challenges and facilitate investments and purchases.

Finally, the development of climate service is hampered by how the Senegalese culture relies on traditional values and endogenous knowledge, where change is perceived with reticence, and where the market "hearsay" may be favoured, when taking decisions, even if these impact negatively upon MSMEs' climate adaptation and resilience. For example, many farmers plant seeds at the time they have traditionally been doing so and wish for God's good graces. Fishermen do not always respect or trust the information provided and may go far out into the sea to fish, despite worsening conditions.

6 Finance for enhancing climate resilience of micro, small and medium enterprises

A public financial landscape to support MSMEs is developing, which can be an opportunity to mobilise finance for climate resilience of MSMEs

Senegal has established a number of institutions that support the private sector financially, including MSMEs. Among these are the National Development Bank (BNDE), the Sovereign Fund for Strategic Investments (FONSIS) and the Guarantee Fund for Priority Investments (FONGIP) (see Box 6.1). These institutions were established to support the first *Plan d'Actions Prioritaires*, but failed to deliver transformational change to MSMEs, including in the area of climate resilience. For example, a recent assessment by the African Development Bank concluded that the BNDE needs additional long-term resources to finance activities related to agriculture, one of the key sectors for building climate resilience. Such finance would be crucial to strengthen the capacities of BNDE loan officers in the areas of risk management, project management, environmental and social management systems and the management of development results (African Development Bank, 2019^[53]). Stakeholder interviews also noted that, while the FONSIS appears to have been useful for MSMEs in general, the FONGIP had not been able to deliver on its mandate, mainly due to limited capitalisation, and would be reformed soon. With the new 'Green PSE', stakeholders hope that these financial institutions will become important vehicles to support MSMEs, notably by operationalising climate resilience issues. However, it is too soon to understand the extent to which this will happen.

Box 6.1. Examples of public financial institutions that support MSMEs in Senegal

The Sovereign Fund for Strategic Investments (FONSIS) can leverage additional funds, invest in the real economy and create flagship Senegalese companies in certain sectors to attract local talent and the diaspora. The FONSIS mainly invests in the form of equity alongside national and foreign private individuals. Through a sub-fund dedicated to small and medium-sized enterprises, the FONSIS invests in equity and it advises, supports and structures these SMEs so that they can raise additional debt financing from banks (BNDE, commercial banks). FONSIS is currently reviewing its internal data collection process in order to provide data related to all its activities and quarterly reports on its portfolio are currently only shared with its Board of Directors, including the Government of Senegal. This limits any assessment as to how effective the FONSIS has been for MSMEs (IFSWF, 2020^[54]).

The Priority Investment Guarantee Fund (FONGIP) aims to improve the conditions for financing economic units operating in priority sectors, as outlined in the PSE, in order to increase their productivity over time. The FONGIP allows lenders to mitigate the risks linked to the granting of loans to SMEs, e.g. by providing capacity building to financial institutions to lend to SMEs, or by lowering the interest rates currently applied by financial institutions [between 5-8% instead of the usual 12-18% applied in Senegal (ADIE, 2020^[55])]. It thus can promote the competitiveness of MSMEs and contribute to the strengthening of growth-promoting sectors.

The BNDE aims to facilitate access to financing for SMEs and small and medium-sized industries (SMIs), and provide global responses to their financial needs. A number of credit lines have helped finance a dozen MSMEs in the agriculture, fishing, poultry and agro-industry sectors since 2015 (African Development Bank, 2019^[53]).

According to the stakeholders interviewed for this report, these institutions are unlikely to deliver the necessary support for entrepreneurs and existing MSMEs, let alone to build their resilience in the face of climate risks. They are not yet sufficiently adapted to recognise the operating needs of MSMEs, which is reflected in their toolkit and strategies. The BNDE has the means to finance the needs of MSMEs but is not focusing on these needs as it develops its model. The FONSIS is seen as the financial arm of the state, but is concentrated on major projects sponsored by Senegal's President, rather than the activities of MSMEs. Finally, the FONGIP does not have enough financial resources to deliver on its mandate.

