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Enabling Environment for Private Sector Engagement in Climate Change Adaptation Projects

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Executive Summary

The Government of Indonesia (GoI) has committed to integrating adaptation efforts into national, regional, and local development planning and implementation, assuring to build the nation's climate resilience. While government commitment is key, the GoI can cover only 41% of the total adaptation costs required. The remaining amount must be assembled from various sources, including the private sector.

Private sector involvement in adaptation is crucial also for the private sector itself. Climate change poses significant risks to businesses in various ways. At the same time, it may provide opportunities for businesses, e.g. through new products and services that help Indonesia's society at large to become more resilient to climate impacts.

Aware of the potential and benefits in partnering with the private sector, the National Designated Authority (NDA) of the Green Climate Fund (GCF) in Indonesia, supported by the Global Green Growth Institute (GGGI), has decided to conduct a study on the provision of an appropriate enabling environment to encourage private sector engagement in climate change adaptation projects in Indonesia.

The study examined challenges faced by the private sector to engage in adaptation projects. The process ultimately led to identification of opportunities and the development of a roadmap for establishing a conducive environment for engaging the private sector in climate change adaptation projects.

Three key adaptation sectors served as the focus of the study, namely water, health, and agriculture. In conducting the study, a broad range of literature was reviewed, and 23 interviews as well as two Focus Group Discussions (FGDs, with 31 public and private organizations) were carried out.

Based on the insights gained throughout the study, the type of private sector actors that can be engaged in climate change adaptation projects ranges from Multinational Companies (MNCs) to Micro, Small, and Medium Enterprises (MSMEs). The instruments that are deemed potential to attract private sector engagement in climate change adaptation in Indonesia are categorized as follows:

- D**ebt finance instruments,** which include microloans, corporate loans, Public-Private Partnership (PPP), as well as Green Bonds;
- **Business conduct instruments,** which include Corporate Social Responsibility (CSR), Business Continuity Plan (BCP), Corporate Shared Value (CSV);
- **De-risking instruments,** which include insurance and guarantees.

While these instruments exist and are being implemented in Indonesia, the government still has to do its homework to promote their application and capitalize fully on their potential for private sector engagement into climate change adaptation projects. The study carved out recommendations along four major aspects to be addressed. They are presented as a roadmap toward an enabling environment for private sector engagement in climate change adaptation projects and include:

- Enhancing awareness and technical capacity among the different stakeholders, both public and private;
- Refining the legal and regulatory framework;
- Facilitating access to finance for the private sector; and
- Improving the coordination and collaboration among the relevant actors and activities.

Kata Pengantar

Pandemi COVID-19 telah mengingatkan kita bahwa bencana pada skala global dapat menghambat roda perkonomian secara signifikan. Dampak pandemi dapat dirasakan oleh semua pihak, mulai dari pemerintah, sektor swasta, dan masyarakat, terlebih oleh kelompok-kelompok rentan. Berdasarkan fakta ini, antisipasi terhadap tantangan global yang akan datang merupakan langkah strategis untuk dunia lakukan, terutama dalam menanggulangi dampak perubahan iklim.

Di Indonesia, perubahan iklim diproyeksikan akan mampu menghambat pertumbuhan ekonomi, memengaruhi kehidupan masyarakat, dan menurunkan daya dukung lingkungan. Untuk menanggulangi dampak perubahan iklim bagi masyarakat dan lingkungan yang rentan, pemerintah perlu melakukan aksi berbasis iklim yang dalam hal ini disebut sebagai adaptasi perubahan iklim. Hal ini juga telah menjadi perhatian khusus bagi Pemerintah Indonesia, yang telah memprioritaskan adaptasi perubahan iklim melalui peningkatan ketahanan masyarakat terhadap perubahan iklim sesuai dengan Rencana Pembangunan Jangka Menengah Nasional (RPJMN) 2020-2024.

Meski menjadi satu kesatuan dalam agenda perubahan iklim nasional, fokus adaptasi perubahan iklim masih tertinggal dibandingkan dengan mitigasi. Agenda adaptasi perubahan iklim nasional juga masih jarang dilirik oleh pihak swasta yang telah berkontribusi aktif dalam mitigasi perubahan iklim seperti dalam proyek energi baru terbarukan dan efisiensi energi, serta pengelolaan sampah organik. Pemerintah Indonesia menyadari kemampuan sektor swasta yang memiliki pengetahuan, modal, dan kemampuan manajerial untuk berkontribusi secara signifikan dalam pemenuhan target perubahan iklim Indonesia. Untuk meningkatkan keterlibatan sektor swasta dalam agenda adaptasi perubahan iklim di Indonesia, Badan Kebijakan Fiskal (BKF), Kementerian Keuangan sebagai National Designated Authority (NDA) dari Green Climate Fund (GCF) di Indonesia melakukan studi yang berjudul Enabling Environment for Private Sector Engagement in Climate Adaptation Projects.

Studi ini bertujuan untuk mengindetifikasi kesempatan dan hambatan bagi sektor swasta serta mamaparkan rekomendasi untuk meningkatkan keterlibatan sector swasta di proyek adaptasi iklim. Studi ini dibuka dengan menyajikan konteks dan urgensi adaptasi perubahan iklim di Indonesia, beserta status keterlibatan swasta dalam sektor prioritas. Temuan-temuan dalam studi ini pun membuktikan, terdapat manfaat nyata bagi sektor swasta yang ingin terlibat dalam agenda adaptasi perubahan iklim melalui diversifikasi instrumen keuangan, proyek/program, atau pendekatan. Di bagian penutup, studi ini memaparkan peta jalan yang dapat diimplementasikan oleh pemangku kepentingan untuk meningkatkan partisipasi dan investasi sektor swasta dalam adaptasi perubahan iklim di Indonesia.

Studi ini diharapkan dapat bermanfaat bagi sektor swasta yang tertarik untuk mengembangkan proyek/program adaptasi perubahan iklim di Indonesia. Selain itu, studi ini juga dapat memberikan informasi kepada semua pihak, baik dari kementerian/lembaga, lembaga swadaya masyarakat, pemerintah daerah, atau entitas-entitas lain yang memiliki ketertarikan akan isu adaptasi dalam agenda perubahan iklim Indonesia.

Saya mengucapkan terima kasih atas keterlibatan semua pihak dalam penyusunan studi ini, terutama bagi Global Green Growth Institute sebagai delivery partner BKF sebagai NDA GCF di Indonesia dan Global CAD yang telah melaksanakan studi ini. Semoga studi ini dapat meningkatkan partisipasi dan investasi sektor swasta dalam agenda adaptasi perubahan iklim nasional, dan membantu pencapaian ketahanan ekonomi, sosial, dan ekosistem di Indonesia.

Plt. Kepala Pusat Kebijakan Pembiayaan
Perubahan Iklim dan Multilateral

Dian Lestari

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Abbreviation and Acronyms

ACA	PT Asuransi Central Asia
AFOLU	Agriculture, Forestry, and Other Land Use
AgriFin	Agriculture Finance
API	Asosiasi Petani Indonesia (Indonesian Farmers Alliance)
ASEAN	Association of Southeast Asian Nations
ASWATA	PT Asuransi Wahana Tata
AW	American Water
BAAC	Bank for Agriculture and Agricultural Cooperatives
Bappenas	Badan Perencanaan Pembangunan Nasional (National Development Planning Agency)
BAU	Business As Usual
BCA	Bank Central Asia
BCM	Business Continuity Management
BCP	Business Continuity Plan
BI	Bank Indonesia
BIMAS	Bimbingan Massal (Mass Guidance Program)
BJB	Bank Pembangunan Daerah Jawa Barat
BKF	Badan Kebijakan Fiskal (Fiscal Policy Agency)
BKPM	Badan Koordinasi Penanaman Modal (Investment Coordinating Board)
BMKG	Badan Meteorologi, Klimatologi, dan Geofisika (Meteorology, Climatology, and Geophysical Agency)
BNI	Bank Negara Indonesia
BPDLH	Badan Pengelola Dana Lingkungan Hidup (Environmental Fund Management Agency)
BPN	Badan Pertanahan Nasional (National Land Agency)
BPR	Bank Perkreditan Rakyat
BPS	Badan Pusat Statistik (Central Bureau of Statistics Indonesia)
BRI	Bank Rakyat Indonesia
BULOG	Badan Urusan Logistik (Indonesian Bureau of Logistics)
BUMD	Badan Usaha Milik Daerah (Regional-Owned Enterprise)
BUMDes	Badan Usaha Milik Desa (Village-Owned Enterprise)
CBO	Community-Based Organization
CBT	Climate Budget Tagging
CSO	Civil Society Organization
CSR	Corporate Social Responsibility
CSV	Corporate Shared Value
DHF	Dengue Hemorrhagic Fever
EIA	Environmental Impact Assessment
ESG	Environmental, Social, and Corporate Governance
FDI	Foreign Direct Investment
FGD	Focus Group Discussion

FMO	Financierings-Maatschappij voor Ontwikkelingslanden (Dutch Entrepreneurial Development Bank)
FSI	Financial Services Institution
GBP	Green Bond Principles
GCA	Government Contracting Authority
GCF	Green Climate Fund
GDP	Gross Domestic Product
GGGI	Global Green Growth Institute
GHG	Greenhouse Gas
GoI	Government of Indonesia
IATPI	Ikatan Ahli Teknik Penyehatan dan Teknik Lingkungan Indonesia (Indonesian Environmental Engineers Association)
ICCSR	Indonesia Climate Change Sectoral Roadmap
ICCTF	Indonesia Climate Change Trust Fund
ICMA	International Capital Market Association
IIGF	Indonesia Infrastructure Guarantee Fund (PT Penjaminan Infrastruktur Indonesia)
IPCC	Intergovernmental Panel on Climate Change
ISFI	Indonesia Sustainable Finance Initiative
JASINDO	PT Asuransi Jasa Indonesia
JKN	Jaminan Kesehatan Nasional (National Health Insurance)
KLHS	Kajian Lingkungan Hidup Strategis (Strategic Environmental Assessment)
KUD	Koperasi Unit Desa (Village Cooperative)
KUDL	Kumar Urban Development Ltd.
KUR	Kredit Usaha Rakyat (People's Business Credit)
LCDI	Low Carbon Development Indonesia
MFI	Microfinance Institution
MNC	Multinational Company
MoEF	Ministry of Environment and Forestry
MoF	Ministry of Finance
MoH	Ministry of Health
MPW	Ministry of Public Works and Housing
MSME	Micro, Small, and Medium Enterprise
NAP	National Adaptation Plan
NDA	National Designated Authority
NDC	Nationally Determined Contributions
OJK	Otoritas Jasa Keuangan (Financial Services Authority)
PAM	Perusahaan Air Minum (Drinking Water Company)
PDAM	Perusahaan Daerah Air Minum (Local Drinking Water Company)
PES	Payment for Ecosystem Services

PII	Private Impact Investor
PISAgro	Partnership for Indonesia Sustainable Agriculture
PKPPIM	Pusat Kebijakan Pembiayaan Perubahan Iklim dan Multilateral (Center for Climate Finance and Multilateral Policy)
PPP	Public-Private Partnership
PPRN	Paguyuban Peternak Rakyat Nasional (National People's Farmer Association)
PROMKES	Promosi Kesehatan dan Pemberdayaan Masyarakat (Health Promotion and Community Empowerment)
PROPER	Public Disclosure Program for Environmental Compliance
PUSH	Program of Urban Sanitation and Hygiene Promotion
Puskesmas	Pusat Kesehatan Masyarakat (Community Health Center)
RAN-API	Rencana Aksi Nasional-Adaptasi Perubahan Iklim (National Action Plan on Climate Change Adaptation)
RAN-GRK	Rencana Aksi Nasional Penurunan Emisi Gas Rumah Kaca (National Action Plan on Greenhouse Gas Emission Reduction)
RKP Desa	Rencana Kerja Pemerintah Desa (Village Government Work Plan)
RLU	PT Royal Lestari Utama
RPJMN	Rencana Pembangunan Jangka Menengah Nasional (National Medium-Term Development Plan)
Saprotan	Sarana Produksi Pertanian (Agriculture Production Facilities)
SDG	Sustainable Development Goal
SMART	Stormwater Management and Road Tunnel
SMI	PT Sarana Multi Infrastruktur
SMS	Short Message Service
SNC	Second National Communications
SOE	State-Owned Enterprise
SPAM	Sistem Penyediaan Air Minum (Drinking Water Supply System)
SPI	Serikat Petani Indonesia (Indonesian Peasant Union)
TLFF	Tropical Landscapes Finance Facility
TNC	Third National Communication
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
VGF	Viability Gap Fund
WAMTI	Wahana Masyarakat Tani dan Nelayan Indonesia (Farmers and Fishermen Indonesia Society)
WWF	World Wide Fund for Nature
YPCII	Yayasan Pembangunan Citra Insan Indonesia

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01 INTRODUCTION

1.1 Background

Indonesia has ratified the Paris Agreement, committing to reduce its greenhouse gas (GHG) emissions by 29% using its own resources and by up to 41% utilizing international support by 2030. The country is carrying out rigorous efforts to curb its GHG emissions, avoiding dangerous anthropogenic interference with the climate system. The Government of Indonesia (GoI) has long started its endeavors to create an enabling environment that assures the achievement of the country's mitigation targets.

While cutting down emission is imperative, the impacts of climate change are already taking place. Indonesia's first Nationally Determined Contributions (NDC) states that climate change is believed to increase the risk of hydro-meteorological disasters. They account for up to 80% of disaster occurrences in Indonesia, which include floods, drought, water shortage, and landslides. Coastal inundation and sea-level rise will affect up to 42 million people living in low-laying coastal zones of Indonesia (or almost one-fifth of the country's population). Overall, the country is highly vulnerable to the adverse impacts of climate change on the economy and livelihoods of the people. Farmers, fishermen, and small businesses are increasingly struggling to cope with the impacts of climate change. Companies of all sizes have growing concerns with protecting their employees, operations, and supply chains from the risks and disruptions due to the changing climate. The potential economic loss due to the changing climate in the four prioritized adaptation sectors (Marine & Coastal, Water, Agriculture, Health) is estimated to accumulate to IDR 544.93 trillion by 2024 (from and including 2020). For 2024 alone, related Gross Domestic Product (GDP) losses are estimated to IDR 120 trillion, which equals to almost 0.5% of the GDP projected for the same year (IDR 24,550 trillion).[1]

Both adaptation and mitigation are at the forefront of Indonesia's climate change policies and commitment. The GoI has committed to integrating adaptation efforts into national, regional, and local development planning and implementation, assuring to build the nation's resilience. While government commitment is key, it comes with the associated financing needs for implementation. The National Adaptation Plan (NAP) stated that a total of IDR 840 trillion is required for climate change adaptation action[2], equal to 5% of the country's GDP in 2018 (IDR 14,848 trillion).[3] The latest data from Indonesia's Ministry of Finance (MoF) laid out that the GoI can cover only 41% of the total adaptation cost required.[4] The rest must be assembled from various sources, including the private sector.

One of the challenges faced by the GoI in financing their adaptation activities, however, is the lack of private sector involvement. Whereas the engagement of the private sector in mitigation actions is already comparatively advanced, its action in adaptation is dragging behind. One of the reasons is that adaptation is deemed a task of the government. However, reality shows that government's actions alone will not be enough, in terms of both financing and development as well as the implementation of appropriate adaptation measures.

According to the Intergovernmental Panel on Climate Change (IPCC) and the United Nations Framework Convention on Climate Change (UNFCCC), **adaptation** refers to adjustments in human and natural systems in response to actual and/or expected climatic variation. It is a process through which societies improve their ability to cope with an uncertain future by developing and implementing strategies to moderate, deal with, and take advantage of the consequences of climate events.

