

Terms of Reference

Impacts of climate-related risks on MSME's access to finance

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Impacts of physical and transition risks on MSME's access to finance

Project Background

In the context of climate change, disadvantaged populations, at the foundation of the economic pyramid, in developing and emerging economies face heightened inequalities and constrained economic growth opportunities. The limited adaptive capacity of these groups increases their exposure to climate risks, with women being particularly susceptible. Recognizing the relevance of financial inclusion becomes crucial for disadvantaged populations to prepare for climate events and adapt their lives and livelihoods. Hence, regulatory interventions enabling access to financial services for resilience building and adaptation are considered critical. The Alliance for Financial Inclusion (AFI) acknowledges the critical role of access to finance in fostering climate resilience and mitigating climate change impacts for MSMEs. Nonetheless, there exists a knowledge gap concerning the impact of physical and transition risks on MSMEs' access to finance and its connection to financial stability.

The Aliance for Financial Inclusion

The Alliance for Financial Inclusion (AFI) is the world's leading organization on financial inclusion policy and regulation. Currently, nearly 90 member institutions make up the AFI network including central banks, ministries of finance and other financial policymaking or regulatory institutions from over 76 developing countries and emerging markets. AFI empowers policymakers to increase the access and usage of quality financial services for the underserved through sustainable and inclusive policies and an effective use of digital technologies.

Policies developed and implemented by the members of the Alliance contribute to a range of the <u>Sustainable Development Goals</u>. by Setting their own agenda, AFI members harness the power of peer learning to develop practical and tested policy reforms that enhance financial inclusion with strategic support from both public and private sector partners.

AFI has 7 Working Groups (WGs): Consumer Empowerment and Market Conduct Working Group (CEMCWG), Digital Financial Services Working Group (DFSWG), Financial Inclusion Data Working Group (FIDWG), Financial Inclusion Strategy Peer Learning Group (FISPLG), Global Standards Proportionality Working Group (GSPWG), Inclusive Green Finance Working Group (IGFWG) and SME Finance Working Group (SMEFWG).

As the key source of policy developments and trends in financial inclusion and as the primary mechanism for generating and incubating technical content in the network, the Working Groups serve as "communities of practice". Providing a platform for knowledge exchange and peer learning among policymakers to share, deliberate and deepen their understanding, the working groups offer leadership and expertise in their respective policy fields and support the network to monitor new developments in emerging fields.

The knowledge generated via the working groups is disseminated for implementation by a range of <u>capacity building activities</u> such as Joint Learning Programs, Member Trainings, Trainings by Private Sector Partners. The practical experience members garner from

engaging in peer learning based capacity building is then applied by members as in country implementation projects which are supported by the provision of financial or technical support to AFI member institutions in conducting activities that aim to deliver financial inclusion policies, regulations, supervisory tools or enablers for the development of policies, such as national financial inclusion strategies

The working groups receive strategic guidance and insight from the High-Level <u>Global Standards & Policy Committee</u>, while the <u>Gender Inclusive Finance Committee</u>, supports WGs in integrating gender considerations into all aspects of their work and support members in fulfilling their <u>Denarau Action Plan</u> (2016) commitment to promote women's financial inclusion.

AFI members have made further commitments in a range of other accords which can be read here.

The AFI's five regional initiatives support policy implementation in Africa (AFPI), Latin America and the Caribbean (FILAC), the Pacific Islands (PIRI), Eastern Europe and Central Asia (ECAPI) and the Arab Region (FIARI).

Inclusive Green Finance (IGF)

The members of the AFI network have been pioneering the concept of <u>Inclusive Green Finance</u> (IGF) when adopting the <u>Sharm El Sheikh Accord on Inclusive Green Finance</u> in 2017, with a renewed commitment in 2022. The AFI <u>IGF Working Group</u> currently has 61 members from 55 countries and has since its establishment in 2019 been working hard to share policy insights and regulatory guidance on IGF.

IGF brings a new element to the ongoing global climate discussions. As most of the global work on green finance has been focusing on capital markets and large-scale project finance, little attention has been paid to what financial sector policymakers can do to make green finance accessible to individuals and MSMEs.

IGF is emerging as a unique approach and is the pillar of global green finance that addresses the climate impacts and potential for empowering transformation amongst the most vulnerable populations in some of the most vulnerable countries globally. IGF can also contribute to the implementation of the Paris Agreement, specifically to the long-term goal of Article 2.1c to make finance flows consistent with a pathway towards low greenhouse gas emissions and climate-resilient development, as well as to the implementation of the Sustainable Development Goals 1 No Poverty, 5 Gender Equality, 7 Affordable and Clean Energy and 13 Climate Action.

Research overview

1. Context

To secure a green transition that is just and equitable, it is important to examine the impact of the transition on inequality. Not only physical risks can lead to a widening of the gap between rich and poor, but also transition risks, especially when looking at it from a macrofinancial perspective.

While emerging and developing economies are more prone to climate disasters, these also tend to disproportionally affect vulnerable groups in society. For instance, poorer households and MSMEs are often located in areas with high physical risks while lacking the resources to invest in climate resilience. Moreover, because of their greater exposure to high physical risks, they may also be denied access to credit, as banks do not tend to support low-margin and high-risk clients, who potentially cannot pay back their debts in case of damaging physical risk occurrence (Volz & Knaack, 2023)¹. Richer households and larger firms, on the other hand, will often be less exposed to physical risks or be in a better position to invest in resilience.

The transition to a low-carbon and sustainable economy may also increase inequality in societies. Green policies drive investments away from harmful sectors towards cleaner and more sustainable sectors. In reaction to that, firms in carbon-intensive industries ought to adjust their production technologies and become more sustainable by investing into clean technologies, a cost many MSMEs might not be able to bear (Volz & Knaack, 2023). To account for these social challenges accompanying the green transition, one has to clarify the underlying drivers behind it and make sure that these challenges are empirically relevant and coming along with high economic costs. With the just transition being at the centre of the Paris Agreement, transformative efforts to mitigate climate change should be combined with efforts to advance other Sustainable Development Goals (SDGs), such as reducing poverty and inequality (Malerba, 2022). This is the main motivation behind this research proposal. This study aims to empirically assess the link behind the green transition and financial exclusion of MSMEs, to see whether physical and transition risks have an impact on making it more difficult for MSMEs to get access to loans, especially when compared to larger firms in high-risk areas.

2. Scope

Investigate the impact of physical risk on bank lending to MSMEs in high-risk areas based on bank lending data. Using bank-level data from a central bank, it could be econometrically measured the impact of disasters on bank lending, controlling for firm size. It also can be gauged short-term impacts as well as long term effects, especially in regions that have been affected by multiple disasters over the years. Such research could be conducted in some AFI member countries, given the membership comprises numerous climate-vulnerable countries that have experienced many large disasters over the last decades.

This project will be in perfect alignment to the agenda set in COP28. The disclosure of global climate goal adaptation and the increased investment in climate finance for the most vulnerable groups of society in developing countries are central to the goals set in COP28. This study would quantify the costs of physical risks of the most vulnerable groups in society, especially in high-risk areas. The results could clarify the financial policies needed to secure a just transition, which is central to the Paris agreement as well as the agenda set at COP28.

The project could add to the body of knowledge and refine the sectors that are impacted most by changing bank lending behaviour due to physical risk. For instance, it could be possible that MSMEs that are operating in the real estate sector, e.g. renting out apartments in a high risk area, could be more impacted by physical risk and therefore, potentially suffer more from limited bank lending opportunities than MSMEs in the merchandise sector

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¹ Volz, U., & Knaack, P. (2023). *Inclusive green finance: A new agenda for central banks and financial supervisors*. London: INSPIRE sustainable central banking toolbox.

(Goossens, Rocco, Azira, & Schonbachler, 2023)². This would allow regulators to design better targeted financial policies to support the MSMEs in specific sectors and regions that suffer more than others and therefore, need more help.

Adding the aspect of the impact of the MSMEs' vulnerability to physical risks and how this impacts the overall financial stability. Evidence is already found by Li et. al (2022)³ that climate risk has an impact on the credit supply to the private as well as public sector. Whereas climate risk negatively affects the credit supply in the private sector, it has a positive effect on the credit supply in the public sector. It would thus, be especially interesting to see how the impact of physical risks affects the overall financial stability.

4. Methodology

The research seeks to quantify the impact of physical risks on financial exclusion, with a particular focus on MSMEs. By analyzing firm-level bank lending data, the study aims to determine whether MSMEs are more vulnerable to substantial financial losses during natural disasters compared to larger firms and wealthier households. The methodology involves categorizing bank lending data by firm size and sector to identify any negative impacts of physical risks on smaller enterprises. This analysis will highlight which sectors are most susceptible to these risks, providing critical insights for the development of targeted financial policies that support the most affected sectors.

After cleaning the final dataset, the study will utilize econometric analysis with statistical software to empirically test the hypothesis that MSMEs face greater bank lending restrictions during natural disasters. Additionally, the research will explore sectoral variations in the impact of physical risks, aiming to demonstrate the broader economic consequences, such as increased unemployment and financial instability. Consistent findings would underscore the need for evidence-based inclusive green finance policies by central banks and regulators, emphasizing targeted fiscal interventions to mitigate financial exclusion among MSMEs and vulnerable sectors. The discussion will also address the role of financial sector policies in supporting a just transition, including initiatives such as greening public credit guarantee schemes and establishing green funds for SMEs, drawing on successful models from participant institutions.

5. Relevance of proposed research

The proposed research aims to provide deeper understanding of the effects of the natural disaster occurrence on the financing conditions of MSMEs. It would provide empirical justification for implementing targeted public policies to support MSMEs in obtaining better access to transition finance. Moreover, the insights generated in this research could also be used to support the design of inclusive green finance policies of central banks and regulators.

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² Goossens, C., Rocco, D., Azira, G., & Schonbachler, A. (2023). Fires, Floods, and Loans: How Banks Can Deal with Increasing Climate Risks. *The Visionary CEO's Guide to Sustainability*.

³ Li, S., Li, Q., & Lu, S. (2022). The impact of climate risk on credit supply to private and public sectors: an empirical analysis of 174 countries. *Environment, Development and Sustainability*.

Researchers Profile and Rationale for Selection

Professor Ulrich Volz is uniquely qualified to lead an empirical research project on the impacts of physical and transition risks on MSMEs' access to finance due to his extensive expertise in sustainable finance and macroeconomic policy. As the Director of the Centre for Sustainable Finance at SOAS, University of London, and with a strong academic and advisory background, Professor Volz brings unparalleled knowledge in the intersection of environmental change and financial systems. His experience advising governments, central banks, and international organizations on sustainable finance and development ensures that the research will be grounded in practical, impactful outcomes. Additionally, his leadership roles in global sustainable finance networks and his previous work with institutions like the ECB, EBRD, and the Asian Development Bank Institute highlight his ability to engage with complex, multi-dimensional financial challenges—exactly the kind posed by climate transition risks for MSMEs.

Yu Sun, as a first-class graduate of the MSc programme in Economics from Humboldt University Berlin and a prospective PhD candidate under Professor Volz's supervision, complements this research with her solid analytical skills and deep expertise in climate economics and sustainable finance. Her previous roles at the European Investment Fund, Compass Lexecon, and the Chair of Finance at Humboldt University Berlin have equipped her with the data analytical skills necessary to conduct rigorous empirical research. Yu's focus on quantifying the impact of climate transition risks on MSME bank lending, combined with her drive to expand the policy framework of Inclusive Green Finance, makes her an ideal candidate to execute the detailed and nuanced analysis required for this study.

Together, Professor Volz's extensive experience in sustainable finance and policy development, combined with Yu Sun's strong analytical background and focus on climate economics, create a team that is exceptionally well-equipped to address the critical research questions surrounding MSMEs' access to finance in the face of physical and transition risks. Their complementary strengths ensure that the research will not only be methodologically robust but also practically relevant, offering valuable insights that can guide policy-making and financial strategies in developing economies.

Data requirements

This research seeks to quantify the economic costs of physical risks and determine whether these costs differ between larger firms and MSMEs across various sectors in EMDEs (Emerging Markets and Developing Economies). The analysis will leverage firm-level bank lending data, ideally sourced from central banks, to categorize firms by size and examine how bank lending to smaller firms, particularly MSMEs, is affected under physical risk conditions.

The methodology involves analyzing changes in the debt structure of firms in response to natural disaster occurrences, distinguishing between MSMEs and larger firms across different sectors. The study would benefit from firm-level bank lending data that includes variables such as firm size, sector of operation, and loan amounts, preferably spanning from 2000 to 2023. This data will allow for a robust analysis of how lending behaviors adjust post-disaster compared to pre-disaster periods.

In addition, it is crucial to assess the financial burdens that firms bear when confronted with natural disasters. Indicators such as Non-Performing Loan (NPL) ratios or insolvency amounts in USD could provide insights into the financial distress experienced by firms. The study will focus on regions with high physical risks, analyzing shifts in bank lending behavior following natural disasters. Furthermore, exploring supervisory data available from central banks will enhance the understanding of broader trends in financial stability and resilience within these regions.

This approach aims to provide empirical evidence on the differential impacts of physical risks on MSMEs versus larger firms, informing the development of targeted financial policies that enhance the resilience of vulnerable sectors in EMDEs.

As part of this engagement, participating members are required to provide a data set that includes key variables such as firm size, sector, location, loan details, and financial performance indicators. This data is crucial for analyzing the impact of various risks on bank lending behavior toward MSMEs, particularly in regions that have experienced natural disasters or are undergoing green transitions.

Potential data variables:

- General supervisory data that central banks have
- Firm size (categorization into MSMEs and larger firms would be ideal)
- Firm location
- Sector under operation
- Type of bank-lending institution
- Amount of credit/loan in USD
- Interest rates
- Tenor
- Time of lending
- Insolvency yes or no?
- Amount of insolvency in USD
- Non-performing loans in USD
- Total amount of loans in USD
- NPL-ratio
- Kind of loans taken (unsecured, secured, collateral)
- Purpose of loans taken (working capital or capital investment into growth)
- Amount of debt in USD
- Amount of equity in USD
- Debt to equity ratio
- Equity capital as percent of assets (to calculate Z score)
- Return as percent of assets (to calculate Z score)
- Standard deviation of return on assets (to calculate Z score)
- Firm ownership by gender
- GDP growth
- Years under observation: 2000-2023 (preferably)
- Regions under observation should have experienced natural disaster in the past, if we want to explore the impact of physical risks on bank lending

 Regions under observation should have experienced some kind of green transitional development, such as the implementation of climate policies supporting climate neutrality, coal-mine closures, etc., to explore the impact of transition risks on bank lending.

AFI engagement

This research will be supervised by Professor Ulrich Volz and reviewed by an AFI committee consisting of:

- Head of Inclusive Green Finance
- Head of Policy Analysis and Guidance
- Senior Policy Manager of the SME Finance Working Group (SMEFWG)
- Senior Policy Manager of the Financial Inclusion Data Working Group (FIDWG)
- Senior Policy Manager of the Gender Inclusive Finance (GIF), and
- Senior Policy Manager of the Inclusive Green Finance Working Group (<u>IGFWG</u>)

The Policy Manager of the IGFWG will also serve as the secretariat.

Besides the AFI committee, a subgroup from the working groups involved in this project will be established to offer comments and recommendations for this research.

AFI will also reach out to and involve member institutions to gather the requested data and to disseminate the results of this study.

In terms of data collection, AFI will liaise with member institutions who express interest in participating in this exercise to assess data availability and undertake the necessary procedures to obtain the dataset and to support with the provision of a Memorandum of Understanding (MoU) or confidentiality agreements, where applicable.

With regards to publications, it is crucial to acknowledge that member institutions may have their own publication guidelines, which both AFI and SOAS must adhere to, ensuring alignment with institutional policies and protocols for dissemination of confidential information.

Publication and Dissemination

This project aims to produce a special report that is accessible and written in less technical language. The report will emphasize the results and the importance of implementing policies that support the green transition for MSMEs, while also offering key recommendations for regulators to advance such initiatives.

Deliverable: Special Report

• A concise document will be developed based on the academic analysis, highlighting key findings and providing actionable recommendations for financial regulators.

Virtual Sessions:

- Virtual sessions will be organized to present the main results to selected staff from participating institutions, allowing for a review and approval of the outcomes.
- A final virtual session will be held to present the completed report to members of the AFI subgroups (IGFWG & SMEFWG).

Timeline

Deliverables / Activities	Tentative dates
Define data requirements and literature review	August 2024
Data collection, data preparation, potential	September 2024
econometric model	
Data analysis and first results to AFI committee	October 2024
Discussion with AFI committee	November 2024
Review of econometric model	End of November 2024
Present reviewed results to AFI members	December 2024
Perform robustness tests	January 2025
Special report	March 2025
Virtual meeting with IG	End of March 2025

ANNEX I

IGF & IGFWG publications

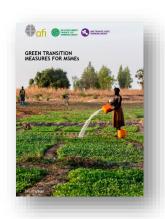
The IGFWG members have developed fourteen knowledge products on IGF in its short existence.



Fostering Inclusive, Affordable and Sustainable Housing Finance (IASHF) Innovation: Global Survey of AFI Members to Advance IASHF Practices (2024)

The housing finance sector is at a crossroads, facing challenges but also brimming with opportunities. This report provides an unparalleled overview of the global landscape, revealing the intricate interplay of challenges, trends, and innovations shaping the future of housing.

This report isn't just a collection of data; it's a roadmap to a brighter future for housing finance. Whether you're a policymaker, financial institution, or simply someone passionate about social and environmental change, this report will inspire and equip you to make a real difference.



Green Transition Measures for MSMEs (2024)

Given that inclusive green finance (IGF) is an emerging and crosscutting issue, it is crucial that IGF policies are designed to address the diverse needs of MSMEs Effective IGF policies can provide MSMEs with the financial tools they need to transition to more sustainable practices.

This report offers a set of recommendations aimed at assisting financial regulators in initiating their IGF journey. These recommendations are designed to help bridge the gaps in access to green finance for MSMEs, fostering an environment where these enterprises can thrive while contributing to a sustainable and resilient economy.





Across the AFI network, financial regulators acknowledge the need for improved risk management practices among lending institutions that consider financial exposure to both environmental and social risks.

This report identifies common approaches to implementing environmental and social risk management (ESRM) in the banking sector and provides procedural considerations for regulators to issue such guidelines.

Blog







AFI member institutions agree that policies must address climate change without leading to financial exclusion. It must help mitigate and build resilience to the negative impacts of climate change and biodiversity loss.

Developed with the University of Luxembourg, this special report identifies IGF as a subset of sustainable finance, shows that a successful IGF framework rests on six 'Building Blocks,' identifies policy tools to further advance the framework, summarizes the related challenges and provides recommendations for IGF policy implementation.

Blog



Collecting and analyzing financial data at the intersection of financial inclusion and green finance is a topic of increasing interest among AFI members. This special report examines the intersection of trends between green finance measurement approaches and supply-side financial inclusion indicators.

Blog-Explainer



<u>Leveraging Digital Financial Services to Advance</u> <u>Inclusive Green Finance Policies</u> (2022)

This report shows how DFS and enabling policies can make a difference in helping the most vulnerable populations adapt to and mitigate climate risk and environmental degradation.

Blog-Explainer





Green Credit Guarantee Schemes for MSMEs (2022)

Contributing significantly to a country's gross domestic product, MSMEs can play a significant role in strengthening a country's resilience to climate change. This report elaborates on policy considerations for the implementation of credit guarantee schemes (CGSs) that can be used to support green lending to MSMEs.

Blog-Explainer



Towards an Inclusive Green Future (2022)

There is a pressing need to promote regulation and policies that strengthen the adaptive capacity and resilience of women to environmental change while empowering them to take part in mitigation efforts and environmental-related decision-making. The purpose of this special report is to examine the intersection between inclusive green finance and gender inclusive finance, with a special emphasis on how to integrate gender considerations into AFI's 4P Framework.

Blog



Integrating Inclusive Green Finance Policies into National Financial Inclusion Strategies (2021)

This guideline note aims to support AFI member institutions to accelerate the development of IGF policies that enhance sustainable potential for economic growth and to manage the financial risks associated with the impacts of climate change. It was designed to provide guidance for institutions looking to incorporate IGF into their national financial inclusion strategies (NFIS).

English / French / Spanish



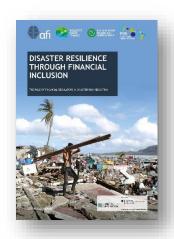
Greening the Financial Sector through Provision Policies (2021)

This special report examines how central banks and other financial regulatory institutions are involved in efforts to green the financial system through provision policies. Highlighting real-world experience and know-how in the AFI network, it provides a comprehensive review of approaches AFI members have taken to roll out a sustainable green finance agenda.



<u>Demand-side Approach to Inclusive Green Finance Data</u> Collection (2021)

This report proposes a first approach on collecting inclusive green finance (IGF) related data from the demand-side to address the scarcity of data on green activities. The relevance of this KP is that demand side data is critical in assessing the needs of vulnerable populations, potential economic impacts of climate events, and existing mechanisms on the ground to help policymakers drive effective policy interventions.



Disaster Resilience Through Financial Inclusion (2021)

This special report examines the roles of financial regulators in disaster risk reduction through financial inclusion. It showcases examples of regulatory interventions from selected AFI members complementing public policies and private sector initiatives in disaster resilience building.



<u>Promoting Inclusive Green Finance Initiative and Policies</u> (2021)

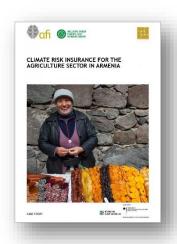
This report provides insights and examples of good practices from the AFI network in promoting inclusive green finance policymaking that encourages private sector investments in green projects. Promotion, the first "P" in AFI's 4Ps of Inclusive Green Finance Framework includes policies and initiatives that prepare and stimulate the private sector to offer financial services to qualified beneficiaries for green projects or related climate action.



<u>Inclusive Green Finance: From Concept to Practice</u> (2020)

This study explores the overlaps of green finance and financial inclusion in addressing the issues of environmental change, financial stability, and social equity and tensions, and calls for the integration of both finance concepts into a new framework called inclusive green finance. Using the IGF framework and from a regulatory perspective, it examines the role of financial inclusion in environmental change mitigation, adaptation and resilience building, and in just transition.

English / French / Spanish



Climate Risk Insurance for the Agriculture Sector in Armenia (2020)

This case study details specific conditions that make Armenia's agricultural sector vulnerable to climate change, and steps that Central Bank of Armenia has taken to cope with the effects of a warming climate. Armenia's experience provides an insight on the evolving role of financial regulators in leading innovations to increase access to finance for low-income populations in climatesensitive sectors.



Inclusive Green Finance: A Survey of the Policy Landscape (Second Edition) (2020)

This special report updates the 2019 report which presents the 4P Framework of Inclusive Green Finance: Provision, Promotion, Protection and Prevention. It reveals emerging policy practices and regulatory interventions that are shaping-up the financial sector towards the transition to more inclusive, resilient and low-carbon economies.

Slider

English / French / Spanish



Inclusive Green Finance Policies for MSMEs (2020)

This report takes stock of policy initiatives and practices from financial regulators in greening MSMEs in the AFI Network. One of the key findings of the report is that financial regulators and policymakers recognize the implications of climate change on MSMEs, and thus, are starting to link climate change and financial inclusion in their National Financial Inclusion Strategies (NFIS).



Inclusive Green Finance: A Survey of the Policy Landscape (2019)

This report introduces AFI's 4Ps of Inclusive Green Finance and takes stock of regulatory practices and policy interventions across the network that links climate change to financial inclusion. Report reveals that financial regulators recognize the importance of addressing climate change issues through financial inclusion and have either started shaping up or exploring policy directions while other countries have already issued specific policies that support climate objectives.



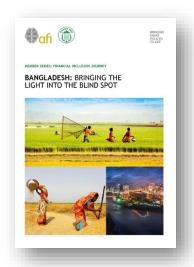
Bangladesh Bank's Journey with Financial Inclusion and Climate Change (2018)

Bangladesh is one of the global leaders in sustainable finance. This study features Bangladesh Bank's interventions and policy initiatives in addressing climate change through financial inclusion. It also provides an insight to Bangladesh Bank's experience in shaping-up its financial system towards a sustainable and low-carbon development pathway.



Reserve Bank of Fiji's Experience with Financial Inclusion and Climate Change (2018)

Fiji, an island state in the Pacific is heavily affected by climate change. This report showcases the policy initiatives from the country's financial regulator to help combat the impacts of climate change. It also reveals how financial regulators can embrace new roles and innovate within its mandate to help the country's resilience building efforts.



Bangladesh: Bringing the light into the blind spot (2018)

The economy of Bangladesh has been achieving more than 6% real GDP growth on average for more than a decade; it recently crossed the 7% landmark and shows strong trends to grow faster in the coming years. One of the drivers of this high and stable growth is Bangladesh's success in pursuing inclusive development strategy, supported by initiatives for inclusive financing, along with implanting these objectives into the country's financial sector. At the present, the financial institutions actively promote financial inclusion and green banking initiatives.