In addition to these public financial institutions, climate resilience can be promoted through the budgetary process, which the Ministry of Economy, Planning and Cooperation oversees. The Ministry of Environment and Sustainable Development has been supporting the mainstreaming of climate issues across different sectoral ministries during the budgetary process. However, the Ministry finds it difficult to ensure that activities are budgeted for in other ministries, as it does not have the mandate to do so and ministries face competing priorities that often leave environment-related issues without a budget. Usually, ministries rely on providers of development co-operation to fill those gaps, as stakeholders interviewed commented. For example, Senegal is reformulating its Country Investment Plan to factor resiliency into agricultural investments, with funds from USAID (USAID, 2016^[56]). The UK Department for International Development is helping Senegal set up a Decentralised Climate Fund (DCF) to enable local authorities to identify and prioritise local adaptation interventions that strengthen local community resilience (IIED, 2015^[57]). However, these efforts need sustained and continuous support to be effective, which is difficult for providers to achieve beyond a certain point in time, as interviewed stakeholders noted. As mentioned earlier, the reform of the budgetary process may prove useful to promote climate resilience across the board, as the Ministry of Economy will decide on priority activities.

The Senegalese commercial banking and insurance sectors are delivering results on resilience

The domestic financial sector provides financial solutions that support the climate resilience of MSMEs, notably in the agricultural sector. For example, commercial banks in Senegal (e.g. Bank of Africa, *Société Générale Sénégal*, or *Banque Internationale pour le Commerce et l'Industrie du Sénégal*) have been providing loans to acquire solar-powered water pumps or domestic biogas systems for some years, while few had invested in resilience projects. More dramatic changes have taken place recently. The *Banque Agricole* (former *Caisse Nationale de Crédit Agricole du Sénégal*) introduced obligatory agricultural insurance, through the CNAAS, the national agricultural insurance company of Senegal. Financing MSMEs across the value chain and providing approximately 75% of all agricultural investment in the country, *Banque Agricole* has great potential to showcase how commercial banks can offer financial products that contribute to building climate resilience of MSMEs, in this case through insurance. Indeed, the *Banque* has a comprehensive view of risks, including climate-related ones. The *Banque Agricole* participates in COMNACC meetings, when relevant, which helped to build awareness internally on climate change issues. Moreover, the *Banque Agricole* is currently undergoing the accreditation process with the Green Climate Fund (the second accredited institution in Senegal, with the *Centre de Suivi écologique*), which would boost its direct access to international climate-related finance for adaptation. This process has also led to the introduction of a climate finance unit in the *Banque*, as well as to the development of environmental and climate due diligence and risk mitigation strategies, which are still under development (*Banque Agricole*, 2019^[58]).

Taking an insurance with the CNAAS is now a condition for the *Banque Agricole* to provide loans to MSMEs that are organised around producer organisations (e.g. the National Council for Rural Cooperation and Co-operation, CNCR), agricultural co-operatives (e.g. the Network of Peasant and Pastoral Organisations of Senegal, RESOPP) and, to some extent, the *Groupements d'Interêt Economiques* (GIEs, groups of micro or individual economic units). These stakeholders sign communal contracts with the *Banque* for loans that include insurance products, which reduces transaction costs. However, many farmers in the informal sector are excluded from this system, unless they are organised.

Beyond the *Banque Agricole*, the work by UN Women with the *Banque Internationale pour le Commerce et l'Industrie du Sénégal* (BICIS), a branch of BNP Paribas, is also now integrating resilience considerations into their investment decisions. The project aims to enhance women's participation in agricultural value chains to increase climate resilience (e.g. by promoting access to land, technology and skills on climate resilience, access to finance through specific credit lines, and access to markets). Engaging women could also provide additional information [e.g. they would find it useful to have information on wind speed for drying agricultural crops and fish, to take decisions on child care, on the winnowing of peanuts, security of fisherfolk and availability of seafood (WFP and ANACIM, 2018^[45])]. Beyond these examples, most commercial banks do not promote resilience internally. The Islamic Bank of Senegal, for example, is the 4th largest domestic bank and is engaged with farmers and fishermen and other MSMEs – yet there is limited awareness internally on the challenges posed by climate change to the sustainability of their investments. The Islamic Bank of Senegal could benefit from incorporating climate adaptation and resilience considerations across their portfolio and by developing Islamic finance insurance products. This would also reduce the default risks of a client base that would become more resilient.