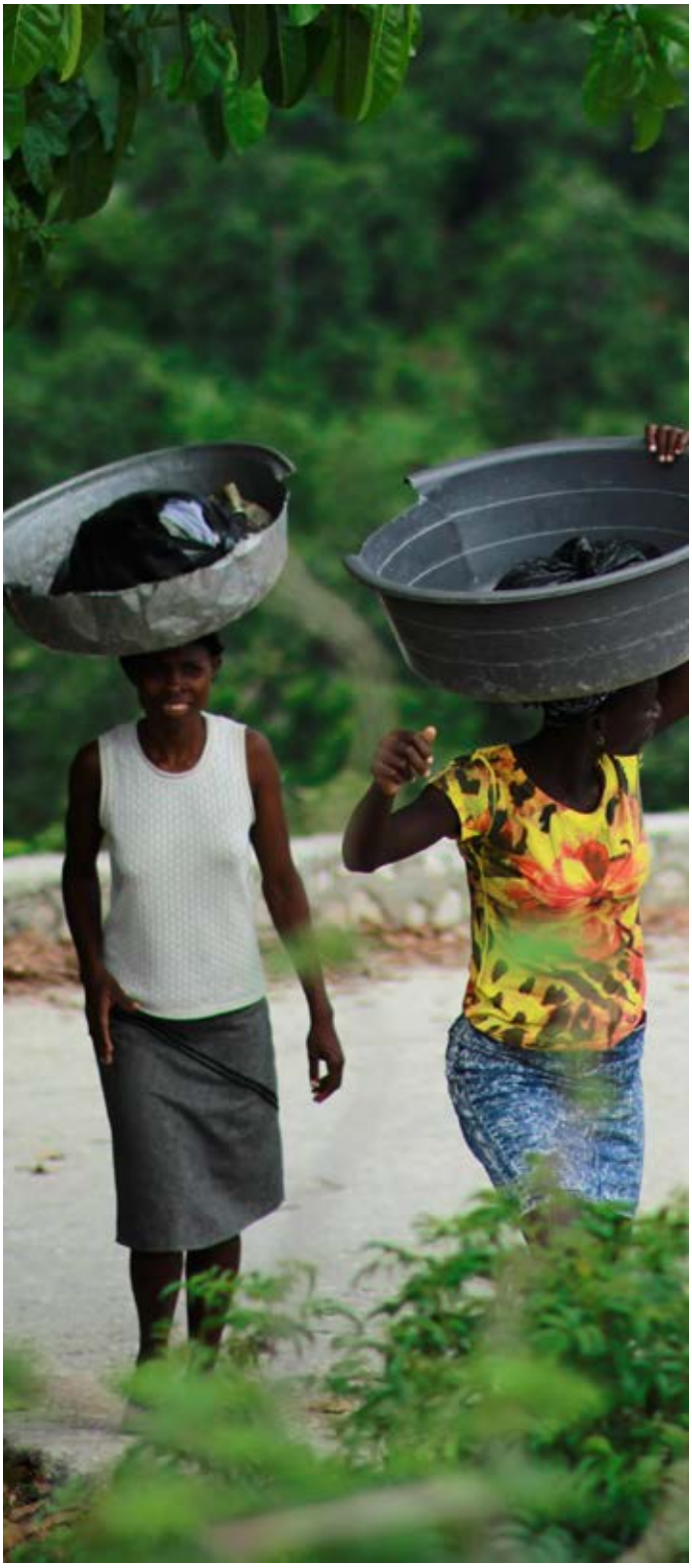
1 Kementerian PPN/Bappenas (2019): National Adaptation Plans. Executive Summary. Jakarta. Indonesia
2 Ministry of Environment and Forestry (2018): Third National Communication of the Indonesian Government to the UNFCCC. Jakarta.Indonesia.
3 World Bank (2019): The World Bank Data. https://data.worldbank.org/country/ID
4 Indonesia Ministry of Finance, Fiscal Policy Agency (2019): Climate Budget Tagging Infographic. Jakarta. Indonesia.

Thus, the private sector plays an instrumental role in the design and financing as well as in implementing adaptation priorities. The private sector will be potentially affected by the devastating impacts of climate change, if not already. More and more investors and businesses are trying to reduce their exposure and vulnerability to climate risks, i.e. to increase the climate resilience of their investments and business processes. Their business mindset helps in identifying and tapping new adaptation-related business opportunities. Furthermore, the private sector can support in developing markets for new goods and services that support strengthening climate resilience.

To succeed, there is a need for close collaboration between the public sector, i.e. the GoI, and the private sector actors: The government needs to provide an environment that enables and incentivizes businesses to be more involved in projects related to climate change adaptation. In turn, the GoI can benefit from the private sector actors' resources and capacity. This includes their natural striving for continuous innovation, which will help to find market-based solutions to increase climate resilience of both business and society at large. At the same time, their revenue orientation can contribute to close the needed financing gap. Furthermore, the GoI can benefit from the private sector skills in developing and rolling out adaptation projects. The inclusion of the private sector in planning and developing strategies to adapt to the changing climate must therefore be a crucial part of the efforts of the government.

Private sector involvement in adaptation can be categorized as:[5]

1. Adapting their businesses to climate change along their respective value chains
2. Supporting other actors, including society at large, in increasing climate resilience through the mobilization of finance for adaptation actions
3. Supporting others in increasing climate resilience through the development of products and services



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5 Cochu, A., Hausotter, T. & M. Henzler (2019): The Roles of the Private Sector in Climate Change Adaptation – An Introduction. Berlin: Adelphi, p.2

1.2 Objective of the Study

Aware of the potential and benefits in partnering with the private sector, the National Designated Authority (NDA) of the Green Climate Fund (GCF) in Indonesia, supported by the Global Green Growth Institute (GGGI), has decided to conduct a study on the provision of an appropriate enabling environment to encourage private sector engagement in climate change adaptation projects in Indonesia.

The study is part of the GCF Readiness and Preparatory Support Programme ("Readiness Programme") in Indonesia. It aims at:

- Identifying opportunities, challenges, needs, and gaps for private sector engagement and leveraging their ability to implement adaptation projects;
- Assessing the financial ecosystem in Indonesia to identify factors that enable or discourage private sector investments in adaptation projects;
- Identifying potential private sectors engagement in climate change adaptation projects;
- Developing a roadmap and recommendations for establishing a conducive environment for engaging the private sector in climate change adaptation projects.

1.3 Scope and Methodology

The study presents and discusses the current status of private sector engagement in adaptation-related activities in Indonesia as well as the mechanisms in place. It also provides recommendations to move forward. The study primarily addresses the GoI and is expected to contribute to the efforts in improving private sector engagement in climate change adaptation projects in Indonesia.

Private sector actors covered by this study include businesses that are, through their processes, products or services, affected by climate change and/or can directly or indirectly contribute to building climate change resilience in Indonesia. This comprises Multinational Companies and large companies, which typically have a large market coverage and strong financial background, as well as Micro, Small, and Medium Enterprises, which constitute 99% of businesses in Indonesia. The private sector is analyzed, especially concerning business opportunities, their barriers and finance needs, as well as in how far the actions can help to build their resilience. Private sector actors also comprise institutional investors such as banks and insurance companies as well as other actors contributing to a business-enabling environment, such as Civil Society Organizations (CSOs), associations, and chambers.

The study was conducted in adherence to the following methodology (Figure 1):

The analysis and evaluation are based on the review of various national and international documents, including reports and white papers, policy notes, and regulations, as well as academic literature. It was complemented by a series of stakeholder

Figure 1 Methodological framework

consultations. 23 interviews were conducted between January and March 2020, with stakeholders from both private and public sectors. Moreover, two Focus Group Discussions (FGDs) took place in June 2020. They served to validate the findings as well as to develop a concrete way forward to increase private sector's engagement in climate change adaptation projects.

The sectoral focus reflects selected priorities and key adaptation areas as defined by strategies of the GoI, taking into account Indonesia Climate Change Sectoral Roadmap (ICCSR) 2009, National Action Plan on Climate Change Adaptation (RAN-API) 2012, NDC 2016, the GCF Country Programme document 2016 (as well as the updated draft document from 2019), and the Low Carbon Development Indonesia (LCDI) 2019.

Water – Provision of drinking water (piped water).

Health – Provision of healthcare services as well as Water Sanitation and Hygiene (WASH)

Agriculture – Provision of required input and related technologies, market linkages for agricultural produce, and climate insurance services

The study also presents a large selection of national and international case studies. They serve to inspire and provide lessons learned in engaging the private sector in climate change adaptation.

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1.4 Limitations

While the study aims to present a comprehensive overview of the existing landscape of private sector engagement in climate change adaptation in Indonesia, it has a number of limitations, which include:

1. The role of international donor and/or sources of funds is not analyzed within this study.
2. The study serves to provide an initial overview of Indonesia's climate change adaptation action with respect to private sector engagement and its enabling environment. Its scope is therefore limited to the national level, i.e. the local context is not part of the study.
3. Due to the COVID-19 pandemic, FGDs had to be conducted virtually, which came along with limitations, especially in terms of the duration as well as intensity of discussion and exchange among the participants.
4. Private sector representatives consulted were below the desired number due to their limited response. This refers to both interviews and FGDs.
5. The contribution of pharmaceutical and medical device industries to climate change adaptation has not been part of this report.

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02 STATUS OF PRIVATE SECTOR ENGAGEMENT IN INDONESIA

The following chapter analyzes the current situation of private sector engagement in climate change adaptation in Indonesia in the selected adaptation sectors (priority areas). The chapter sets out providing a general overview of the potential motives (drivers) of the private sector to engage in climate change adaptation (2.1). It then carves out the following for each of the sectors:

- The specific challenges brought by climate change;
- The status quo of climate change adaptation along the respective value chains; and
- The key challenges toward engaging the respective private sector actors in climate change adaptation.

2.1 Drivers for Private Sector Engagement in Climate Change Adaptation

From a private sector's perspective, various factors motivate businesses to engage in climate change adaptation.

Firstly, an enterprise may wish to reduce climate-change-related risks. Climate change poses significant risks to businesses in various ways. These risks can arise, for instance, from extreme weather, general temperature changes, rising sea level, spread of diseases, or water scarcity. On the one hand, they can refer directly to the business itself. This includes, for instance, damage to a business' physical assets or to the health of its workers, disruptions of internal processes (which in turn may reduce productive capacity), or to limited access to finance resulting from higher risk awareness of investors. Risks can, on the other hand, also refer to potential harm caused up-and downstream of the business itself. This includes its suppliers or customers and its wider social and institutional environment, which in turn can impact the business. Examples include disrupted supply chains resulting from a shortage of raw materials; reduced liability or drop out of suppliers; reduced demand for products and services; and changes in the regulatory or political environment.

Table 1 provides a non-comprehensive overview of potential business risks related to climate change:[1]

It is important to note that businesses do not always label or communicate their related activities specifically as adaptation measures. Instead, they are often part of their general risk management. [2] Such strategic risk management, however, is more likely to be found in larger companies. Smaller businesses often do not have the capacity to prepare accordingly and tend to face stronger repercussions (e.g. existential crises) when not absorbing climate-related shocks. [3]

Secondly, the private sector may identify and seek to benefit from business opportunities related to climate change. Developing and providing services and products for climate change adaptation.

The demand for specific products and services can change both quantitatively and qualitatively, leading to extending or shrinking existing markets, or opening up new markets. In agriculture, for example, markets for climate-resilient crops, irrigation solutions, farming technologies facilitating climate-smart farming, data and information services, or pest control products may further develop. In the health sector, innovative technologies for rapid diagnostics may be needed. In both cases, the financial services sector can benefit as well.

Table 1 Overview of potential business risks related to climate change

Risk Area	Examples
Logistics	Lost cargo, disrupted distribution networks
Physical assets	Flooded buildings or farm land
Operational efficiency	Increased cooling requirements for agricultural product storage or health facilities
Resource competition	Reduced water availability due to competition with other users (e.g. for cooling of power plants)
Business reputation	Conflicts of arable land or water use
Finance	Lenders' increased concern of climate change risks that their investments may face
Insurance costs	Increased costs to cover weather-or climate-related risks
Biodiversity	Threatening of species which are important to agriculture and fisheries

Banks, insurances, or microfinance institutions (MFIs) can capitalize on providing access to finance for businesses that want to strengthen the resilience

1 Adapted from: CSR Asia (2011): Climate Change Adaptation. Engaging Business in Asia. Main Report – Publication 1 of 5
2 Averchenkova A., Crick F., Kocornik-Mina A., Leck H. and Surminski S. (2015): Multinational Companies and Climate Adaptation-Are We Asking the Right Questions? A Review of Current Knowledge and A New Research Perspective. Grantham Research Institute on Climate Change and the Environment, London School of Economics and Political Science, Houghton Street, London WC2A 2A, United Kingdom; Working Paper No. 183
3 CSR Asia (2011): Climate Change Adaptation. Engaging Business in Asia. Main Report – Publication 1 of 5

of their own operations or want to use business opportunities through innovative products and services. Additionally, in order to drive the demand for related finance products, they can contribute to a higher level and wider spread of awareness of the risks and opportunities that climate change brings for the private sector.

Adaptation of existing infrastructure (public or private) may boost the demand in respective private sector services and the know-how to implement or co-finance projects. Such infrastructure projects may refer to, for instance, climate-proofing of production facilities, flood-proof roads, solutions for climate-resilient water treatment plants and distribution systems, or additional health treatment facilities and hospital beds that allow to respond quickly to potentially increasing numbers of (e.g. dengue) patients.[4]

Next to the two major drivers of risk reduction and opportunities, motivation for private sector engagement can also derive from reputational benefits that may be gained in the scope of Corporate Social Responsibility (CSR) or Corporate Citizenship activities, strengthening the corporate brand while contributing to a more climate-resilient society. [5]

Lastly, having more of an external character, regulatory and legal aspects, and incentive schemes, as well as pressure from different stakeholders, such as CSOs, customers, banks, or insurers, can be effective drivers of climate change adaptation. [6]

Accordingly, private sector involvement in adaptation can be categorized as (see Figure 2):[7]

1. Adapting businesses to climate change along the respective value chains (reducing risks)
2. Supporting other actors, such as business, civil society, or the public sector, in increasing climate resilience through the mobilization of finance and the development of products and services (using opprtunities).
3. Compliance with regulations, incentives schemes, and other drivers, such as company reputation as well as pressure from customers and communities.

To which extent these drivers are prevalent in Indonesia in the three prioritized areas will be elaborated throughout the following sections and chapter.

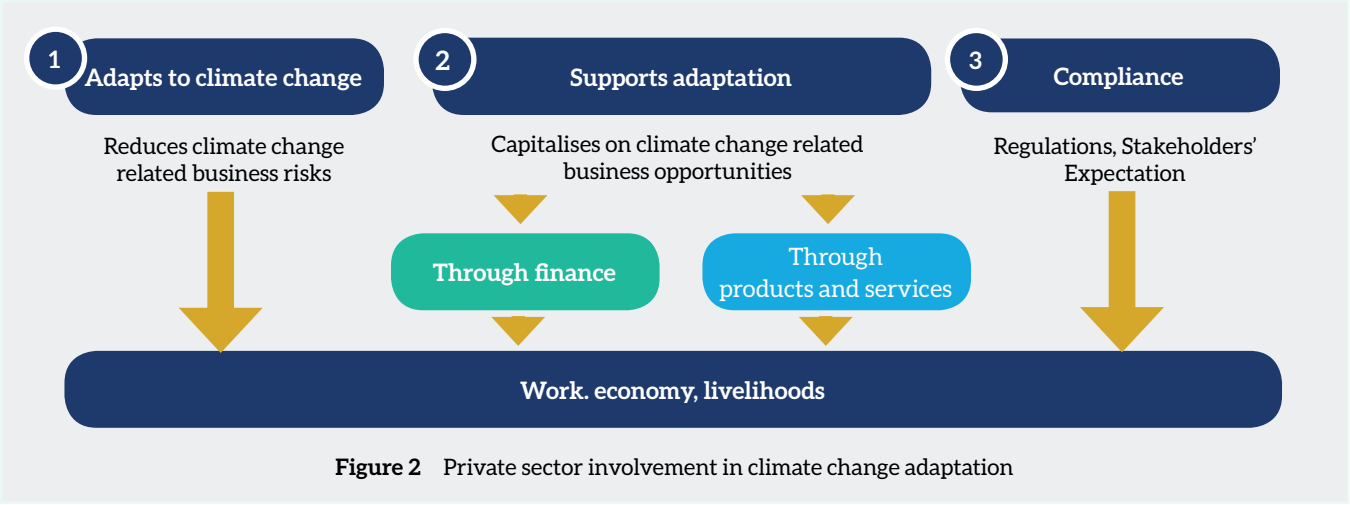


Figure 2 Private sector involvement in climate change adaptation

4 Druce, L., Moslener, U., Gruening, C., Pauw, P. & R. Connell (2016): Demystifying Adaptation Finance for the Private Sector; UNEP Finance Initiative, German Federal Ministry for Economic Cooperation and Development (BMZ), German Development Corporation (GIZ), Frankfurt School UNEP Collaborating Centre for Climate & Sustainable Energy Finance, The German Development Centre (DIE) and Acclimatise

5 Linnenluecke, M. & T. Smith (2018): Adaptation of MSMEs to Climate Change: A Review of Existing Literature. In Schaer, C. & N. Kuruppu (Eds), Private-Sector Action in Adaptation: Perspective on the Role of Micro-, Small-, and Medium-sized Enterprises (pp. 19-25). UNEO DTU Partnership

6 Averchenkova A., Crick F., Kocornik-Mina A., Leck H. and Surminski S. (2015): Multinational Companies and Climate Adaptation-Are We Asking the Right Questions? A Review of Current Knowledge and A New Research Perspective. Grantham Research Institute on Climate Change and the Environment, London School of Economics and Political Science, Houghton Street, London WC2A 2A, United Kingdom; Working Paper No. 183

7 Adapted from: Cochu, A., Hausotter, T. & M. Henzler (2019): The Roles of the Private Sector in Climate Change Adaptation – An Introduction. Berlin: Adelphi, p.2

2.2 The Status Quo of Private Sector Engagement in Selected Sectors

The following sub-chapter details the status of private sector engagement in the three priority areas: water, agriculture, and health. Table 2 provides an overview of each of the priority areas, highlighting the alignment with the priorities set by the GoI, the key climate change impacts, the estimated losses in case of missing action, and the overall areas of private sector engagement.

Table 2: Overview of priority areas

Sector	Alignment with Government Priorities	Vulnerability to Climate Change and Impacts	Potential Loss without Adaptation Actions (2020 to 2024)[8]	Possibilities for Private Sector Engagement
Water	A key development target as mentioned in the National Medium-Term Development Plan (Rencana Pembangunan Jangka Menengah Nasional/RPJMN) 2020-2024.	Water scarcity, floods, landslide, and drought. Risk levels caused by these hazards are projected to be high and/or very high especially in the most populated islands of Indonesia, i.e. Java, Bali, Sumatra, Nusa Tenggara, and Sulawesi.	IDR 27.92 Trillion or USD 1.99 Billion	• Public-Private Partnership (PPP) for construction of water treatment plants, management, and distribution of drinking water; • High potential for measures to increase resilience of own business operations (e.g. optimizing water use and management in production).
Agriculture	One of the main development targets as mentioned in RPJMN 2020-2024. Explicitly covered in ICCSR, indirectly in RAN-API through the sub-sectors	Overall decreased production of food products, e.g. through: • Increased risk of loss of productive farm land, especially in Java, Bali, Sulawesi, Kalimantan, Sumatra, and Lombok; • Concentration of rainfall and intensification of dry seasons, increased temperature (plant respiration changes), extreme weather events.	IDR 77.9 Trillion or USD 5.56 Billion	• Business opportunities (e.g. new insurance products); • Measures to increase resilience of own business operations (e.g. plant management such as crop variation, pest control). • Climate-smart agriculture technology
Health	One of the main development targets as mentioned in RPJMN 2020-2024. Explicitly covered in ICCSR and in RAN-API	Risk of increasing cases of morbidity and mortality due to extreme weather events and/or illnesses, infectious diseases, malnutrition from reduced food production.	IDR 31.29 Trillion or USD 2.24 Billion	• Provision of healthcare services); • Increase resilience of own business operations (e.g. awareness raising and medical programs to reduce risk of sickness of workforce).

Exchange rate:
USD 1 = IDR 14,000

8 Kementerian PPN/Bappenas (2019)

2.2.1 Water Sector

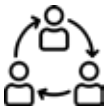
Water consumption for domestic and industrial use in Indonesia accounts for 14.8% of the total water withdrawal. At the same time, it contributed seven times more to the GDP in 2018 than agriculture, despite consuming six times less water.[9] Availability of clean water for drinking and sanitation is crucial to the health and wellbeing of the population, and is deemed instrumental in assuring the achievement of GoI's vision to reduce the prevalence of stunting in children.

Concurrently, the country is facing a challenge of declining freshwater resources. In the past decades, the renewable internal freshwater resources per capita in Indonesia have been decreasing at a rapid pace. The diminishing availability, coupled with the doubling of water needs every ten years, results in increasing water stress, which is particularly apparent in the most populated regions.

Unsustainable consumption, limited infrastructure, poor management, and the alteration of the climatic system add more pressure on the country's water challenges. Water scarcity has already affected the densely populated islands, such as Java and Bali, and the situation will continue to aggravate, affecting other major islands, such as Nusa Tenggara, Sumatra, Sulawesi and the Moluccas.[10] Drought intensity, which is projected to increase between 2025 and 2030, will also further exacerbate the already strained water availability in the country.[11]

At the same time, increasing the quality of and access to basic services, including the provision of clean water and sanitation services, is one of the GoI's prime development targets. The current RPJMN 2020-2024 targets are: 1) 100% community access to drinking water and 100% access to sanitation; and 2) community-based total sanitation. To achieve these targets in the face of climate change, the country's NAP focuses its adaptation measures for the water sector on addressing domestic water supply. The GoI, through its NAP document, proposes the following interventions:

Table 3 Interventions in water sector based on NAP

Interventions	
	Prioritizing water demand for domestic use, especially in regions with water scarcity and in regions of strategic importance;
	Controlling the use of groundwater and enhancing the use of surface water for water supply;
	Intensifying the development of water storage for water supply and optimization and maintenance of existing resources;
	Encouraging involvement of the private sector for financing the development of water infrastructure;
	Capacity building of institutions involved in water resource management to communicate, cooperate, and coordinate;
	Community empowerment and participation at the local level in water resource management;
	A partnership between government and community in water resource management.

© Khalif Akbar/Unsplash

9 FAO (2016): AQUASTAT Main Database, Food and Agriculture Organization of the United Nations (FAO). http://www.fao.org/nr/water/aquastat/data/query/index.html Website accessed on [15/04/2020 21:25]
10 Kementerian PPN/Bappenas (2010): Indonesian Climate Change Sectoral Roadmap. Jakarta. Indonesia
11 Kementerian PPN/Bappenas (2010)

Private Sector Engagement in the Water Sector – Status Quo

The geographical context of the country, combined with a strained budget, has made it challenging for the GoI to fulfill its commitment using only public funds. Various projects and initiatives to partner with the private sector in improving access to clean water were carried out, mostly through mechanisms such as CSR and PPP. In 2018, investments in water and sanitation projects done in collaboration with the private sector was estimated at USD 314,620,000, increasing twofold from the previous year.[12] However, the figure is still considered low, if compared with its peer countries. In 2019, only 7% of water and sanitation projects in Indonesia were funded by the private sector, while in China, India, Malaysia, the Philippines, Thailand, and Vietnam, it would be up to 30%.

Government actors hold a crucial role in monitoring and regulating the activities along the supply chain. These functions are in adherence to Law No. 17/2019. Government institutions that are particularly relevant in the clean water provision supply chain include: 1) Ministry of Public Works and Housing (MPW) (i.e. Directorate General of Water Resources and Directorate General of Human Settlements); 2) Ministry of Environment and Forestry (MoEF) (i.e. Directorate General of Forest and Land Rehabilitation); and 3) Sub-national governmental agencies, such as Regional/City Development Planning Agency, Environmental Agency, as well as Public Works Agency.

Provision of clean water is often not bankable, primarily due to the low capacity of the communities to pay for the water tariff.[13] To boost private sector investment in this field and to accelerate the expansion of access to clean water for all, the GoI has enacted Presidential Regulation No. 46/2019 on Provision of Guarantee and Subsidy of Interest for Credit Investment in Clean Water Treatment Plants. Viability Gap Fund (VGF) is also provided to increase the bankability of water supply projects, based on Presidential Regulation No. 38/2015 and Minister of Finance Regulation No. 223/PMK.011/2012 on VGF.

In 2009, the GoI, through the MoF, established a non-bank financial institution PT Sarana

© PT. SMI/Facebook

Fresh water provision program in Bima Regency, East Nusa Tenggara, Water Action for People (WAfP) by PT. Sarana Multi Infrastruktur

12 World Bank (2019)
13 Capacity to Pay must be differentiated from Willingness to Pay. Capacity to Pay relates to the ability of a person or a community to afford a certain kind of services, in this particular case is piped clean water.

Multi Infrastruktur (SMI) to be a catalyst for the acceleration of infrastructure development in Indonesia, which includes water supply, and to support the implementation of PPP schemes. SMI serves as an alternative to banks in providing loans with competitive interest and long tenure to the private sector interested in investing in Indonesian infrastructure.

The collaboration between the government and the private sector in clean water supply, while burgeoning, does not seem to have any adaptation motive in the background. Boosting infrastructure development and opportunities for doing business appear to be the main reason for cooperation. This also applies to infrastructure projects supported by SMI, despite its mandate on climate change. The issue of climate change adaptation mostly appears when the collaborative projects are initiated by Development Agencies and/or Non-Governmental Organizations which hold mandates to combat climate change. They are usually done under the framework of managing natural resources together with local communities.

The key actors involved, including the private sector, in the provision of clean water in the country are presented in Figure 3 below through a simplified illustration of the clean water supply chain in Indonesia.

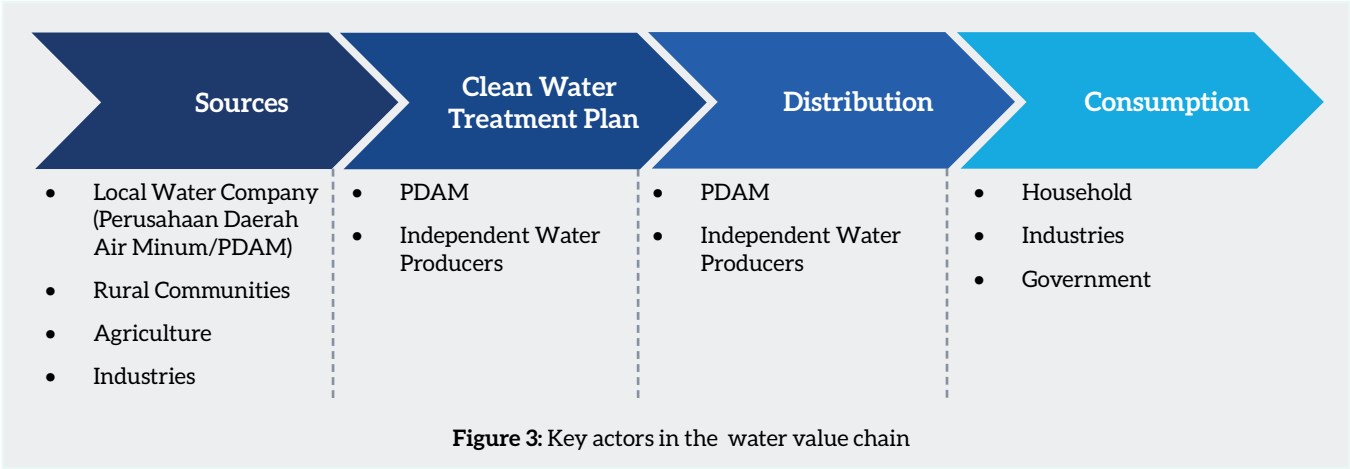


Figure 3: Key actors in the water value chain

1. At the Sources

Actors involved in the utilization and management of surface water resources are mainly rural communities, agricultural players (spanning from smallholder farmers to big MNCs) and industries. These actors have various interests in the water resources, but can be simplified into two categories, namely: withdrawing freshwater from the source and discharging effluent to water bodies.

In view of protecting water resources, there are various projects and activities documented, ranging from compliance to regulations, Business Continuity Plan (BCP), and Corporate Shared Value (CSV) to initiation of Payment for Ecosystem Services (PES) scheme. (See Examples in Box 1)

2. At the Clean Water Treatment Plants and Distribution System

Perusahaan Daerah Air Minum (PDAM), being the state-owned company operating at the national and the sub-national level, is deemed the main player in the field of clean water supply. Their primary task is to produce, or in some cases procure, clean water and distribute it to the population in their respective region following the regulated and standardized quality, quantity, and continuity. In carrying out their duty, PDAM can operate in different ways. The most common practice is for PDAM to own and operate its clean water treatment plant, including distribution. Another model that is currently being widely explored is to partner with a private company, using PPP schemes. One example is the 25 years partnership between PT PAM Lyonnaise Jaya (PALYJA) and drinking water company, Perusahaan Air Minum (PAM) Jaya to improve clean water supply services in the western part of Jakarta.

Private sector participation in producing clean water, especially in populated areas, is increasing. MNCs, such as Medco and Adaro, have continued expanding their lines of business toward the production of clean water. Adaro Water, for example, is operating three Clean Water Treatment Plants in Gresik (East Java), Banjar Baru (South Kalimantan), and Kotawaringin Timur (Central Kalimantan). Medco, on the other hand, is involved in a newly established Clean Water Supply System in Umbulan (East Java), facilitated by SMI.

Water pricing is generally monitored and regulated by the government through the respective Regional-Owned Enterprise (Badan Usaha Milik Daerah/ BUMD). When it comes to decentralized clean water supply, MSMEs play an instrumental role and are highly relevant for small-scale and community-based water provisioning services. Their activities range from the development of communal water treatment plants to selling water in jerry cans in areas with scarce access to clean water. At the village level, the role of community-based organizations (CBO) and Village-Owned Enterprises (Badan Usaha Milik Desa/ BUMDes) in operations and maintenance (O&M) and distribution becomes more common. At the same time, the local private sector plays a role in the construction of dam or treatment plants.

The most common private sector engagement model used to develop centralized clean water treatment plants and its distribution is PPP. However, when it comes to decentralized water supply, engagement models such as CSR, microfinancing, as well as impact investments are more common. (See examples in Box 1.)

3. Consumption

All actors with access to the distribution pipes are consumers of PAM/PDAM. There is no specific private engagement model at this stage. However, given the declining water availability and exacerbated by the impacts of climate change, promotion of water efficiency for consumers needs to be strengthened and could be an opportunity in the future, e.g. reduced usage of clean water to water the garden during dry season, to wash the car, or even to water the street.

Challenges in Engaging the Private Sector

a. Insufficient maintenance of the integrity of the upstream areas of water resources creates insecurities for private sector to invest (e.g. more expensive water treatment technologies);

b. Investment in water treatment plant projects are often not bankable due to the low capacity of the population to pay;

c. The recent decision of the Supreme Court on halting the privatization of water management has generated uncertainty about the potential of further engagement of the private sector in clean water provision in the country;

d. The absence of disaster insurance, making it harder to comply with the water provision targets;

e. Limited availability of data, technology, and research as a basis for water resource management or development of indices for insurance.

Box 1: Examples of private sector engagement in clean water provision

Examples of Private Sector Engagement in Clean Water Provision in Indonesia

Business Continuity Plan – MNCs and large companies are increasingly integrating climate risks into their Business Continuity Plan (BCP). There is a lack of examples of BCP conducted by Indonesian companies. However, during the interview process, it was revealed that banks require their debtors to undertake climate risk projection and the associated impacts on their business to assess the credit risk. This kind of risk management is deemed a routine procedure, especially for projects that banks perceive as risky with respect to the impacts of climate change, for example in the context of a credit request for hydropower plants.

Corporate Shared Value – Corporate Shared Value (CSV) is defined as a method of creating economic value while simultaneously adding value to society and addressing additional challenges, for example, climate change. Departing from growing concerns about the sustainable supply of spring water, PT Multi Bintang through their foundation, Sahabat Multi Bintang, together with USAID, developed a project on "Strengthening Community Resilience in the Landscape of Pacet, Mojokerto" in 2018. The project included a participatory vulnerability assessment to increase awareness and identify potential activities to be developed with the community, but at the same time relevant to their business. The project promoted environmentally friendly tourism activities in the landscape, to protect livelihoods while simultaneously building the resilience of the community to climate-and weather-related risks. The value of this partnership was USD 95,836.

Payment for Ecosystem Services – Payment for Ecosystem Services (PES) is one of the main economic instruments proposed under Law No. 32/2009. Despite its worldwide implementation, especially in the water sector, it is less visible in Indonesia. An example of PES implementation in Indonesia in managing water resources is in Cidanau River. The activities involved local government, PT Krakatau Tirta Industry (private sector actor), and local communities to tackle environmental issues in the watershed, including activities related to the preservation of the remaining vegetation cover and forest rehabilitation of the 'critical lands' with steep slopes.[14]

Public-Private Partnership – East Java Provincial Government, supported by the GoI through SMI, and PT Meta Adhya Tirta Umbulan work together in a Public-Private Partnership (PPP) scheme to develop a regional drinking water supply system (Sistem Penyediaan Air Minum/SPAM) in Umbulan, East Java. The objective of the project is to provide clean water to 1.3 million people in Pasuruan City, Pasuruan Regency, Gresik Regency, Sidoarjo Regency, and Surabaya City. One of the initial issues that occurred in the project was the capacity of the water users to pay. To ensure the bankability of the project, the government provided VGF. The project investment value was IDR 2.05 trillion, which consisted of: 1) IDR 818,01 billion of VGF by the MoF; 2) IDR 369.59 billion from business entity; and 3) IDR 862.4 billion from bank loan. Under the scheme, the drinking water tariff for the public consumers at IDR 5,280/m3 is affordable.

Corporate Social Responsibility – Corporate Social Responsibility (CSR) is still deemed the most popular public-private collaboration model used in Indonesia. Governmental agencies, especially those at the sub-national level, are very familiar with the model and the associated procedures. They even take the lead in directing private companies operating in the region to allocate their CSR funds toward areas or themes aligned with the development targets. For example, the development of clean water infrastructures in Bogor Regency using Danone Aqua CSR fund.[15]

Village Initiatives – Villages in Indonesia have both problems and potential related to the water sector for water, food, and energy security as well as health. CBOs or BUMDes are increasingly playing roles in the construction of dams or water treatment plants, as well as the operation, maintenance, and distribution of clean water and sanitation. The CBOs or BUMDes engage private sector during the construction stage while at the same time engage local government-owned rural development banks, People's Credit Banks (Bank Perkreditan Rakyat/BPR), to finance the project. In West Java, the central government in cooperation with the World Bank's Water and Sanitation Program support the capacity building of CBOs' transformation to legal organizations BUMDes, as a mandatory requirement for accessing financing for commercial banks or other agencies. The project works with 26 community-based water organizations and connects them with BPR to obtain loans. This has helped BUMDes increase and expand coverage of clean water supply for their communities. In 2015, BUMDes of Bongas Subdistrict of Sumedang Regency served 544 house connections and contributed 10% of the profit to the village revenue. Another similar initiative is Community-based Water Supply and Sanitation Delivery (PAMSIMAS), which currently is in its 3rd phase (2016-2020) of targeting 15,000 new villages while continuing to assist the already established 27,000 villages.

14 Lapeyre, R.; Pirard, R.; Leimona, B. 2015. Payments for environmental services in Indonesia: What if economic signals were lost in translation?. Published in Land Use Policy. http://dx.doi.org/10.1016/j.landusepol.2015.03.004.

15 Amerta Sustainability (2018): Perkembangan CSR di Indonesia. https://www.amerta.id/2018/04/25/1304/perkembangan-csr-di-indonesia.php

2.2.2 Agriculture Sector

The agricultural sector plays a vital role in Indonesia, both in economy and food security. About one-third of Indonesia's land area, or 60.2 million hectares, is used for agricultural purposes.[16] Of this share, crops were being harvested on an area of 44 million hectares (2016),[17] of which 7.1 million-hectare wetland area was used for food crops.[18] In 2016, the sector contributed roughly 13% to Indonesia's GDP, which is a rather stable share of GDP contribution in a longer-term perspective. When it comes to employment, relative to other sectors, the agricultural sector contribution has continued to decrease over the past decades, from 55% in 1992 to 28% i

Horticultural crops such as vegetables, fruits, and nuts showed the strongest growth in 2018 (6.99%; 3.72% in 2017), followed by livestock (4.58%), and plantation crops (e.g. coconut, oil palm, cashew, tea, coffee, cocoa, rubber; 3.87%). Food crops such as rice, maize, and soybeans make up the rear. This development appears to contrast the GoI's objectives with respect to food security. The country strives for self-sufficiency in agriculture, food sovereignty, and increased agricultural productivity,[19] while currently still relying strongly on food imports.[20] Next to extractive industries, plantation agriculture dominates Indonesia's commodity-based economy,[21] whereby it is mostly export-oriented commodities, such as rubber and palm oil, that are cultivated in large-scale plantation.

The impacts of climate change, such as changes in precipitation patterns, sea-level rise, increased temperature, as well as increased frequency and intensity of extreme weather events, have affected the production of crops, and thus the associated key actors involved in this sector. Rice yield has decreased by 20% in the last 20 years due to a decrease in rainfall.[22] Furthermore, the availability of water and humidity affect populations of insects, which poses a challenge to agricultural activities in Indonesia. Increased precipitation during the wet season and the prolonged dry season is projected to decrease food production in 2050 compared to the current condition, i.e. rice (-4.6%), maize (-20%), soy (-65.2%), sugar (-17.1%), and palm oil (-21.4%).[23] In general, climate change could result in a 9%-25% reduction in farm-level net revenue in Indonesia in the future, affecting the income and livelihood of farmers.[24]

Climate change will put agri-players in a more vulnerable condition. The situation especially applies to smallholder farmers, with a limited plot size to cultivate (in some cases with precarious land tenure situation), low level of knowledge about climate change and the associated risks, and lack of capital. Furthermore, the envisioned development of the agricultural sector, if not planned sustainably, can exacerbate Indonesia's vulnerability to climate change. Massive deforestation and irresponsible land-use change could spur more forest fires and increase the probability of flood and landslide events.[25]

To address food security in the face of climate change, the GoI focuses on the implementation of Climate-Smart Agriculture. The NAP's measures span across improving farmer's understanding of climate information, improving water availability and soil productivity, strengthening agriculture innovation (e.g. development of climate-resistant seeds) to develop alternative financing for when a disaster occurs.

Private Sector Engagement in the Agricultural Sector – Status Quo

Private sector engagement in adaptation in Indonesia´s agricultural sector is more evidently labelled as adaptation than in the water sector. The engagement models primarily include CSR schemes (and to a certain extent CSV), insurance, and microfinancing. Impact investment in the agricultural sector in Indonesia is also proliferating, shown by the fact that agriculture has consistently been the focal sector for private impact investors (PIIs). Between

16 FAO (2019): Country Profile - Indonesia. http://www.fao.org/countryprofiles/index/en/?iso3=IDN
17 FAO (2018): FAO Statistical Yearbook Country. Indonesia. http://faostat.fao.org/static/syb/syb_101.pdf
18 BPS (2019): Statistical Yearbook of Indonesia 2018.
19 Ndoko, E., Candida, A. & E. Zmudczynska (2018): A Review of Indonesia's Agriculture Development in Recent Years (2014-2018). FFTC Agricultural Policy Platform
20 Oxford Business Group (2019): New Areas for Growth in Indonesia's Agricultural Sector. Indonesia 2018. https://oxfordbusinessgroup.com/overview/breaking-new-ground-small-scale-farming-and-mechanised-production-set-unlock-sector's-economic
21 World Bank & IFC (2019): Creating Markets in Indonesia. Unlocking the Dynamism of the Indonesian Private Sector. Country Private Sector Diagnostic
22 Kementerian PPN/Bappenas (2010)
23 Kementerian PPN/Bappenas (2010)
24 ADB (2015): ADB Papers on Indonesia - Summary of Indonesia's Agriculture, Natural Resources, and Environment Sector Assessment. Manila. Philippines
25 World Bank & IFC (2019); Papathanasiou, C., Alonistioti, D., Kasella, A., Makropoulu, C. & M. Mimikou, M. (2012): The Impact of Forest Fires on the Vulnerability of Peri-urban Catchments to Flood Events (The Case of the Eastern Attica Region). GlobalNEST Journal. 14 (3), pp294-302

2015 and 2016, agriculture shared 27% of all deals and 10% of all impact capital deployed in Indonesia. Deals are predominantly done for products such as coffee and cacao.[26] In 2018, the Tropical Landscape Finance Facility (TLFF) issued a multi-tranche Sustainability Bond, being the first corporate sustainability bond in Asia. Its proceeds were used to finance sustainable natural rubber plantations on heavily degraded land in two provinces in Indonesia. PPP does not seem to be a popular scheme used to engage the private sector in agriculture, suggested by the minimal and outdated evidence. This may be due to the fact that PPP in Indonesia is highly focused on the development of infrastructure. Examples of the various private sector engagement models are presented in Box 2.

Examples of private sector engagement show the variety of angles from which adaptation can be addressed as well as the various actors that may be involved in such efforts. They include MNCs, governmental organizations, NGOs, and local businesses. All actors underscore the importance of joint action. Taking a value chain perspective helps to identify the main groups of players in the sector. Figure 4 provides a simplified and aggregated visualization of the agricultural value chain (crops).[27] The specific predominant actors in each step of value creation can involve both private and public players and vary dependent on the specific products, regions, and steps of the value chain.

1. Input

Input is provided by various types of businesses, which include MNCs such as Bayer, DuPont, Cargill, or Syngenta (e.g. for fertilizers, pesticides, seed stock, fodder), Indonesian businesses (e.g. BISI for seeds, CV Karya Hidup Sentosa for tractors/machinery), government institutions (e.g. Agency for Agricultural Research and Development under the Ministry of Agriculture, PT Sang Hyang Seri, a State-Owned Company in agricultural sector), provinces, and farmers.[28] Increasingly important actors are providers of digital solutions, such as for smart farming (e.g. PT Mitra Sejahtera Membangun Bangsa).

2. Cultivation and Post-Harvest

Primary producers can be distinguished based on two types of production prevalent in Indonesia:

a. Large-scale plantations, which are either state-owned or operated by private companies and mainly geared toward the export market, with commodities such as rubber or palm oil.[29] The latter accounts for the highest share (85%) of foreign direct investments (FDI) in Indonesia's agricultural sector.[30]

b. Cultivation based on traditional farming methods, which to a large part is done by individual smallholder farmers and farmer cooperatives,

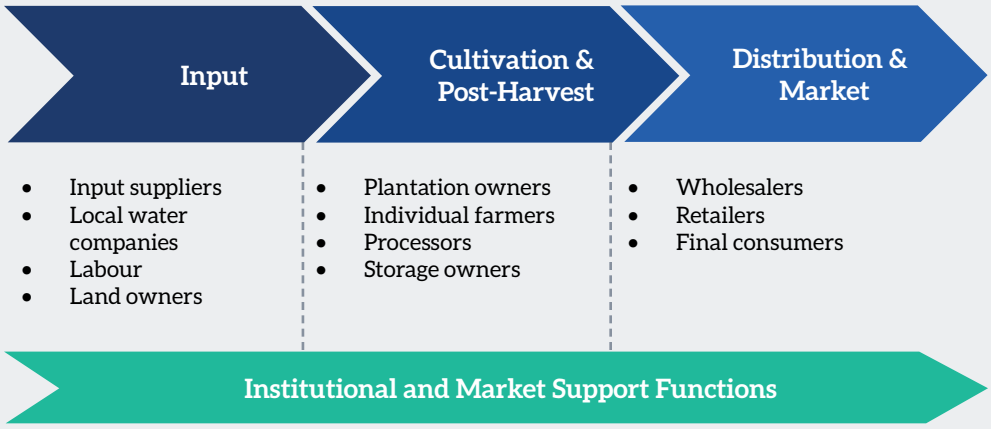


Figure 4: Agricultural value chain (simplified)

26 GIIN, 2018. The Landscape of Impact Investing in Southeast Asia.
27 Basic steps apply analogously for livestock.
28 Hidayat I.M. & Asadi (n.d.): Integrated Seed Sector Status in Indonesia. Indonesian Vegetable Research Institute, Lembang; Indonesian Biotechnology and Genetic Resources Institute, Bogor; MercyCorps (2013): Indonesia Market Assessment for Agricultural Value-Chain Payments via Mobile Technology.
29 Indonesia Investment (2016): Agricultural Sector of Indonesia. https://www.indonesia-investments.com/culture/economy/general-economic-outline/agriculture/item378?searchstring=Agricultural%20Sector%20of%20Indonesia
30 Layukallo, R., Fanggidae, V. & D.R. Ningrum (2016): Mapping of Policies and Stakeholders in Foreign Direct Investment in Indonesia's Agricultural Sector. Perkumpulan Prakarsa, Jakarta

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concentrating on rice, soybeans, and corn, as well as fruits and vegetables.[31] In rice production, for instance, 90% are smallholder farmers.[32] For palm oil production, approximately 1.8 million farmers are operating in Indonesia. Farmer groups (40 to 50 farmers per group) or cooperatives (Koperasi Unit Desa/KUD) play a vital role in Indonesia, helping farmers with education, provision of credits, input distribution, marketing, or field extension.[33]

3. Distribution and Market

This part of the value chain covers a broad range of actors, including for instance millers, Indonesian Bureau of Logistics (Badan Urusan Logistik/BULOG), provincial markets, traditional markets, modern markets/retail stores, wholesalers, exporters, inter-island traders, and the food processing industry (both Indonesian and international companies).

Additionally, various private and public sector actors, such as certifiers, research institutes, ministries, producers' associations, trade unions, insurers, and banks, are providing an institutional and market support function.

Central actors within the government, specifically with respect to investments in agricultural activities, include the Ministry of Agriculture, the Investment Coordinating Board (Badan Koordinasi Penanaman Modal/BKPM), the Ministry of Agrarian Affairs and Spatial Planning/ National Land Agency (Badan Pertanahan Nasional/BPN), as well as local governments and related institutions at provincial, district, and local levels. At the national level, key functions of the government include policy formulation, monitoring and supervision of policy implementation, licensing for foreign investors, and inter-ministerial coordination. At the district, sub-district and local level authorities have a stronger focus on investment promotion and coordination as well as on related regulations and processes, such as issuing business permits, dealing with local development programs, and monitoring compliance with environmental regulations.

31 Indonesia Investment (2016)
32 Oxford Business Group (2019): Self-Sufficiency in Rice Production Revives Indonesian Agriculture. Indonesia 2018. https://oxfordbusinessgroup.com/analysis/growth-segment-self-sufficiency-rice-production-revitalise-sector
33 MercyCorps (2013): Indonesia Market Assessment for Agricultural Value-Chain Payments via Mobile Technology.; Suryani, E., Ariningsih, E. & H.P. Saliem (2019): Perspective on the Role of Agricultural Cooperatives in Response to the Changing Food Consumption Pattern in Indonesia. FFTC Agricultural Policy Platform

Challenges in Engaging the Private Sector

In view of responding to the impacts of climate change through strengthening agricultural resilience, the sector still faces a broad number of challenges that hamper private sector engagement in climate change adaptation, including:[34]

a. Limited capabilities in agribusiness management;

b. Lack of extension services for farmers as farming units are often remote and fragmented: Almost 10 million smallholder households own less than 0.5 ha each, while the availability of agricultural land is further decreasing as a result of converting agricultural land for other purposes;[35]

c. Limited awareness of climate change risks with a tendency of higher awareness among female farmers;[36]

d. Issues of land tenure and marketability of products, making it difficult for farmers to provide collateral to the banks when applying for credit;

e. Especially small-scale farmers lack access to finance as financial institutions consider the agricultural sector as having a high-risk profile;

f. Insufficient or damaged infrastructure, especially irrigation networks (more than half of the irrigated land works with damaged irrigation systems),[37] clean water, and energy;

g. Living wages of agricultural labor are comparatively low;

h. Requirements of fertilizer and seeds are hardly met with respect to site-specific recommendations;

i. Lack of access to farming equipment and technologies;

j. Missing the know-how of translating international frameworks for climate change adaptation into the local context;

k. Availability of and access to weather and climate data, especially related to rainfall, which is often incomplete and lacks quality and validity.[38]

©Kiril Dobrev/Unsplash

34 Ndoko, E., Candida, A. & E. Zmudczynska (2018): A Review of Indonesia's Agriculture Development in Recent Years (2014-2018). FFTC Agricultural Policy Platform; Oxford Business Group (2019): New Areas for Growth in Indonesia's Agricultural Sector. Indonesia 2018. https://oxfordbusinessgroup.com/overview/breaking-new-ground-small-scale-farming-and-mechanised-production-set-unlock-sector's-economic; Suryani, E., Ariningsih, E. & H.P. Saliem (2015): Perspective on the Role of Agricultural Cooperatives in Response to the Changing Food Consumption Pattern in Indonesia. FFTC Agricultural Policy Platform

35 Arifin, B., Nuryartono, N., Pasaribu, S.H., Yasmin, F., Rifai, M.A. & R. Kurniadi (2019): Profitability and Labor Productivity in Indonesian Agriculture. World Bank

36 Rondhi, M., Khasan, A.F., Mori, Y. & T. Kondo (2019): Assessing the Role of the Perceived Impact of Climate Change on National Adaptation Policy: The Case of Rice Farming in Indonesia. Land, 8, 81

37 FAO (2017): Country Fact Sheet on Food and Agriculture Policy Trends, Indonesia

38 Interview Syngenta foundation, January 16, 2020

Box 2: Examples of private sector engagement in the agricultural sector

Examples of Private Sector Engagement Models in Agricultural Sector in Indonesia

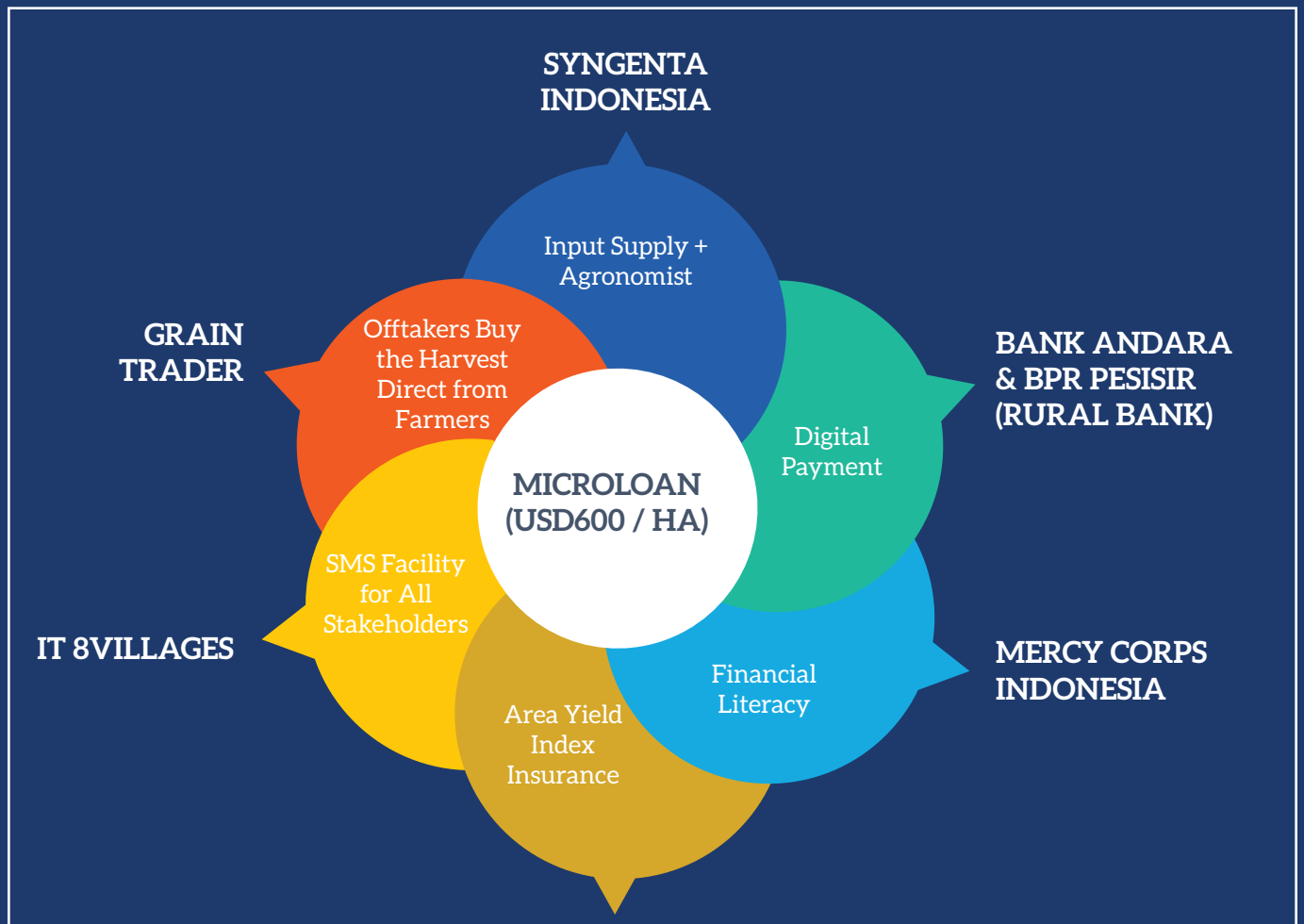
CSR/CSV – Cargill, through their CSR/CSV activity in "Strengthening smallholder farmers' resilience in poultry sector in Blitar, East Java", [39] aims to improve the resilience of smallholder chicken farmers in Blitar District. The activity involves designing climate-adaptive chicken sheds following international standards, and provides capacity building on proper poultry management for smallholder chicken farmers & National People's Farmer Association (Paguyuban Peternak Rakyat Nasional/ PPRN). Cargill primarily invests time and know-how in the development and testing of climate-adapted chicken sheds to increase their productivity. Moreover, they also co-develop training modules for the farmers on good chicken farming practices, climate change and adaptation action, farm management and entrepreneurship. Cargill, thus, invests in adapting its own business to climate change by helping its downstream supply chain, i.e. customers, to climate-proof their businesses. At the same time, it indirectly provides finance to enable the poultry farmers in Indonesia to engage in climate adaptation, as they increase their farming businesses' resilience and contribute to food security in times of changing climate.

Sustainable Bonds – Another prominent example for private sector engagement in sustainable farming in Indonesia is PT Royal Lestari Utama (RLU). The company, a joint venture formed in 2015 between Indonesian Barito Pacific Group and French Michelin, established a sustainable rubber plantation. They aimed at producing natural rubber in a climate-smart, socially inclusive, and wildlife-friendly way, combining its business with forest restoration, ecosystem conservation, and community programs. The company uses the principle of environmental and social safeguards for their strategic decisions and daily operations. It used an innovative blended finance scheme for investment in close cooperation with and through support from the GoI, USAID, BNP Paribas, and others. Through this initiative, Michelin, the second largest tire manufacturer, secures its rubber supply. Although climate change adaptation is not an explicit objective of the project, it is implicit to RLU's business model.

Insurance and Microfinance – The Agriculture Financing Business Model for Corn Farmers,[40] crops insurance for corn under the Agriculture Finance (AgriFin) Mobile project, Financing of Smallholder Corn Farmers based on Value Chain, was piloted in 2015. The pilot project took place in Dompu District, West Nusa Tenggara Province, Indonesia, starting with 1,200-ha area yield index-based insurance that covered drought and windstorm as those are the two dominant perils in the area. The value chain model of AgriFin creates an enabling ecosystem for non-bankable poor farmers, from access to finance (microloans of USD 600/ha) to access to good agriculture practice. To do so, the model involved various stakeholders, namely Bank Andara, Rural Bank Pesisir Akbar, Syngenta Indonesia, farmers groups, PT Asuransi Central Asia (ACA), offtakers and a fertilizer company, which are led by Mercy Corps Indonesia. Unlike other agricultural insurance pilots, the AgriFin model is free from any government subsidy, for both the interest rate of the microfinancing and the insurance premium.

39 Interview USAID APIK, January 15, 2020; USAID (2019): USAID Adaptasi Perubahan Iklim dan Ketangguhan (APIK) Project. Annual Report PY 4, October 1st, 2018-September 30th, 2019

40 ACA. 2017. Highlight of Agriculture Insurance in Indonesia. Retrieved from: https://microinsurancenetwork.org/sites/default/files/civicrm/persist/contribute/files/Session%202_Jakub%20Nugraha_%20Highlight%20of%20Agriculture%20Insurance%20in%20Indonesia.pdf



Within only two cycles, the model showed promising results, which include:

- Increased farmers' yield, i.e. from 5.5 tons/ha kernel production to minimum of 8 tons/ha, with less supply chain;
- Increased net profit, from USD 150/ha to USD 1,270/ha; as well as
- Alteration of farmers' behavior, i.e. from leaning on subsidy to become more independent, as well as the burgeoning business mindset among the farmers accompanied by fostering continuous improvement in their agricultural practices.

The model continued to grow. In the 2016-2017 program year, Agriculture Financing Business Model for Corn Farmers entered its 3rd planting season, increasing the number of farmers accessing the loan product from 640 to 805 and covering 1,546 hectares. Further market assessment was done, seeking to expand the model to other villages and sub-districts in 3 districts and one city, with the conservative assumption that the expansion will reach 15,000 farmers (30,000 hectares) by 2020.[41]

41 Mercy Corps. 2017. AGRIFIN MOBILE PROJECT-Annual Narrative Report. Retrieved from: https://www.mercycorpsagrifin.org/wp-content/uploads/2020/03/AgriFinMobile_AnnualReport_September2017.pdf

2.2.3 Health Sector

Indonesia is suffering from a weak healthcare system, despite the considerable improvement after the introduction of National Health Insurance (Jaminan Kesehatan Nasional/JKN). Annually, there is USD 68 billion of an unaddressed demand-supply gap.[42] The number of physicians, nurses, and midwives is still low, respectively at 0.4 and 2.1 per 1,000 people. While the figures have increased over time, it is still far below its peers, i.e. Thailand, Vietnam, and Malaysia, as well as the average in East Asia and Pacific. [43]

At the end of 2018, the country had 2,813 hospitals, proliferating from 2010 with 1,623. [44] **More than 50% of these hospitals are concentrated on Java island, whereas areas in the Eastern part of Indonesia especially are still lacking these facilities.** There is a shortage of international-standard hospitals, which results in more than 600,000 people per year seeking medical treatment in neighboring countries, representing an accumulated cost of up to USD 1.9 billion (plus additional 2.1 billion indirect spending). [45]

Furthermore, out of 10,000 Community Health Centers (Pusat Kesehatan Masyarakat/Puskesmas) in the country, only 60% are rated in good condition. [46] Even though Puskesmas aims to provide affordable and good quality of healthcare, the cost of health services in Indonesia is deemed high, especially for the lower-income groups.

In addition, lack of access to clean water and sanitation adds more challenges to the health and well-being of the population. In 2019, Statistics Indonesia (Badan Pusat Statistik/BPS) recorded that 90% of Indonesian households had access to water, but not all had access to clean and safe water. [47] Only about 70% of the population had access to basic sanitation services. To date, about 10% of Indonesia's urban population is still practicing open defecation, posing detrimental effects on communities' health. [48] **Sufficient domestic water treatment is also still lacking in the country. Communal wastewater treatment is rare, and people rely heavily on septic tanks.** About 52% of the population in rural areas and 79% in urban areas use septic tanks. [49] However, only a few actually apply regular cleaning. Overloaded septic tanks could pollute the groundwater, which is one of the population's main sources of clean water in the absence of PDAM coverage.

On top of all, climate change will greatly affect the population's health and well-being by: 1) increasing the rate of mortality and morbidity due to climate-related disasters; 2) increasing prevalence of stunting and malnutrition due to reduced food production under the changing climate; and 3) increasing the rate of mortality and morbidity caused by change in temperature, air pollution, as well as food-, vector-, and water-borne diseases. [50]

The current NAP measures for the health sector are focusing mainly on the prevalence of Dengue Hemorrhagic Fever (DHF), which is projected to profoundly affect the middle and eastern parts of Indonesia, where health facilities are scarce. It is expected that the increasing prevalence of DHF will result in massive economic losses, amounting up to IDR 6 trillion between 2020 to 2030. [51] The Ministry of Health (MoH) plans more holistic adaptation strategies to deal with the changing climate, addressing all climate-change-related impacts on the health sector, through the Health Promotion and Community Empowerment (Promosi Kesehatan dan Pemberdayaan Masyarakat/PROMKES) Program. Activities include enhancing public awareness of climate change, improving mapping of vulnerability areas, as well as forge partnership with the private sector to address climate change in the health sector.[52]

42 Lim et al. (2018)
43 World Bank (2019)
44 Databoks (2019): Berapa Jumlah Rumah Sakit di Indonesia?. https://databoks.katadata.co.id/datapublish/2019/10/10/berapa-jumlah-rumah-sakit-di-indonesia
45 Lim et al. (2018)
46 Kementerian Kesehatan Republik Indonesia, Pudat Data dan Informasi (2019): Data Dasar Puskesmas Nasional 2019. Jakarta. Indonesia
47 BPS 2019
48 UNICEF (2019): Drinking Water - Water and Sanitation Coverage. https://data.unicef.org/topic/water-and-sanitation/drinking-water/#data
49 World Bank (2019)
50 Kementerian PPN/Bappenas (2010). Note: Number of affected people are not available
51 Kementerian PPN/Bappenas (2019)
52 WHO, 2017, Status of the Development of Health National Adaptation Plan for Climate Change in Southeast Asia

Private Sector Engagement in Health Sector – Status Quo

Private sector is heavily involved in the health sector in Indonesia. The value of Indonesia's healthcare market is estimated at USD 21 billion, with 40% of healthcare costs being covered by the public sector, compared to 60% by the private sector. [53] Private hospitals, mainly concentrated in Java and Sumatra, multiply faster than the public ones—although the latter have more beds available. The main driver to assure the presence of hospitals/clinics spread around the country, including those in collaboration with the private sector, is however primarily based on development needs and an obligation of the government to provide access to healthcare system.

In addition, the private sector is also involved in other health-related activities, from healthy lifestyle campaigns and development of insurance products to pharmaceuticals, medical devices, and laboratories. Although some activities are heavily linked to adaptation, they are normally done under Business as Usual (BAU) or in adherence to current lifestyle

Private sector actors involved in the health sector is presented in Figure 5:

Private sector engagement models, especially those related to adaptation, is highly dominated by CSR schemes, especially in the provisioning Puskesmas, clinics, and sanitation facilities. CSR initiatives (including those related to the health sector) are strongly supported by the local governments of the project locations. CSR is deemed as a critical aid to ease the financial burden of the local government pursuing their development goals. The government also promotes PPP schemes to establish new hospitals (or new specialized wings of an existing hospital), accounting to almost 20% of total PPP projects under preparation. Two out of ten "already tendered" PPP projects in 2019 are about the establishment of hospitals, i.e. Gorontalo Regional Hospital and Sidoarjo General Hospital.

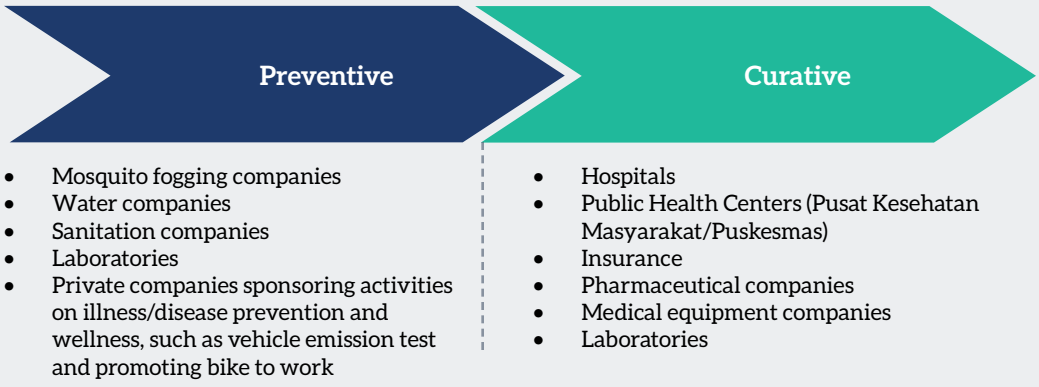


Figure 5: Main private sector actors in the health sector

The private sector is also dominating the market of health-insurance products, pharmaceutical, and medical devices. A high number of private companies offer health insurance, such as AXA, Mandiri, Manulife, and Allianz, among others. These private health insurances are often integrated with a life insurance scheme and have been around for decades.

Two relatively novel insurance products instrumental in coping with climate change are disaster insurance and dengue insurance. Disaster Insurance is, however, still unpopular in Indonesia, despite the urgency, due to reasons such as low literacy of insurance and the associated affordability.

53 Oxford Business Group (2018): Public and Private Measures Boosting Indonesia's Health Sector. Indonesia 2018. https://oxfordbusinessgroup.com/overview/universal-coverage-public-and-private-initiatives-are-supporting-sector-growth

Challenges in Engaging the Private Sector

a. There is a general lack of human resources, combined with the unequal geographic distribution of health workforce in Indonesia. In urban and more developed regions, the concentration of workforce is considerably higher than in rural and remote areas. Overall, the number of doctors currently equals to only 1/15 of the OECD standard.

b. The low capacity to afford treatment at the hospital, especially for population located in more remote areas, results in the reluctance of private sector to enter the health sector.

c. The slow development of the national market leads to a lack of trust by patients in the local system and infrastructure and consequently leads to a high number of treatments abroad.

d. The number of physical healthcare centers is still insufficient, despite an overall increase in hospitals. [54] This is relevant not just to ensure comprehensive access to healthcare, but also in the light of projected increases of and accordingly needed capacities to respond to the potential and projected increase of dengue and other climate-change-induced diseases.

e. Access to health services, especially in remote areas is hampered, not just by the limited availability and quality of the health facilities, but also by the country structure (archipelago) combined with insufficient transport infrastructure and by regional income disparities

f. There are insufficient investments and inefficient education in healthcare (including sanitation and hygiene) as well as preventive medicine. [55]

g. Mechanism for cooperation with private insurers are unclear. [56]

h. The regulatory environment hampers foreign investments. [57]

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54 Lim et al. (2018)
55 Lim et al. (2018)
56 Lim et al. (2018)
57 Lim et al. (2018)

Box 3: Examples of private sector engagement in health sector

Engagement Models in Health

CSR – Provision for small-scale clean water treatment, sanitation facilities, and the associated campaign through CSR is very popular in Indonesia. For example, in 2017, PT Konimex initiated a School Sanitation Project with the construction of sanitation facilities in 75 elementary schools in Sukoharjo Regency. [58] A similar initiative also took place in Serang municipality. The government of Serang encouraged 500 companies operating in the area to allocate their CSR funds to improve the sanitation facilities in more than 300 elementary schools. [59] Furthermore, a CSR forum in West Java developed clean water infrastructures in the region, for example, Danone Aqua constructed clean water facility in Bogor Regency and a community-based sanitation program in Sukabumi.[60]

Dengue Insurance – Departing from the fact that around 410 people are diagnosed with dengue fever every day in Indonesia, and at least 4 of them will die from dengue fever every day, ACA developed novel dengue insurance. Dengue patients usually require 5-7 days of medical treatment, which costs around USD 300-400, a cost deemed high to the lower-income communities that earn about USD 142 monthly. [61] ACA offers dengue insurance with an affordable premium, at USD 3.5 annually, covering treatment cost up to USD 150. The application and claim processes are also made very simple. Customers could even apply through Short Message Service (SMS) applications.

Box 4: Common challenges in private sector engagement in the three sectors

Common Challenges in Private Sector Engagement in the Three Sectors

- There is lack of awareness and understanding about climate change, especially the need for adaptation, combined with weak signals from the government to include the private sector in the adaptation playing field. This is shown by, for example, the missing definition of what adaptation projects precisely constitute as well as the lack of incentives to engage the private sector.
- Activities and intervention areas in the prioritized sectors are mainly related to the provision of access to basic services, which is highly deemed as being a government task. On the one hand, while the demand for access to basic services is high, the management of natural resources cannot or even should not easily be privatized (e.g. water sources). On the other hand, the often limited capacity to afford these services, such as healthcare and clean water, makes the business less attractive to the private sector.
- Adaptation projects are highly overlapping with other development projects from the government. Therefore, adaptation measures are still seen as BAU, slowing down the development of a market on investing in adaptation projects.

58 Warta Ekonomi (2017): HUT ke-50, Konimex Bangun Sanitasi Sekolah Dasar di Sukoharjo. https://www.wartaekonomi.co.id/read135155/hut-ke50-konimex-bangun-sanitasi-sekolah-dasar-di-sukoharjo.html
59 Pikiran Rakyat, Kabar Banten (2018): Pemkab Serang Dorong Industri Arahkan Dana CSR untuk Sanitasi Sekolah. https://kabarbanten.pikiran-rakyat.com/serang/pr-59612386/pemkab-serang-dorong-industri-arahkan-dana-csr-untuk-sanitasi-sekolah
60 Amerta Sustainability (2018)
61 Salary Explorer (2020): http://www.salaryexplorer.com/salary survey.php?loc=101&loctype=1


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03 REGULATORY AND FINANCIAL FRAMEWORK

To be able to invest more systematically in climate change adaptation, the necessary enabling conditions with regard to the regulatory framework, as well as the financial infrastructure to access finance, need to be in place. The chapter focuses specifically on the aspects relevant to the private sector and does not aim to provide a comprehensive overview of the regulatory and policy framework. It sets the stage for a more detailed description of different financial instruments relevant to private sector engagement in adaptation in Indonesia.

3.1 Policy and Regulatory Framework for Adaptation

Climate change has become one of the nation's priorities over the last 3 decades, marked by the signing of the UNFCCC in 1992, ratified in 1994 through Law No. 6/1994. In adherence to the standard approach recommended by the IPCC, Indonesia has always communicated both its mitigation and adaptation efforts.

National climate change policies and strategies in Indonesia have always included mitigation, adaptation, and the associated means of implementation. Discussions about engaging the private sector in finance climate actions have been brought up since the initial communications with UNFCCC, however, were focused more on climate change mitigation. Implementation of adaptation actions relies heavily on the state budget.

A brief history of climate change adaptation policies in Indonesia following its signatory is presented in the figure below.

Indonesia has submitted three National Communications to the UNFCCC since 1999. The latest was the Third National Communications (TNCs) in 2018. Calls for private sector contribution were clearly articulated for mitigation sectors, but not at all for adaptation, especially in the Initial National Communications (INCs) and the TNCs. The Second National Communications (SNCs) started to include private sector involvement in the measure to facilitate adequate adaptation to climate change but was limited to the health sector, focusing on the enhancement of capacity building to reduce the impact of climate change on public health.

The ICCSR, which was launched in 2010, serves as detailed policy guidance and mainstreaming tool to take up considerations of climate change into all aspects of development planning. While it encouraged the involvement of the private sector, again, it mainly emphasized on mitigations sectors. The only call for private sector involvement in adaptation was for financing the development of water infrastructure.

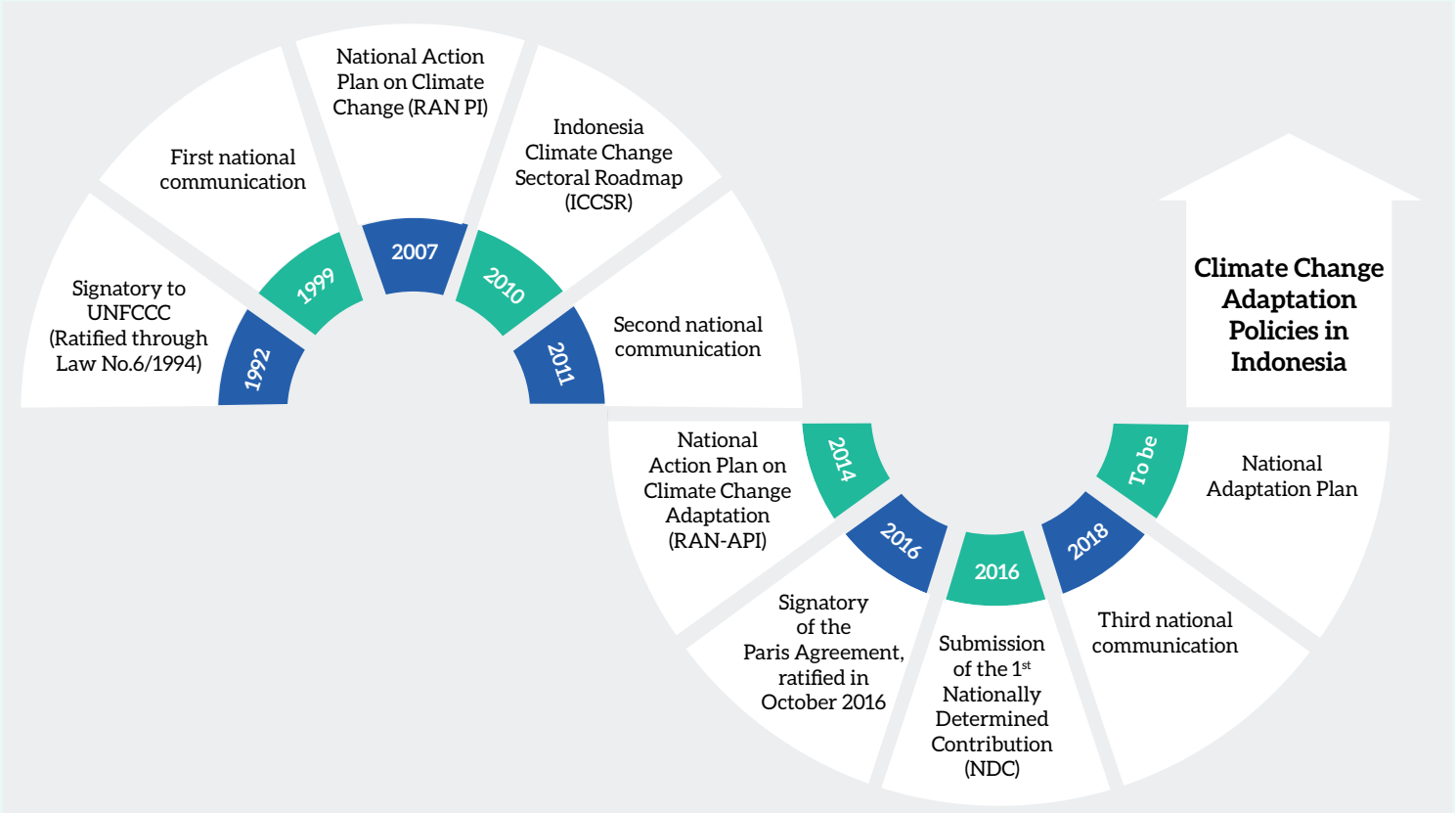

Figure 6: Climate Change Adaptation Policies in Indonesia

Following the ICCSR, the RAN-API was the first strategic document in Indonesia specifically focused on adapting to the impacts of climate change, assuring concerted efforts by all stakeholders (including the private sector) in a coordinated manner. It serves as the main reference in the planning of climate change adaptation actions. The document is also used as the basis for the GoI in formulating their NAP. While RAN-API did not specify financing sources for each action, it presented, however, an elaborated discussion about financing mechanisms of adaptation in Indonesia, including expected contributions from the private sector. RAN-API stated that in the mid-term government budget should serve as the main source for implementation. However, the document also discussed the intent to blend private and government funds, attracting investments through banks and non-bank institutions, as well as making use of CSR and PPP to implement adaptation actions.

Having ratified the Paris Agreement on October 31st, 2016, Indonesia submitted its first NDC on November 6th, 2016. Emphasis therein is given to the importance of integrating mitigation and adaptation actions for building climate resilience in food, water, and energy. The NDC puts high importance on the multi stakeholder engagement, including the private sector. The role of the latter is deemed crucial for mobilizing resources, from financing to fostering innovation and new technologies, contributing to the achievement of the country's commitment in tackling climate change.

The Indonesian NAP, also communicated a notion similar to RAN-API and the NDC on private sector engagement. The NAP offers all stakeholders, including private sector, a roadmap of government's priority for medium-and long-term adaptation actions. It presents a critical opportunity for the GoI to align private sector interests with national adaptation priorities. Proper alignment would facilitate a longer-term scaling-up of adaptation activities across wider networks, distributing ownership among more stakeholders, and ultimately become more representative, inclusive, and successful. However, to do so, certain policies and incentives must be provided to all stakeholders, especially the private sector, for their willingness to act together toward climate-resilient economy.

PPP and CSR are financing schemes with the most governmental buy-in, shown by:

1) the existence of legal framework as a basis for their implementation;

2) the number of references given in various public policies, strategies, and even planning documents;

3) popularity of practices, which is driven by the number of success stories.

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Economic Instruments for Adaptation

To date, there is no specific national adaptation financing policy to conduct vulnerability assessment (VA) and implement adaptation action plans. Law No. 32/2009 on Environmental Protection and Management regulates among others the obligations of the private sector, i.e. industries, to protect nature and the environment. This obligation is stated in Article 68, which requires every person conducting business and/or activities to:

- Provide information relating to the environmental protection and management in a correct, accurate, transparent, and timely manner;
- Sustain environmental functions; and
- Comply with the provisions on environmental quality standards and/or standard criteria to avoid environmental damages.

Accordingly, the law presented a list of economic instruments to encourage the national government, local government, or any parties (including private companies and individual) to protect the environment. It includes:

- Incentives and disincentives that require financial institutions and capital market to comply with environmentally friendly practices, to provide financing for environmental services and to develop insurance scheme that supports environmentally friendly practices;
- Financing that regulates the guarantee fund for recovery activities, funds for pollution prevention and/or environmental damage and recovery, as well as trust funds for conservation activities;
- Planning that regulates national and regional GDP, compensation fee for inter-provincial activities, PES, and internalization of environmental costs.

The implementation of these instruments is outlined in Government Regulation No. 46/2017 on Environmental Economic Instruments.

Box 5: Strategic environmental assessment

Strategic Environmental Assessment

Evidently, many adaptation-related projects are initiated by either the government, donors, or other actors. The issue is that often the actions are not done based on appropriate vulnerability assessment. Based on Law No. 32/2009, the government is mandating the development of Strategic Environmental Assessment (Kajian Lingkungan Hidup Strategis/KLHS), which later on is translated into Government Regulation No. 46/2016 about the implementation of KLHS.

The KLHS document is developed as a basis for development plans, and it is strongly suggested to include vulnerability assessment (VA), but not necessarily deemed as an obligation. At the same time, consideration of risks of climate change must be integrated into the development planning. Given the advancement of the climate science and the increased accuracy of the data and information about the severity of the impact, it is deemed imperative that the national and sub-national government develop VA for their region to be updated regularly, and apply systemic thinking in the formulation of the adaptation options.

The informed-formulation of adaptation options will help the government to assign better the allocation of their budget, and identifying the needs for support, signaling the private sectors of the needs of their contribution.

Analysis of Law No. 32/2009 and its derivatives confirm that, although it occasionally mentioned adaptation to climate change, there is no specific mechanism and/or economic instrument solely used to finance adaptation actions. These instruments are generally intended to support activities related to environmental rehabilitation and protection as well as to foster sustainable development, which are implicitly aligned with adaptation actions and therefore seem to serve as suitable instruments. However, it is highly recommended for the government to develop a set of adaptation-specific instrument to promote private contribution in adaptation projects, as was done in mitigation.

The government plays a central role in the protection and management of the environment. The private sector is invited, and to a certain extent obliged, to support these efforts. Nevertheless, the lack of awareness from the private sector, coupled with the domination of State-Owned Enterprises (SOEs), despite its function as catalyst for private engagement, as well as incentives, resulted in the lack of private sector engagement in this field, or uncoordinated efforts at best.

Box 6: National funds for climate change

Indonesia Climate Change Trust Fund

The Indonesia Climate Change Trust Fund (ICCTF) is a national trust fund dedicated to both the mitigation and adaptation of climate change in Indonesia and equipped with a governmental mandate. ICCTF manages grants for non-profit projects proposed and implemented by governmental agencies, civil societies, research organizations of the government and non-government, and universities. It specifically supports projects which respond to the achievement of National Action Plan on Greenhouse Gas Emission Reduction (Rencana Aksi Nasional Penurunan Emisi Gas Rumah Kaca/RAN-GRK), RAN-API, and NDC target. To date, there is no involvement yet by the private sector, as donor or as beneficiaries. However, the fund managers have reached out to the Indonesian Business Council on Sustainable Development, an initiative led by KADIN, to develop some perspective in private sector engagement in the future.

Public Agency for Environmental Fund Management

The Public Agency for Environmental Fund Management (Badan Pengelola Dana Lingkungan Hidup/ BPDLH) is a new agency responsible for managing funds related to forestry, energy and mineral resources, carbon trading, environmental services, industry, transportation, agriculture, marine and fisheries, and other fields related to the environment, as the implementation of the mandate of Government Regulation No. 46/2017 on Environmental Economic Instruments and Presidential Regulation No. 77/2018 on Management of Environmental Funds.

BPDLH is expected to prioritize accountable fund management with international standard governance, so that it can become a solution for developed countries to provide funding. The fund will be used to fulfill GoI's role in protecting and managing the environment. It thus may also play a role in engaging the private sector in climate change adaption, e.g. through the provision of guarantees or microloans.

3.2 Overview of the Financial Sector

Sustainable Development Goals (SDGs) are mainstreamed into Indonesia's latest RPJMN 2020-2024 as an integrated part of the seventh development agenda of the country, which includes "improving the state of the environment, enhancing disaster resilience, and tackling climate change". This means the GoI must pursue its economic growth targets based on socially balanced, resource-efficient, and environmentally friendly management. However, dealing with the changing climate is not the responsibility of national governments alone. Engagement of business and investors, being the key drivers to the economy, is required.

Private sector investments to support efforts in combating climate change are not novel in the country, but mainly focus on climate change mitigation, i.e. renewable energy generation. Nevertheless, as reported by the United Nations Environment Programme (UNEP) in "Towards a Sustainable Financial System in Indonesia" the landscape of private green finance in Indonesia is still unclear. There is barely any research about the flows of green finance from private capital markets in Indonesia, including those for adaptation. [1] Responding to this absence, the Financial Services Authority (Otoritas Jasa Keuangan/OJK) and Climate Policy Initiative are conducting a study on tracking private finance for the first time. The preliminary findings of the study, which were presented at the end of 2019, highlighted the allocation of private finance for adaptation that is mostly allocated for water as well as the cross-cutting sectors, such as Agriculture, Forestry and Other Land Use (AFOLU), and infrastructure.[2]

From the public sector side, Indonesia started Climate Budget Tagging (CBT) in 2014, tracking down climate finance in the public sector. CBT helps the GoI to identify how the budget for mitigating and adapting to climate change has been allocated and spent. It allows tracking and assessing the effectiveness of government expenditures on climate change. Doing so could ultimately lead to an improved mechanism to optimize the use of public funds to leverage more private financing in climate-related investments, including developing an appropriate set of incentives and disincentives to encourage private sector engagement.

Banking

Indonesia's banking sector is continuously growing, along with the growth of the middle class and the overall population. As of 2018, there were 115 commercial banks available. Bank Rakyat Indonesia (BRI) is listed as the largest bank in Indonesia in terms of assets, has the most branches, and covers even the most remote areas in Indonesia. Rural banks play an important role in Indonesia, covering the deposit and credit services for the population living in remote areas. Rural banks' customers are characterized by a large number of individuals with small financial resources. The market is regulated by OJK, whereas the central bank of Indonesia, Bank Indonesia (BI), is responsible for foreign exchange supervision and payment systems.

Increasing resilience to the adversity of climate change requires extensive private sector financing and therefore, banks, as one of the major players in the financial sector, have a vital role. At the same time, a survey done in 2015 by the World Bank shows that access to finance is deemed a significant constraint to doing business. Despite this, the percentage of firms using banks' credit for their investment between 2009 to 2015 increased from 11% to 36%. [3] More than 60% of private firms in Indonesia are financing their fixed assets using their internal sources/equity, indicating inefficient financial intermediation. [4] Moreover, the cost of intermediation in Indonesia is high.

At the end of 2015, OJK initiated the pilot project of "First Movers on Sustainable Banking". Eight banks, representing 46% of national banking assets, committed themselves to being the pioneers in sustainable banking. These eight banks are Bank Mandiri, Bank Negara Indonesia (BNI), BRI, Artha Graha International Bank, Bank Central Asia (BCA), Bank Pembangunan Daerah Jawa Barat (BJB), Bank Muamalat, and BRI Syariah. Five other banks joined the first movers, namely Bank CIMB Niaga, Bank Syariah Mandiri, Bank OCBC NISP, Maybank Indonesia, and HSBC Indonesia. The Sustainable Banking movement serves as an excellent momentum to enhance banks' involvement in financing adaptation projects. However, there are still a few challenges to be addressed, including:[5]

1 UNEP (2015): Towards a Sustainable Financial System in Indonesia. https://www.die-gdi.de/uploads/media/Towards_a_Sustainable_Financial_System_in_Indonesia.pdf
2 Climate Policy Initiative (2019): Uncovering the Landscape of Private Climate Finance in Indonesia. Jakarta. Indonesia. http://climatepolicyinitiative.org/wp-content/uploads/2020/02/Uncovering-the-Landscape-of-Private-Climate-Finance-in-Indonesia-Preliminary-findings.pdf
3 World Bank (2019)
4 World Bank (2014): Enterprise Surveys: What Business Experience - Indonesia 2015 Country Profile. Washington DC. https://www.enterprisesurveys.org/content/dam/enterprisesurveys/documents/country-profiles/Indonesia-2015.pdf
5 WWF, 2018. Sustainable Banking in ASEAN-Sustainable Finance Report. World Wide Fund for Nature, Gland, Switzerland

a. Unclear definition of "sustainability lending", e.g. what it is, the criteria and what it means to finance adaptation projects;

b. Development of the sectors' portfolio is mainly related to mitigation. Banks are still mapping their sustainable portfolio, including those potentially relevant to adaptation. The recognition of Environmental, Social, and Governance aspects in developing their products could serve as a good starting point to expand their portfolio to provide financing for adaptation projects;

c. Need for support from OJK in raising awareness about adaptation projects, what it constitutes, potential markets, as well as sharing of success stories/best practices, to reinforce banks to develop new products for adaptation;

d. Lack of internal capacity in banks to assure the existence of a supporting and functioning internal structure while simultaneously developing their sustainable products, including those related to adaptation. Some efforts in increasing capacity include staff capacity building on Environmental, Social, and Corporate Governance (ESG), dedicating a sustainable finance division as well as risk analysts for the impact of climate change;

e. Eligible sectors for the proceeds of issuance of green bonds dominated by mitigation sectors, although banks are gearing toward developing additional green products, following the issuance of OJK Regulation No. 60/POJK.04/2017 on green bonds. Adaptation to climate change is named one of the sectors, however unclear of what it constitutes.

Microfinancing

Microfinance is the dissemination of small loans to help low-income groups who will otherwise not have access to loans, to engage in a variety of economic activities. Microfinance has been successful in reaching the poor and helping them gradually escape from poverty because of its strong competency in using scarce resources to efficiently reach the underserved. [6] In addition to commercial banking, Indonesia has a long tradition of microfinance in particular in rural areas. Microfinancing in Indonesia can be traced back to the 1970s, introduced in an attempt to increase agricultural production. The scheme gained name since the government, through BRI, launched SIMPEDES (savings account) and KUPEDES (lending product). Microcredits proved to be resilient despite the financial crisis in 1997-1998 that resulted in tremendous damage to financial institutions in Indonesia. To date, the microcredit scheme continues to expand as a government initiative

Microloans, also microcredits, are typically provided through MFIs. People's Credit Bank (Badan Perkreditan Rakyat/BPR), is a generic term for various sorts of rural banks. Their microfinance division and cooperatives are the main forms of MFIs in the country. [7] There are more than 1.6 thousand rural banks in the country. Major advantages of the MFIs are the proximity and knowledge of the clients' profile and demography, and more flexibility in supporting financial inclusion.

The size of microcredit varies and can go up to IDR 250 million. A nation-wide famous microcredit scheme is People's Business Credit (Kredit Usaha Rakyat/

6 Ofori-Adjei. A.B. (2007): Microfinance: An Alternative Means of Healthcare Financing for the Poor. Ghana Medical Journal
7 Government of Indonesia (2013): Law No. 1/2013 on Microfinance Institutions

KUR). KUR is very useful for small businesses and can also be used to finance climate-proofing efforts in business. This could be done by developing and offering microfinance products explicitly dedicated to increasing businesses' climate resilience. KUR is distributed by fifty financial institutions in Indonesia, bank and non-bank, with BRI as the biggest KUR distributor. As per January 2020, BRI has distributed more than IDR 11 trillion, growing almost twofold since 2018. More than 90% of the distributed KUR by BRI was used for microfinancing (KUR Mikro). [8] KUR is mainly utilized in the trade sector (42%), followed by agriculture and forestry (28%). [9]

Microfinance in Indonesia is expected to drive community empowerment and business development, including MSMEs. They offer products such as microcredit and microsavings. [10] The microcredit is eligible for all sectors, from small-scale agriculture to trade and industry. However, specific adaptation focus has not been considered.

Both BPR and the national banks owned by central and local governments could intermediate the government priority programs through a direct assignment. For instance, BRI executed former BIMAS (Bimbingan Massal), a mass guidance program to boost food self-sufficiency. In addition, national banks are mandated by the law to provide capacity building on business development. BRI runs BRIncubator with a number of Rumah Kreatif BUMN (SOEs' Creative House) to improve the MSMEs' business development capacity. BRI could provide access to clean water in rural areas if required. Both are currently CSR initiatives but initiatives like this may potentially be linked to their line of financial products. [11]

Village Fund and BUMDes

Village is the smallest government administration body with authority to regulate and manage the interests of the community and the climate measures. In 2015, the central government launched a Village Fund transfer, to support village development and community empowerment.[12] The fund aims to close the infrastructure gap between rural and urban areas, improve rural access to vital community services, boost social welfare, and serves as an opportunity for villages to increase their resilience toward climate change.

In the current RPJMN 2020-2024, the GoI has allocated IDR 329 trillion to be transferred to 75,954 rural villages (PDDI Kemendesa, 2020). For the fiscal year 2020, the GoI allocates IDR 72 trillion, or on average IDR 960 million for each village. [13] Ministry of Villages, Disadvantaged Regions, and Transmigration issues a regulation to guide the formulation of priority programs utilizing the village fund. [14] The advised priority programs include construction, operations, and maintenance of village facilities and infrastructures supporting the villages' social and economic development. These include food security, water and sanitation, and health sectors as priority areas for adaptation.

Through the Village Fund, the GoI promotes the establishment or strengthening of BUMDes (or joint BUMDes for that of the cross-border village), to contribute to the village income toward self-sufficiency. During the planning, implementation, monitoring, and evaluation processes, the GoI encourages community participation, including the private sector, to enable the BUMDes into the national supply chain. [15] It is expected that more than 46,000 BUMDes (more than 61% of total villages in Indonesia) are established across Indonesia by December 2020. [16]

Proposal of activities using the village fund should be included in the annual Village Government Work Plan (RKP Desa) and expenditure plan, accommodating the community's needs and interests. However, the village governments are facing challenges in identifying priority development programs. This could be a momentum to include adaptation-related activities to increase the villages' awareness and implementation of prioritized adaptation measures.

8 The other 10% are used for KUR Retail and KUR Migrant Worker, Bank Mandiri (2020): People's Bussiness Loan - Kredit Usaha Rakyat. https://www.bankmandiri.co.id/en/kredit-usaha-rakyat-kur- Note: The other 10% are used for KUR Retail and KUR Migrant Worker

9 Kementerian Koordinator Bidang Perekonomian Republik Indonesia (2020): Kredit Usaha Rakyat - Data Realisasi KUR sd 31 Jan 2020. http://kur.ekon.go.id/realisasi_kur/2020/1

10 Charitonenko, S. & Afwan, I. 2003. Commercialization of Microfinance: Indonesia. ADB

11 Interview with BRI (2020)

12 Govt. Regulation No. 60/2014 on Village Fund originated from State Budget and Govt. Regulation No. 43/2014 on Implementation Regulation on Village Law

13 Ministry of Finance (2020) Januari, Dana Desa Siap Dicairkan untuk Desa yang Memenuhi Syarat. Issue 28/01/2020 in April 2020 the Government refocused the fund, made it eligible for social security net affected by COVID-19

14 Minister of Villages, Disadvantaged Regions, and Transmigration Regulation No. 11/2019 and Minister of Finance Regulation No. 205/PMK.07/2019 for the fiscal year 2020.

15 CNBC Indonesia (2019) Jokowi Geram! Ribuan BUMDes Mangkrak. Issue on 19 Dec 2019

16 Aryudi, D. (2020): Bumdes Banyak yang Mangkrak,Rudy Suryanto : Nasib Desa Tidak Akan Berubah, Kecuali Warga Desa Itu Sendiri yang Merubahnya. https://blog.bumdes.id/2020/01/diskusi-resolusi-bumdes-2020/

Digital Banking for Impact Investing

The broader community in Indonesia has easily accepted the practice of digital banking. The e-wallet market size in 2018 reached USD 1.5 billion and is expected to grow up to USD 25 billion in 2023. [17] The growing market is presenting opportunities on several fronts. For traditional banks, this would be an avenue to reach clients without having to be physically present and simultaneously increase the number of clients. When it comes to green private investment, especially from individuals, digital banking serves as critical infrastructure to accommodate digital impact investment, such as crowdfunding.

Impact investment is an investment made into companies, organizations, and funds to generate social and environmental impact alongside a financial return. [18] Impact investment in Indonesia started in 2007, but has expanded with speed since 2013. Indonesia is known as the largest market for impact investing in Southeast Asia. PIIs have mobilized USD 148.8 million since 2007 across 58 deals. Agriculture is one of the most attractive sectors for PIIs, mainly targeting Indonesian products, such as cacao and coffee. It constitutes 27% of all deals and 10% of all impact capital deployed in Indonesia. Most debt investments in agriculture have targeted cooperatives, whereas equity deals have targeted enterprises that work closely with farmers to provide them end-to-end. [19]

Box 7: Financial literacy

Financial Literacy

The lack of understanding of adaptation to climate change, combined with the lingering high level of financial illiteracy, has to a certain extent affected the uptake of banks loans and insurance products in Indonesia. According to the survey on public financial literacy done in 2013 and 2016, there is a linear relationship between financial literacy and the use of financial products and services. The role of the financial industry in Indonesia has increased in supporting community welfare and economic development, especially through savings and lending.

Savings account is the most known and used financial product by the public, or 99.3% of the total respondents. The number of savings accounts at commercial banks increased from 82.7 million in 2013 to 199.3 million accounts in 2016. This represents an increase of 141% in nominal term, amounting to IDR 4,900.3 trillion, or in average savings of IDR 24.6 million for each account. However, when it comes to insurance products, only 60% of the respondents were aware of their existence. There is still a lack of understanding and awareness about risks among the Indonesian citizens. This includes risks on their livelihoods due to the impacts of climate change, shown by the negligible knowledge about agricultural insurance of only 0.7% of the respondents. With respect to credit, pawning is more known by the public. Nevertheless, the amount of bank loans has increased over time, amounting to IDR 4,709.5 trillion, in 2016. People's Business Credit or KUR, aimed at supporting MSMEs, is known by 24.6% of the respondents.

17 Statista.com (2020): Largest banks in Indonesia as of Q2 2018, by total assets. https://www.statista.com/statistics/830681/indonesia-top-banks-by-total-assets/
18 GIIN (2018)
19 GIIN (2018)

3.3 Development of Sustainable Finance in Indonesia

OJK is leading the movement of Sustainable Finance in the country, which serves as a response to making progress toward the SDGs and coping with climate change. The Sustainable Finance Roadmap, which was published in 2014, provided a starting point to raise awareness and build capacities in the financial industry needed to develop sustainable financing practices.

Figure 7: Sustainable Finance movement in Indonesia

One of the major milestones of the roadmap is the issuance of the new OJK Regulation 51/POJK.03/2017 on Sustainable Finance Implementation for Financial Institutions, Listed Companies, and Public Companies. The regulation aimed at increasing awareness and commitment to implement sustainability principles and develop sustainable finance products, including to provide sources of financing necessary to achieve the SDGs and financing responses to climate change in sufficient amount. Through this regulation, OJK encourages financial services actors in creating and developing sustainable product innovations, as well as supporting financing of production activities that can create economic growth, social justice, and environmental quality improvement. This objective could serve as a firm foundation to develop further financing products for adaptation-related projects.

However, the implementation of the regulation did not go unchallenged. Some issues that need to be addressed would include:

1. **The Absence of Green Taxonomy:** OJK Regulation 51/2017 mentioned that the application of Sustainable Finance should also be viewed as a concrete step toward realization of Indonesia's commitment to climate change mitigation and adaptation. However, an official definition of what constitutes as green, and specifically adaptation, is still missing. The technical guidelines of OJK Regulation 51 have only mentioned a list of potential sectors and their examples. While sectors related to mitigation are elaborated, it is not the case when it comes to adaptation. Furthermore, these examples cannot and should not be deemed as a definition.
2. **Development of Adaptation Portfolio:** OJK has neither obligation nor power to define the sustainable portfolio to be developed by the financial industries. Nevertheless, the absence of green taxonomy could (if not already) delay the development of adaptation sector portfolio. Banks are individually mapping the sectors,

identifying those with most market while simultaneously developing internal capacity. Mitigation has gone through, to a certain extent, a positive market transformation, where investors see profit and financial institutions found its market. While interest and opportunities are growing in adaptation, the market is still in its infancy and nowhere close to the transformation that happened in the area of mitigation.

- **Unclarity about incentives:** Fiscal and non-fiscal incentives with regard to the implementation of sustainable banking must be developed by the MoF. To date, there is no clarity of what the incentives look like. A few incentives have been provided by the OJK, including: 1) Non-fiscal incentives (in cooperation with international donor): training, investment guide in green projects, and support in the development of the pilot project; and 2) Fiscal incentives: awards and discount to the listing cost of green bonds.
- **Difficulties in Maintaining Coordination:** A coordination forum on sustainable finance was launched as part of the roadmap. However, due to internal reshuffle, the forum has been inactive since September 2019. Evaluation on the progress of sustainable finance implementation will rely on the mandatory reporting process, regulated under Article 10 of OJK Regulation no. 51.
- **The Absence of Standardized Approach:** The regulation has successfully facilitated the initiation of the Sustainable Banking movement in Indonesia. As a start, the regulation meant to attract financial institutions to be part of the movement, refrained from imposing additional burden. It relied heavily on the ability of banks, especially those which are parts of the Indonesia Sustainable Finance Initiative (ISFI), to develop the transformation pathway. However, once the regulation is implemented more widely, and more success stories are compiled, it may be worth considering a refined version of the regulation which could include a set of minimum standardized requirement and thus could easily be followed and adopted by other banks and other financial institutions, fostering a more systematic implementation of sustainable finance.

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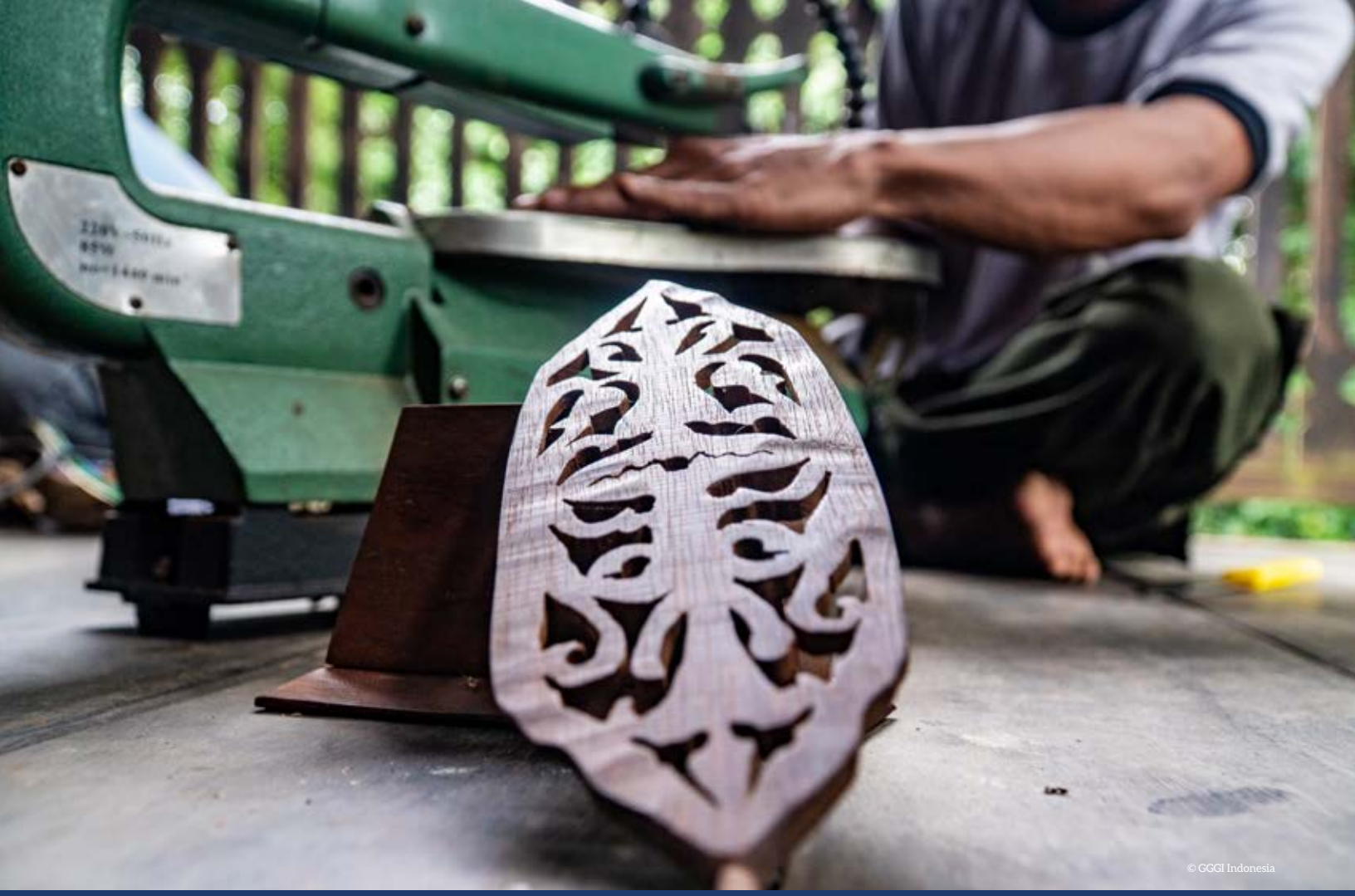

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04 SELECTED INSTRUMENTS FOR PRIVATE SECTOR ENGAGEMENT IN CLIMATE CHANGE ADAPTATION

Based on the status quo of private sector engagement, the current status of the financial sector, and the legal and regulatory framework in Indonesia, this chapter introduces and discusses the status of application and suitability of typical instruments facilitating private sector engagement. This includes debt instruments (4.1), business conduct approaches (4.2), as well as insurance and guarantees (4.3).

4.1 Debt Finance Instruments

Businesses who want to engage in climate change adaptation generally have two financing options: 1) Equity, i.e. ownership in a company's assets through, for instance, venture capital, stock, or partners; and 2) Debt, i.e. capital that is borrowed, for instance, from a bank. Focus here is given to debt instruments.

Figure 8 provides an overview of typical debt financing options, covering lending (both micro-and larger-scale loans), (green) bonds, and PPPs, all of which will be detailed further below.[1]

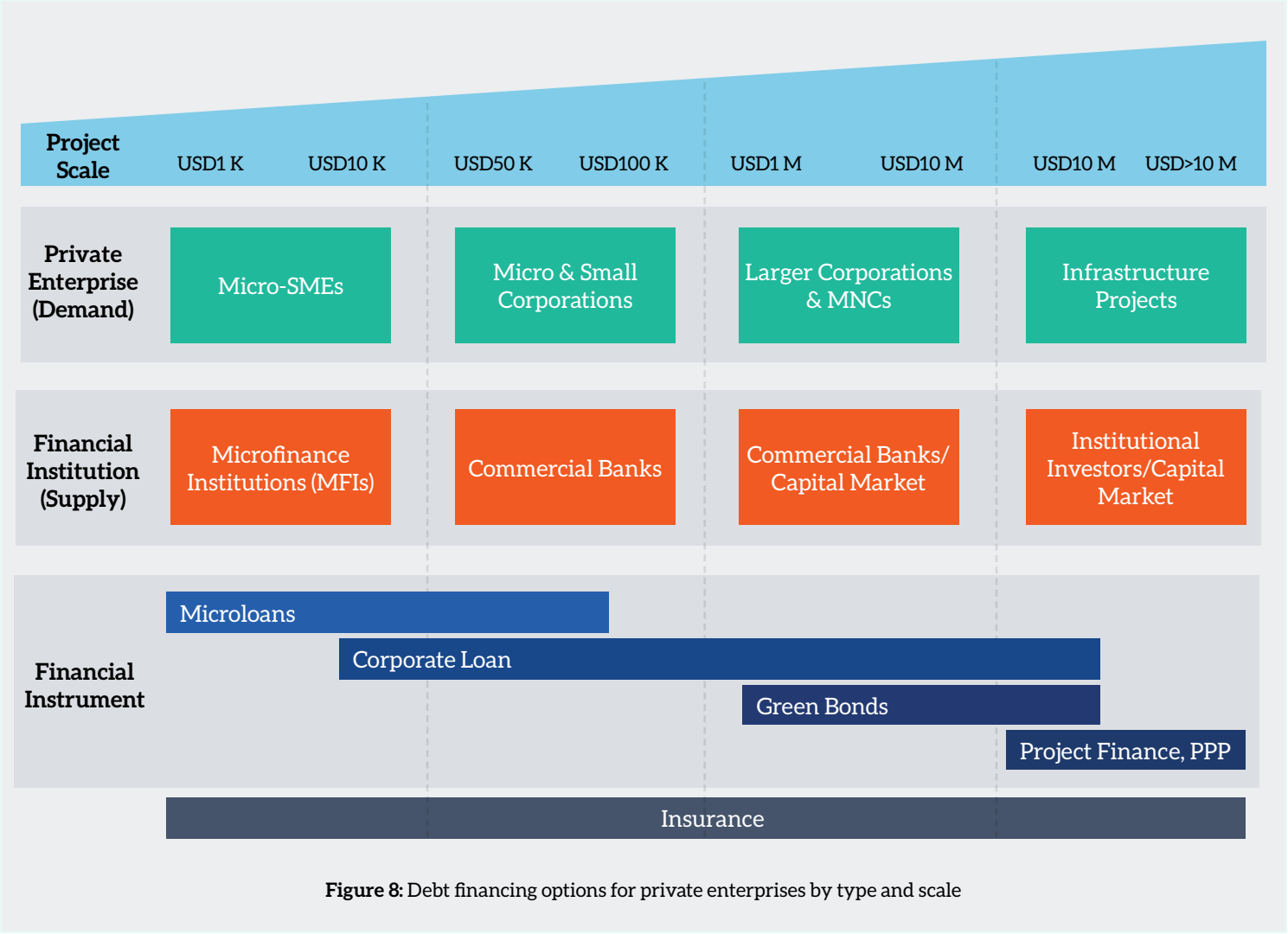

Figure 8: Debt financing options for private enterprises by type and scale

1 Adapted from: Druce, L., Moslener, U., Gruening, C., Pauw, P. & R. Connell (2016): Demystifying Adaptation Finance for the Private Sector; UNEP Finance Initiative, German Federal Ministry for Economic Cooperation and Development (BMZ), German Development Corporation (GIZ), Frankfurt School UNEP Collaborating Centre for Climate & Sustainable Energy Finance, The German Development Centre (DIE) and Acclimatise, p.6

4.1.1 Microloans

As discussed in Chapter 3.2, microfinance is the dissemination of small loans to help low-income communities who will otherwise not have access to loans, to engage in a variety of economic activities. Given its popularity in Indonesia, they constitute an essential finance instrument and catalyst to engage especially micro-and small-scale businesses in climate change adaptation. While it is less suitable for more capital-intensive investments, it can help MSMEs to invest in rendering their business processes more resilient. It is especially relevant to the agricultural sector, in which a high number of small-scale businesses, such as smallholder farmers are operating. Microloans can be used, for instance, to cover the premium of agricultural insurances, to purchase more resilient seeds, or to invest in climate-smart farming technologies and irrigation solutions. However, MSMEs in other sectors can also use this mode of finance to improve their climate resilience and climate-proof their business. A major advantage of the "Indonesian government-led type" microloan is its flexibility to respond to the various demands of customers.

A major challenge to be overcome for tapping the full potential of microfinance in the context of climate change adaptation is, however, the lack of underlying assets of farmers which still hinders access to these loans. In 2019, of 200 farmers applying for a micro loan, only 100 passed the screening processes. BPR or cooperatives need the collateral, while the state-owned bank BRI provide non-collateral community business credit (KUR). By easing the requirements to access funds, especially on the side of BPR, with its wide distribution and outreach, more farmers could be reached. There is also a potential in combining microfinance with microinsurance. With the current level of climate change awareness, its impacts and consequences for business is low and not sufficient. This refers to both businesses and the rural banks/ MFIs themselves, as the latter often lack awareness and knowledge of climate-related risks. [2] To increase awareness, the topic of climate change could be included by extension service providers, business incubators such as the BRIncubator, and in other existing and planned programs focusing to improve business development capacity and financial literacy. The latter constitutes another important challenge, especially in more remote areas, despite a positive trend of increasing financial literacy in the country. The link between financial literacy and private sector engagement in climate change adaptation may not be obvious at the first glance. It constitutes, however, one important pillar and enabler to access external finance in general and microfinance in particular.

Microfinance can also be interesting for an adaptation action in the health sector, for instance in the context of prevention measures with respect to sanitation, as the example from MercyCorps demonstrates (see Box 8). [3] This particular case shows that the debtor must not necessarily be a business to get the private sector engaged in climate change adaptation. Instead, a private sector actor's contribution can lie in the provision of products or services that help increasing climate resilience, while the microfinance helps to create the market, especially the demand and spending capacity.

Box 8: Program of Urban Sanitation and Hygiene Promotion

Program of Urban Sanitation and Hygiene Promotion (PUSH), Indonesia, MercyCorps

In 2009, MercyCorps initiated a project in poor urban regions in Jakarta that aimed to provide low-cost and environmentally friendly sanitation solutions and to increase awareness of economic, health, and environmental benefits of improved sanitation. All elements were implemented by the private sector. For the development and production of septic tanks, sludge removal mechanisms, and storage solutions, the Indonesian Environmental Engineers Association (Ikatan Ahli Teknik Penyehatan dan Teknik Lingkungan Indonesia/IATPI), local businesses, and craftsmen were involved. A local MFI played a key role as it provided instalment payment options to households for buying the septic tanks. The MFI was also responsible for the marketing, sales, and hired contractors of the installation.

Lastly, MFIs currently are not integrating climate-change-related risk criteria into their pre-screening mechanism when evaluating loan applications. While doing so would increase transactions costs, this can, at the same time, reduce the risk of loan defaults and thus related costs. Furthermore, it can contribute to increased awareness of small businesses about climate-change-related business risks.

2 Interview Syngenta, 16.01.2020
3 MercyCorps (2011): Private Sector Engagement. A Toolkit for Effectively Building and Sustaining Program Partnerships with the Private Sector. https://www.mercycorps.org/sites/default/files/2020-01/Private%20Sector%20Engagement%20Toolkit_%20August%202012.pdf

4.1.2 Corporate Loans

Around 56% of large companies in Indonesia make use of bank loans or formal credit lines, whereas only 25% of MSMEs use formal credit. [4] **As of 2018, lending rate on average is 10.5%,** [5] **while deposit is 6.1%.**[6] Domestic credit provided to the private sector by banks accounts for 32.7% of the GDP. [7] The number is comparably lower than of its peer countries, such as Malaysia, Thailand, and Viet Nam, as well as the East Pacific region, at 120.3%, 112.5%, 133.3%, and 139.3% respectively. [8] Real lending rates are generally high in comparison to peer countries, at the same time lending is mostly short-term, from 3 to 7 years. Such conditions are deemed as a constraint for green investment.

A UNEP study on sustainable finance in Indonesia revealed that only 56% of all MSMEs in Indonesia have access to formal financial institutions, mainly due to lack of information about borrowers and collateral restriction. [9] Therefore, MSMEs rely heavily on own funding or alternatively seek informal lending with relatives, friends, or loan sharks. The lack of access to bank finance is seen as a major barrier toward green investments by MSMEs.

The banks, as one of the major players in the financial sector, have an important role to play in enabling the transition toward a greener economy that is resilient to the adverse impacts of climate change. To date, there are no specific loan products for adaptation at any banks in Indonesia. Although, based on the assessment of the type of investments that were pre-financed by the banks, it is not uncommon to find activities which are relevant to, but not labelled as, adaptation. With the issuance of OJK Regulation 51, the banks, members of the ISFI, or referred to as the "first movers", have started their transformation pathway to become sustainable banks, applying the eight sustainability principles. Accordingly, these banks have started to refine their credit policies and requirements for approval in adherence to the sustainability principles. Integrating adaptation into the sustainable banking in a systematic way has a great potential for further targeting and implementing adaptation projects by the private sector.

Banks are required to be highly selective when financing green projects, particularly due to the high initial investment and risks, as well as the long-term nature of most green projects. While guided under the regulation, there is, however, no minimum standards for implementation for the participating banks, i.e. requirements related to sustainability differ from bank to bank. Some banks, for instance, would require an assessment of environmental management performance known as the Public Disclosure Program for Environmental Compliance (PROPER), [10] others are happy with the project's environmental assessment, and some would require a feasibility study that includes climate risk assessment. A more precisely formulated and targeted regulation explicitly formulating requirements or standards for climate change risk considerations could have positive effects both for the banks by reducing their risks and for the businesses by being forced to look actively into this subject.

The sustainable finance roadmap, which was part of the implementation of OJK Regulation 51, also resulted in two green lending sector guides for palm oil and energy. No information is available regarding the upcoming priority sectors. Banks are currently mapping the potential sectors to develop their sustainable portfolio while also developing new green products, fostering institution-wide capacity building, and adjusting their internal structure to be able to respond to the practice of sustainable banking.

Key challenges that need to be overcome to effectively use corporate loans to facilitate the uptake of climate change adaptation action by the private sector include:

a. There is no specific loan scheme explicitly dedicated to climate change adaptation;

b. The loan conditions often do not sufficiently correspond to the investment size and the need for long-term financing of green projects;

c. There is a lack of best practice examples (champion projects) that could support banks to build trust toward the potential and level of success of adaptation-related projects;

d. Banks require at least 35% of the total loan as individual contribution of the debtor. Due to the big size of pre-financing required by adaptation projects, debtors are having trouble providing this level of own contribution to the adaptation project loan;

e. There is a lack of a stringent due diligence process, especially when it comes to ESG.

4 World Bank (2014)
5 World Bank (2019)
6 World Bank (2019)
7 World Bank (2019)
8 World Bank (2019)
9 UNEP (2015)
10 A scheme for businesses on the assessment of environmental management performance issued by the Ministry of Environment and Forestry

4.1.3 Public-Private Partnerships

In simple terms, PPPs are formalized and longer-term oriented cooperation between public and private sector actors, particularly in the context of infrastructure development. Despite the difference in both definition and implementation practice, some elements or core components characterizing all PPPs include: [11]

a. The partnership formally defines roles and responsibilities of the public and the private partners;

b. Risks are shared and allocated between the private and public sector actors along a range of different mechanisms according to suitability;

c. The private partner(s) usually are rewarded financially according to the risks and responsibilities they take over;

d. The private sector takes part in supply of assets and services that are traditionally provided by the government, such as road and transport, energy, schools, hospitals, etc.

PPPs constitute a common and proven approach to crowding in private investments, overcoming public financing gaps, to drive innovation, and gaining efficiency and cost reliability. [12] They play a key role especially in infrastructure development and, as such, can be used as an instrument to increase private sector engagement toward a climate-resilient society.

The array of potential applications for PPPs in combating climate change is wide. Important thematic areas include resilient infrastructure, natural resource management, and climate innovation. PPPs offer the opportunity to leverage additional resources that may be necessary to mobilize investments into large-scale infrastructure development, to develop and open up new green markets, to showcase successful projects that deliver social and environmental benefits, or to stimulate green entrepreneurship. [13] Thus, PPPs can catalyze climate change adaptation, especially in the context of climate-resilient infrastructures and innovations that increase adaptive capacity of the society at large. The following box provides some international good practices for PPP in climate change adaptation.

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11 Norden (2016): Public-Private Partnerships for Climate Finance. Copenhagen; Pereira, J. (2017): Blended Finance. What it is, how it works, and how it is used. Research report

12 Alfen, H.W.; Kalidindi, A.N.; Ogunlana, S.; Wang, S.; