



Climate-resilient micro- smalland medium-sized enterprises in Mongolia: Understanding challenges

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ABOUT THIS PUBLICATION

As part of the Australian Awards Fellowship, we hereby present three policy briefs that were developed by the Research Fellows from Mongolia with the Griffith University, Deakin University and the University of Southern Queensland Academics. This is part 1 of the series. We build the three series from one to the next, starting with understanding the policy framework to build climate-resilient small businesses in Mongolia, followed by understanding the best practices for micro- small- and medium enterprises (MSMEs) to become climate-resilient in Mongolia and lastly, we present how to build capacity through climate-resilient development and gender inclusive entrepreneurship in Mongolia. Below we present our part 1 of the series.

The findings, interpretations and conclusions expressed in this paper are those of the author(s) and should not be attributed to Griffith University or affiliated organisations.

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Introduction

Recent decades have seen an escalation in greenhouse gas emissions and climate change concerns, primarily driven by human activities. This has resulted in significant repercussions for populations and business operations, manifesting in heightened occurrences of disasters and infectious diseases linked to climate change effects. The adverse impacts of climate change are particularly pronounced in least developed and developing countries, with Mongolia experiencing a discernible influence in recent years. Moreover women-owned micro, small, and medium enterprises (MSMEs) have a disproportionate burden due to issues of limited time and financial constraints. In light of these concerns, this study aims to identify effective strategies aimed at bolstering the resilience of MSMEs in Mongolia, with a specific emphasis on women entrepreneurs. Given that these businesses form the backbone of the nation's economic livelihood, empowering them to withstand the adverse effects of climate change becomes paramount. The study was conducted in two phases to identify ways in which entrepreneurs coped using their efforts. Initially, a comprehensive literature review was undertaken to determine the specific challenges related to climate change faced by Mongolian women-owned MSMEs. Subsequently, insights from an Australian fellowship were used to develop a best practice model to help womenowned MSMEs overcome these problems for running a business that is resistant to climate change. This initiative is geared towards empowering women to contribute incrementally to the enhancement of their businesses' resilience, ultimately contributing to a reduction in greenhouse gas emissions.

Climate change—why is this a problem and affecting others?

Climate change has evolved as a global issue. This has led to heightened awareness and demands for robust policies and programs from governments to reduce greenhouse gas (GHG) emissions and restrain global warming. While human activities are recognised as the primary drivers of climate change,1 implementing measures against it extends beyond government purview, impacting individuals and businesses alike. A significant portion of GHG emissions stems from industrial and enterprise activities, with multinational corporations and large enterprises contributing substantially. However, MSMEs also wield a noteworthy influence holistically.2 They account for the majority of businesses, and they represent about 90 per cent of businesses and more than 50 per cent of employment worldwide underscoring the crucial need to prioritise the reduction of greenhouse gas emissions.3 For example, SMEs account for 64 per cent of total industrial pollution in Europe and 53 percent of total industrial carbon emissions in China.⁴ The world must transform its energy, industry, transport, food, agriculture, and forestry systems, and businesses and investors need to ensure emissions are lowered, not just because it is the right thing to do, but because it makes economic and business sense as well.5

Yet while there is an increased awareness of the significance of climate change, reducing greenhouse gas emissions, improving waste management, and increasing use of renewable energy, this has mainly concentrated amongst large companies. On the other hand, MSMEs, who are considered most vulnerable to the effects of climate change, have limited opportunities to implement these measures, due to the challenges of limited access to finance, lack of skills, and limited innovation. MSMEs also lack awareness of specific environmental policies and implications for their businesses and overall impact of climate change which further hinders them from being climate-resilient businesses.⁶

What is the impact of the climate change on Mongolian MSMEs?

Within Mongolia, MSMEs make up the largest private sector and the backbone of the economy contributing to one-fifth of the Gross Domestic Product (GDP) and 72 per cent of all employment.7 According to the NSO, in the second quarter of 2023, there were 86,848 MSMEs accounting to 97.1 per cent of all entrepreneurs in Mongolia, including 84.6 per cent employing 0-9 employees. In particular, the proportion of women-owned MSMEs is high with 64 per cent compared to large organisations that are dominated by men.8 Although the participation of women in the MSME sector is relatively high, they face particular challenges within the Mongolian context in sustaining their enterprises, e.g. lack of management skills, information and networks, time, and cultural norms discouraging them from entering the private sector,9 with the key issue being household activities¹⁰ where they perform the majority of unpaid household work (75.9 per cent)11 which prevents them from sustainably developing their businesses.

Moreover, the COVID-19 pandemic has disproportionately impacted entrepreneurs, with smaller business owners experiencing more severe consequences than their larger counterparts. The global risk of business disruption has escalated, affecting over 430 million businesses. The crisis hit women-owned entrepreneurs harder leading to an increased likelihood of prolonged closures compared to men-run entrepreneurs. Similarly, gender-based disparities can be observed during the 2009 financial crisis, fighlighting the gender-based disparities since the onset of the COVID-19 crisis.

This case of COVID-19 has made entrepreneurs aware of the need to be prepared for any risk. Although COVID is caused by an infectious disease, it is already recognised that it is related to nature, climate change and environmental pollution caused by human activities.¹⁷ Risks related to climate change is foreseen to continue to increase, as the temperature increases by 1°C, rainfall increases, and the floods that occurred once every 20 years, by the end of this century, it is estimated that it will occur once every 5 years.18 In 2023 compared to previous years, Asian countries were heavily affected by floods, 19 with Ulaanbaatar experiencing two floods in 2023, 20 after 1966,21 and 1982.22 There has been no final information on the amount of damage to the flooded businesses, 23 and the State Emergency Commission²⁴ and the Mongolian National Chamber of Commerce and Industry²⁵ have emphasised the need for businesses to take disaster risk

insurance and provided information that only insured businesses can be compensated. However, there is a lack of information on businesses with disaster risk protection insurance and risk protection funds in Mongolia.

Such direct and indirect negative impacts of climate change have already begun to affect business operations to some extent, and the consequences can close down MSMEs permanently, or lead them into high levels of debt in recovering from climate damage to business assets and property. Therefore, it is important to identify ways to support the sustainable business development of these MSMEs, especially women-owned businesses, to prevent risks, and to contribute to reducing the negative effects of climate change through their business activities.

The aim of the present study is to systematically review past published and unpublished research on the topic of "Climate Change Impacts, Adaptation, and Mitigation Ways for Women-Owned MSMEs" to determine the experiences and methods that can be implemented by Mongolian Women-Owned MSMEs. Furthermore, it is intended to propose research on the same topic and the use of this research work.

What does the analysis of the current situation and challenges of MSMEs in Mongolia suggest?

MSMEs are the backbone of societies everywhere, so they play a major role in contributing to economies by sustaining livelihoods, among the working poor, women, and vulnerable groups. However, access to finance is one of the key challenges they face to grow their businesses.²⁷

The challenges faced by MSMEs are more complex and global.28 This is not limited to COVID-19 or the global financial crisis, but research suggests that problems related to climate change are emerging. Despite the evident long-term risks caused by climate change, the lack of a comprehensive understanding of how it affects the operations of the MSMEs has led to diminished importance on adaptation and measures to effectively mitigate risks.²⁹ Challenges such as access to new markets, limited access to knowledge and information, lack of technical skills and limited access to finance not only impede MSMEs from making the green transition but also hinder overall productivity, thereby limiting the growth prospects of enterprises.30 Therefore, regardless of the obstacles facing MSMEs, there is a need to see the opportunities of running a business in a climate changeresilient manner and to contribute to the fight against climate change in the future.

Research on the impact of climate change on MSMEs is predominantly done within the Western country context, there is a lack of research focusing on developing countries like Mongolia. This study thus provides an overview of the challenges faced by Mongolian MSMEs and their impact on their ability to engage in climate change-resilient activities. Despite the challenges, there are instances from countries like Australia and others that have identified effective practices for climate change resilience and mitigation. This study seeks to draw upon these examples to recommend actionable measures that Mongolian MSMEs can adopt.

A review of the literature on projects and programs implemented by international donor organisations in Mongolia has identified key challenges faced by MSMEs in implementing their business activities in an environmentally friendly manner namely:

- 1. lack of finance and investment.
- poor access to information related to recent developments in environmentally friendly technologies and global, regional, and national trends,
- lack of information related to Circular economy design, strategy, and solutions,
- 4. poor training and consulting services, and government support.

Based on the document analysis, the motivations of MSMEs to participate in the green transition can be broadly classified as follows.

Access to finance: According to the World Bank's Enterprise Survey, the financial challenge was the most important of the top 10 barriers to doing business followed by challenges related to electricity, corruption, and land availability. 30 per cent of the surveyed enterprises regarded the financial challenges as the most urgent and biggest challenge, which is 16 per cent higher than the countries of East Asia and the Pacific 3. Approximately 131 million formal MSMEs in developing countries, constituting 41 per cent of such enterprises, face unfulfilled financing requirements. In this context, women-owned businesses represent 23 per cent of all MSMEs but contribute to 32 per cent of the overall MSME finance gap.³¹

MSMEs often struggle to secure loans from traditional financial institutions due to their perceived riskiness and the inability to provide sufficient collateral, making it challenging to access capital.3276 per cent of MSMEs received support from commercial bank loans for financing and 70 per cent of them needed more funding to expand their business.33 Commercial banks are cautious in lending to SMEs. Many MSMEs failed to meet the loan requirements because of a lack of collateral, high business risk, lack of regular income as well as their incompetence to implement business projects and document discrepancies.34 Similarly, women entrepreneurs in Mongolia encounter difficulties in obtaining financial support due to limitations in collateral and capital assets, along with strict requirements to be meet, and to overcome the capital collateral/assetsrelated challenges, women entrepreneurs use the 'pension loan', 'household loan', and/or salary loan as one of their financial resources.35 Furthermore, the research identified that one-fifth of businesses completely closed during

the COVID-19 crisis in Mongolia",³⁶ with women being the most affected. Moreover, even before the pandemic, women entrepreneurs lacked financial resources.³⁷

Although commercial banks have been offering green credit/loan products to women entrepreneurs in recent years, access to finance remains limited due to the above challenges.

Information and knowledge: Compared to large companies, MSMEs struggle to access information related to climate change policies, resources (for example, finance, training, and networks), and best practices.38 According to ADB's survey, there is a significant need for women-owned MSMEs to enhance their understanding of the circular economy (CE), and the concepts and activities it encompasses (87.7 per cent). Only 6.5 per cent possess a strong grasp of CE, while 66.8 per cent are familiar with it, and 26.8 per cent have never heard of it. Most womenowned MSMEs are limited to comprehending "waste management and recycling" and lack knowledge of how to make eco-friendly changes to their business activities. Yet financial constraints hinder them from acting. Therefore, it is important to enhance their knowledge and understanding of how to adapt to climate change in business activities by drawing on real experiences. On the one hand, access to information is limited, but on the other hand, information provision is insufficient. The government policy implemented in Mongolia does not have clear and effective regulations combating climate change, which in turn restricts the environmental actions that are undertaken by MSMEs. While countries globally are formulating climate change adaptation strategies, including specific plans for MSMEs,³⁹ Mongolia lacks such documentation.

Technical skills: A lack of an adequately skilled workforce is another most frequently cited challenge for MSMEs. Since most MSMEs have a small number of employees, the development and implementation of any change plan and actions are carried out by the owners themselves. However, there are problems at the MSMEs, such as limited capacity for climate awareness, effective reduction of negative impacts of climate change, and use of new opportunities. According to ADB's "Supporting womenowned MSMEs in the ger areas of Ulaanbaatar" projects survey, financial management and technology skills are lowest when evaluating the capabilities of MSMEs using six indicators shown in Table 1 below.

The lack of financial literacy and financial discipline of MSMEs hinders their business growth. Many MSMEs have loans, leading to very few having risk management practices/awareness such as building

Table 1: Business management competencies assessment

#	Business management competencies assessment	Assessment, %
1	Management, organisation	73.6%
2	Financial management	24.8%
3	Human resources	46.2%
4	The use and application of information technology	28.8%
5	Sales channels	35.1%
6	Product/Service development	67.4%

Source: Authors 2023.

savings or insurance. Also, another technical skills gap is technological literacy, which is the inability to access information, raise productivity, upgrade production processes, and adopt new resource-efficient technologies. Further, the lack of strong climate change adaptation policies and actions for MSMEs puts pressure on MSMEs to proactively seek opportunities to conduct their activities with resilience to climate change. While large corporations encounter fewer challenges, to independently undertake green transitions without relying on government initiatives, MSMEs experience challenges that underscore the importance of showcasing the viability of adopting low-cost and easily implementable good practices. This demonstration becomes crucial for MSMEs to position themselves on pathways toward a green transition despite the challenges they confront. Another critical issue for MSMEs is increased dependence on digital tools and platforms.40

WAYS FORWARD:

- Emphasise active participation in workshops, training sessions, and capacity-building programs offered by various entities.
- Advocate for financial literacy programs, enhanced information access, and technical support for effective resource management.
- Develop and implement climate-resilient response plans.
- Promote the use of tools like the Climate Competitiveness Assessment Tool (CCAT), Climate Expert Tool, and IRIM Toolkit for comprehensive climate risk assessments.
- 5. Encourage employers to adopt sustainable financial practices to save costs.
- 6. Promote positive financial behavior, including reducing paper usage, embracing digital processes, and implementing water conservation practices.

Status and urgency to act

As mentioned in the introduction section, MSMEs play a crucial role in the global economy, but they are particularly vulnerable to the adverse impacts of climate change. Among these enterprises, women-owned MSMEs are at a unique intersection, facing both the challenges and opportunities presented by climate change. Eleven participants were selected from a think tank in Mongolia for an Australian Fellowship, where they learned about the importance of climate resilience and the role of gender in it. This section explores and highlights the status and urgency towards action.

Firstly, MSMEs lack the knowledge and capacity to identify and managing climate-resilient resources effectively, as well as manage the overall MSME operations. Enhancing the understanding and capability of MSMEs (its employers and employees) in recognising, seeking, and handling climate-resilient resources is crucial for MSMEs' enduring viability and ability to withstand challenges related to climate change. Measures like educating them in financial

literacy, enhancing their access to information, and providing technical support can close the information divide and enable MSMEs to proficiently oversee climateresilient resources.

To enhance their knowledge, MSMEs should actively participate in workshops, training sessions, and capacity-building programs focused on climate-related and management-related topics, which are provided by government agencies, NGOs, international organisations and industry associations.

In Mongolia, a few organisations and programs operate in the field of capacity building and support of MSMEs. For instance, the "Women's Development Center" operates to support women's employment, especially women who cannot work due to lack of childcare. The center has a separate room for children and organises free training, professionalisation and further employment of women entrepreneurs. Other centres like the Business Incubator Centre support MSMEs with services such as training, consulting, etc. Yet what is missing is focused methodological and financial support for women-owned MSMEs around climate resilience.

Secondly, as identified in the literature, developing and implementing climate-resilient response plans can mitigate the financial damage impact of climate change by minimising disruptions. To develop adaptation plans MSMEs should conduct thorough climate risk assessments to identify vulnerabilities and prioritise adaptation measures. To evaluate risks arising from the impacts of climate change on a specific business, it is necessary to gather and analyse information about concrete (local/regional) risks, likelihood of occurrence, and severity of potential damages. ⁴¹ Examining these discoveries allows us to identify the entities and endeavors most vulnerable to the impacts of climate change. Conversely, it also highlights those that stand to benefit the most from initiatives aimed at enhancing resilience.

Climate Competitiveness Assessment Tool (CCAT)42 and Climate Expert Tool⁴³ are valuable instruments for conducting this analysis. Within these tools after identifying potential climate change-induced risks to physical assets and business operations, MSMEs should select the most relevant risks, assess the business opportunities, develop measures to take against the climate change-related challenges.44 To identify possible risks for the organisation, MSMEs should provide details about the climate risks they encounter and their readiness for climate change by completing a structured questionnaire (self-assessment). The Toolkit developed by IRIM is a resource that can be used for self-assessment. After completing a risk assessment and pinpointing various adaptation possibilities, it is essential to perform a cost-benefit analysis to evaluate the expenses, operational costs, and long-term viability of production.⁴⁵ Cost-benefit analysis allows employees and employers to assess the feasibility and financial viability of the resilience activities, as well as determining the most appealing measures. The concluding phase encompasses the development of an adaptation strategy, which involves outlining the timeline for implementing various measures, anticipating challenges, and identifying indicators for measuring success.

Thirdly, MSMEs are increasingly vulnerable to the impacts of climate change, which can strain their financial

resources. However, proactive measures can help MSMEs simultaneously save costs and maintain financial stability in the face of climate change.

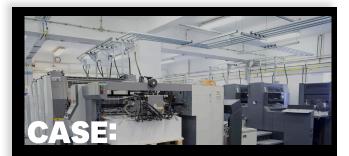
In today's globalised and climate-sensitive world, it is increasingly important for MSMEs to understand the financial implications of climate change and adopt sustainable financial practices. To do it MSMEs need to have positive financial behavior, starting with finding ways to save daily operation costs related to the environment. For instance:

- Reducing paper usage and embracing digital processes: transition to digital record-keeping and document management, use cloud-based solutions;
- Reducing water consumption: start monitoring water usage and adopt water conservation practices;
- Reducing the need for office space, utilities, and commuting-related expenses: develop flexible work policies and if possible encourage remote work, etc.

Furthermore, energy efficiency, characterised by the utilisation of less energy for equal or augmented output, is gaining growing recognition as a pivotal and economically viable approach to diminish greenhouse gas (GHG) emissions.46 Energy efficiency and renewable energy adoption are the best way to save on operating costs, so it is pivotal for MSMEs aiming to improve their sustainability and competitiveness. For this, MSMEs can identify inefficiencies and implement energysaving measures, such as adopting renewable energy, reducing its operational costs. By doing this, it will reduce environmental impact and demonstrate commitment to environmental responsibility. Overcoming barriers to adoption requires a combination of government incentives, capacity building, and increased awareness. By embracing energy efficiency and renewable energy, women-owned MSMEs can not only lower their operational costs but also contribute to a more sustainable and resilient future.

In the realm of renewable energy, solar power stands as the most abundant source, capable of capturing even in overcast conditions. Mongolia boasts a significant solar energy resource, estimated at an annual average of 270-300 sunny days in the Gobi region, and the average annual amount of solar radiation is 2200-3300 hours. According to this, the annual dose of radiation is calculated as 1200-1600 kWh/m2.47 Thus, MSMEs possess substantial potential for implementing rooftop solar PV systems within their premises. This potential is particularly relevant to both the manufacturing and services sectors, where numerous operations rely on electricity. It is envisaged that MSMEs can synchronise their energy requirements with periods of ample solar energy generation. Another feasible option for heating or preheating is the adoption of solar water heating, enabling water to be heated well above the 80°C threshold. Additionally, the prospect of employing on-site battery storage becomes increasingly appealing as battery prices continue to decline. These batteries not only enhance the utilisation of solar PV systems throughout the day but also provide a contingency plan in the event of grid failures.48

In addition, a sustainable financial system is characterised by the creation, valuation, and transaction of financial assets in a manner that contributes to wealth, aligning



In Germany, the printing company known as Druckerei Senser has effectively reduced its electricity consumption by 30 per cent. This achievement was made possible through the installation of specially designed, energy-efficient printing machines. Moreover, the company has embraced innovative practices, including the adoption of a cutting-edge solar power system that fulfills nearly a quarter (25 per cent) of its electricity needs. Before implementing the solar system, comprehensive insulation improvements were carried out across the entire production area's roof to minimise heat loss. Notably, Druckerei Senser has strategically chosen to harness and repurpose waste heat generated by their printing machines to provide heating for adjacent spaces. These measures, with a specific emphasis on waste heat recovery, have resulted in a significant 20 per cent reduction in heating energy requirements (IPCC, 1995).

with the long-term requirements of an inclusive and environmentally sustainable economy. The term "green finance" refers to financial instruments where the proceeds are directed towards environmentally sustainable projects, initiatives, and products, all aimed at fostering a green economic transformation towards low-carbon, sustainable, and inclusive pathways. The primary objectives of green finance encompass the internalisation of environmental externalities and the mitigation of risk perceptions.

In Mongolia, banks are issuing green loans to support the green economy. This loan has an annual interest rate of 2-8 per cent and is a loan of 3-100 million MNT for a period of up to 30 months. The loan is provided for energy saving, renewable energy and all kinds of eco activities. Therefore, SMEs can study these loans and make their business more energy efficient, stable and climate resilient.

Lastly, in the 21st century digital and information technology has developed rapidly, so to maintain financial literacy and skills MSMEs need to boost their digital literacy. When discussing digital literacy, it is inherently intertwined with digital technology.⁴⁹ In our daily lives, digital technology is most prominently manifested through devices known as gadgets, which encompass mobile devices, computers, laptops used for engaging in various activities on social media, running programs, and facilitating online communication among individuals or organisations. Here are some ways in which MSMEs can

utilise digital technology to enhance their resilience:

- Digital Marketing: MSMEs can invest in digital marketing strategies to broaden their online presence, reaching a larger audience and boosting sales (Dave Chaffey, Fiona Ellis-Chadwick, 2019).
- E-commerce: Establishing or expanding online storefronts provides SMEs with the opportunity to diversify revenue streams, access a global customer base, and ensure operational continuity during disruptions (Dave Chaffey, Fiona Ellis-Chadwick, 2019).
- Cloud-Based Tools: Implementation of Cloud-Based Software and services for e-commerce, remote work, data storage, and collaboration can support SMEs in maintaining business continuity (Sandu, R. and Gide, E., 2018). This is particularly beneficial when employees need to work remotely or when consumers are unable to engage with the business in person.

In addition, MSMEs can utilise online platforms and resources dedicated to climate change information, such as those offered by government climate agencies, international organisations, and research institutions. For instance, the website of the Bureau of Meteorology of Australia (http://www.bom.gov.au/) provides an open database, which includes daily and historical weather statistics.

WAYS FORWARD:

- Advise MSMEs to conduct regular energy audits to identify inefficiencies and implement energy-saving measures.
- 8. Promote the adoption of renewable energy sources, especially in regions with abundant resources like solar power in Mongolia.
- Explore and utilize green loans offered by banks in Mongolia to support energy-saving, renewable energy, and eco-friendly activities.
- 10. Adopt specific digital strategies, including digital marketing, e-commerce, and the use of cloud-based tools to enhance MSME resilience.

Conclusion and recommendations

In this paper we have analysis reveals that MSMEs in Mongolia, comprising a substantial portion of the economy, are susceptible to the adverse impacts of climate change. These enterprises, particularly those owned by women, face additional hurdles, such as limited access to finance, lack of technical skills, and inadequate awareness of climate-related policies. The recent COVID-19 pandemic has further exacerbated the challenges for these businesses, underlining the need for proactive measures to enhance their resilience. The study underscores the importance of addressing the specific challenges faced by MSMEs in Mongolia and proposes several recommendations based on international and local best practices. These include capacity-building programs, adaptation plans, and the adoption of sustainable

financial practices. The paper also highlights successful cases, such as Druckerei Senser in Germany, to illustrate how MSMEs can effectively reduce their environmental impact while improving operational efficiency.

Moreover, the research points out the significance of incorporating digital literacy into MSMEs' skill sets, given the rapid development of digital technology in the 21st century. This includes leveraging digital marketing, e-commerce, and cloud-based tools to enhance business resilience and adaptability.

Key policy recommendations

RECOMMENDATION 1 Training and development

Emphasise active participation in workshops, training sessions, and capacity-building programs offered by various entities. Advocate for financial literacy programs, enhanced information access, and technical support for effective resource management.

RECOMMENDATION 2

Develop and implement climate-resilient response plans

Promote the use of tools like the Climate Competitiveness Assessment Tool (CCAT), Climate Expert Tool, and IRIM Toolkit for comprehensive climate risk assessments.

RECOMMENDATION 3

Encourage employers to adopt sustainable financial practices to save costs

Promote positive financial behavior, including reducing paper usage, embracing digital processes, and implementing water conservation practices. Explore and utilise green loans offered by banks in Mongolia to support energy-saving, renewable energy, and eco-friendly activities.

RECOMMENDATION 4 Audits and loans

Advise MSMEs to conduct regular energy audits to identify inefficiencies and implement energy-saving measures. Promote the adoption of renewable energy sources, especially in regions with abundant resources like solar power in Mongolia.

RECOMMENDATION 5 Digital literacy

Adopt specific digital strategies, including digital marketing, e-commerce, and the use of cloud-based tools to enhance MSME resilience.

In conclusion, the study provides insights into the current situation and challenges faced by MSMEs in Mongolia regarding climate change. By drawing on lessons learned from international and local best practices, the paper offers practical recommendations to empower these enterprises to become more climate-resilient, contribute to environmental sustainability, and ensure their long-term viability in the face of a changing climate.

In our next brief we discuss the learnings from international expeirences to improve institutions for climate-resilient MSMEs in Mongolia and we present lessons from best practices for institutional set up.

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