The growth of the insurance market is a promising avenue to promote resilience

In Senegal, index-based insurance is developing and has the potential to change risk management for MSMEs. Index-based insurance is widely perceived as a particularly effective means of providing insurance in developing countries because it lowers assessment costs and reduces the moral hazard associated with traditional insurance contracts (Schaefer and Waters, 2016^[59]). At the meso-level, insurance products are targeted at 'risk aggregators' such as professional associations, NGOs, community associations and co-operatives (Schaefer and Waters, 2016^[59]), and therefore can benefit MSMEs that are members of such groups. For example, PlaNet Guarantee provides drought index insurance to farming co-operatives in Senegal (Schaefer and Waters, 2016^[59]), but such schemes were limited in number until the *Banque Agricole* associated with the CNAAS to scale up the use of insurance. The CNAAS developed the index-based insurance (e.g. to cover for a rain deficit), using weather stations and satellite information, departing from its traditional indemnity insurance model (e.g. after a flood, which requires physical inspection of losses). As mentioned, the *Banque* covered all of its operations with one of the two types of insurance to lower its own risks, with a preference for index-based insurance due to its lower costs. This has led to coverage of approximately 10% of all Senegalese farmers in a few years (notably cotton, peanut, maize and livestock breeders), see Table 6.1.

Table 6.1. Number of farmers with index-based insurance by CNAAS over time

Year	2009-11	2012	2013	2014	2015	2016	2017	2018	2019
Farmers insured	1 285	2 103	8 251	12 144	24 701	39 852	79 771	188 314	269 024

Source: (CNAAS, 2020^[52]), Définition de l'Assurtech, the National Agriculture Insurance Company of Senegal (la Compagnie d'assurance agricole au Sénégal : CNAAS)

The CNAAS uses its network of 40 regional branches to disseminate its insurance products and explain it to the farmers, through producer organisations, co-operatives and GIEs. Such a dissemination and training model reduces costs by signing collective contracts and simplifying payments and negotiations. The Senegal River Valley, where cotton grows, exemplifies how insurance has encouraged investments to improve production processes and to develop a transformation industry. The current development pathway of the rice valley has been possible thanks to the CNAAS. The CNAAS is piloting other insurance tools in other sectors (e.g. fisheries sector; flexible risk transfer options such as insurance-for-assets programmes) and across regions, including the use of satellite-based insurance. The Ministries of Agriculture and Fisheries could help foster insurance there and in other regions, for example, by integrating insurance into its policy- and decision-making and by engaging in dialogue with the CNAAS.

At the macro-level, Senegal is part of the African Risk Capacity (ARC) since 2016. ARC, including its financial mechanism, the Extreme Climate Facility (XCF), provides African countries with funding for adaptation, if pre-determined climate data thresholds are met. However, these do not target MSMEs specifically (ARC, n.d.^[60]). ARC financing and activities are led by the Ministry of Interior, which distributes pay-outs to beneficiaries; while CNAAS disburses funds directly to farmers and is connected with the ministries of environment and agriculture. The CNAAS does not participate in domestic discussions on contingency plans to design domestic operation plans. In fact, the CNAAS does not benefit from the capacity building opportunities offered by ARC and does not receive pay-outs from the risk pool mechanisms. Stakeholders interviewed noted that synergies between the two levels of insurance could be unfolded, which would help develop a more comprehensive resilience building package for farmers, livestock herders and fisherfolks.

Notwithstanding progress, the insurance model in Senegal stands on shaky grounds

There is potential to scale up the *Banque Agricole*-CNAAS approach, despite the challenges that the CNAAS is experiencing. In fact, other insurance companies in Senegal are studying the CNAAS model. *Sonam Assurances* and *Allianz Sénégal Assurances* started providing agricultural insurance to MSMEs, but for now do not have specific products beyond harvesting, according to stakeholders interviewed.

The *Banque Agricole*-CNAAS business model is not yet solid enough. Currently, the government subsidises half of the insurance premium and the premium is VAT free, making insurance more attractive for farmers. According to stakeholder interviews, however, the government's payment of funds to the CNAAS are delayed, as is the case for other national agencies due to limited financial resources nationwide. At the same time, the CNAAS bears the burden of paying for the climatic services offered by the ANACIM and telephone operators (Orange), as well as running annual awareness raising campaigns for MSMEs throughout the country with materials presented in several languages. These are necessary because many farmers still have no or limited understanding of insurance, and mistrust future insurance pay-outs, especially in index-based insurance. Additionally, there are gender-based preferences against index-based insurance that the CNAAS also tries to overcome (Box 6.2). Other public actors (e.g. ADEPME) could step up such awareness-raising tasks, as they are now associated to the CNAAS. The CNAAS itself needs capacity building to strengthen its management (accounting, finance, administration, monitoring and evaluation) and to continue developing insurance indices. Finally, the maintenance of the weather stations ought to be paid by ANACIM, yet the costs are passed downward to the CNAAS.

Box 6.2. Gendered assessments on the need of insurance

A recent gendered assessment found that while men in Senegal were interested in insurance, women were more concerned with shocks to health and other issues affecting income levels and thus favoured savings-based instruments over index-based insurance. Women requested more access to emergency savings as opposed to men who had a stronger interest in insurance, indicating women's preoccupation with shocks that would not be covered by a weather index product (Delavallade et al., 2015^[61]). This is due to the health risks associated with reproduction and children's health, and so women are more likely to choose savings, which can be used more flexibly than insurance. Considering that female-led enterprises face limited access to finance and often operate micro-enterprises in the informal sector, further hindering access to formal financial mechanisms (Crick et al., 2018^[7]), such studies show that inclusive MSME-specific insurance product design also requires considering how female-led MSMEs process and prepare for climate risks.

As a result, the current financial model of the CNAAS stands on shaky grounds, and the CNAAS is studying, with the World Bank, changing the pricing structure of its insurance products (no premium subsidy, more progressive premium), especially for the agricultural sector. The CNAAS is also considering the commercialisation of climate data to pay for the maintenance of existing and deployment of additional weather stations. Another option is for the CNAAS to reach economies of scale, with a possible breaking point reached if the CNAAS covered half of the Senegalese farmers. In that case, stakeholders interviewed agreed that the *Banque Agricole*-CNAAS model could thrive.

That being said, neither the *Banque Agricole* nor the CNAAS are promoting resilient agricultural methods at scale, e.g. smart irrigation systems, in parallel to the introduction of insurance. Most climate resilience activities are still pilots and the *Banque Agricole* is still studying how to develop such activities through a pipeline approach, which it hopes to achieve through its new partnership with the Global Green Growth Institute and the accreditation process to the Green Climate Fund (Banque Agricole, 2019^[58]).

The role of remittances needs to be better studied and harnessed for climate resilience

Remittances from the Senegalese diaspora are one important financial source for MSMEs and contribute to more than 10% of the Senegalese GDP (UNCDF, 2020^[32]). After losing assets, MSMEs rarely take on a commercial loan due to high interest rates and the fear of indebtedness, implying the importance of insurance and social safety nets. Senegalese migrants in Europe and other countries transfer funds, goods, technology, know-how, services, and therefore contribute to MSME resilience against climate change impacts. These funds may be used to build basic infrastructure at community-level or finance economic activities linked to agriculture, livestock, fisheries or trade (Wade et al., 2017^[62]). The governance of these transfers and institutional structures could further facilitate these transfers and ensure co-ordination across relevant stakeholders (Wade et al., 2017^[62]). Senegal has benefited from the support of several providers (e.g. IFAD, Italy or France) to mobilise remittances from the Senegalese diaspora in order to finance basic infrastructure needs, notably in remote and rural areas, yet these projects are not always connected with climate resilience issues.

7 Role of development co-operation in engaging the private sector in building climate resilience

Development co-operation providers have been promoting climate change adaptation and resilience issues in Senegal. Of bilateral and multilateral adaptation-related development finance (significant and principal) reported to OECD Development Assistance Committee, a small portion has flown to disaster risk reduction and management: disaster risk reduction (1% of total adaptation finance), multi-hazard response preparedness (2%) and none for immediate post-emergency reconstruction and rehabilitation over the period between 2012 and 2018. In total, about USD 300 million of development finance was committed by bilateral and multilateral providers to support climate change adaptation (significant and principal) in Senegal between 2012 and 2018.

Often, as seen in this case study, providers have been an important enabling force behind the resilience agenda in Senegal. For example, France supported the integration of environmental and climate-related issues in some of the institutions supporting MSMEs. Providers have also been working with the government through pilots that show positive climate resilience results, in the hope that the government could take over and scale up activities. One concrete example of this is the weather stations project supported by Global Affairs Canada and others. Further examples are the 'ASAP programme' from IFAD to support the Ministry of Agriculture in capturing international climate finance; USAID's long-standing initiative with the Ministry of Fisheries that dealt with climate change adaptation and climate resilience; or GIZ's Private Sector Adaptation to Climate Change (PSACC) programme for MSMEs to help them assessing climate risks and opportunities to develop tailored climate risk management and adaptation strategies.

However, this usually hits the reality of a government that is unable to test new approaches or to sustain or scale up those that showed promising results at project level, given other pressing social priorities in the country. In fact, Senegalese stakeholders noted that, oftentimes, projects are blocked because development co-operation requires Senegal to commit public funding and to co-finance an activity, as a sign of domestic ownership, which is often difficult to obtain in a timely manner.

Against this background, providers of development co-operation could direct their interventions to ensure their support is better targeted towards MSMEs, by:

- Mainstreaming climate resilience aspects into their own interventions in areas such as youth, job creation, education, agriculture or tourism and making resilience a soft condition, under relevant circumstances, before approving projects in this area. When co-benefits are possible, providers could finance the additional costs of ensuring that an intervention supports climate resilience building. Providers could also push to support some key areas in the system (e.g. reforming legal codes, enhancing the capacity of the Ministry of Economy) with resilience considerations in mind.

- Assessing the climate resilience impact of past and on-going projects that are not falling under the remit of their climate or environmental desks, notably those that aim at supporting the private sector in Senegal or those that engage in aid for trade. For future interventions, doing so would help to understand where climate resilience could have been integrated, as well as to identify missed opportunities and addressing potential maladaptation. Providers could also study the interactions between resilience and risk reduction beyond climate change (e.g. demography; overfishing, offshore development).
- Ensuring that interventions are sustainable over time, e.g. by investing, when maintenance activities are possible and anchored within the communities; or by ensuring that funds are sustained, e.g. through revolving funds after the provider is gone.
- Working directly with MSMEs through operational capacity trainings, study tours and raising awareness on climate change. Providers could also work directly with social entrepreneurs, start-ups and incubators, while the surrounding to support MSMEs is being reformed. They could also work with intermediaries, such as producer organisations, co-operatives, GIEs or women's groups, which can connect MSMEs with markets more effectively. Working with commercial banks and public financing entities are other ways to target MSMEs, building on the African Development Bank's experience of supporting the BNDE with credit lines for MSMEs, or France's experiences to ensure that the FONSIS and the FONGIP target MSMEs.
- Investing in programmes that have proven its contribution to resilience – such as agricultural insurance or the use of cereal banks. Insurance, for example, not only prepares for losses caused by climate shocks, but also improves food security when it is integrated into broader risk management strategies. The example of the Senegal River Valley shows clearly what insurance can achieve. For example, a political dialogue on agricultural insurance with the CNAAS could be promoted, one that connects relevant ministries and governmental agencies, as well as the Presidential Office.

The system for co-ordinating providers of development co-operation in Senegal is based around two main forums, the G50 and the G12. The G50 includes all the development co-operation partners operating in Senegal to share information and draft joint messages. The G12, comprising eight bilateral partners and four multilateral partners from the G50, seeks to enhance co-ordination. Theme-based and sectoral working groups complete the picture, with mixed degrees of involvement on the part of both providers and government (OECD, 2017^[2]). The European Union also has its own monthly co-ordination structure, in which Senegalese stakeholders are involved, and which was the origin of the joint programming initiative. In their joint European Strategy Document for Senegal, the European Union and its Member States highlight, *inter alia*, climate change as a key national challenge (European Union, 2018^[63]).

Despite these efforts, the stakeholders interviewed noted that these co-ordination groups could better connect their initiatives, as most they often work in siloes, e.g. work on entrepreneurship by France, on agriculture by Italy, on gender by UN Women. While this helps avoiding duplicative efforts between development co-operation providers, it may be a missed opportunity for pursuing synergies across thematic areas, types of actors and regions. The Ministry of Economy plans to reform how the government works with development co-operation providers, by funnelling and reviewing all planned investments centrally. The Ministry could, with COMNACC, map all resilience interventions, to find synergies, avoid duplications and identify opportunities. The co-ordination groups also offer an opportunity for the Ministry and COMNACC to come up with a pipeline of projects, which tackle national resilience priorities in the country. Providers could also encourage the Ministry to focus on technical assistance, data and information management issues, together with COMNACC, which may be more relevant to MSMEs.

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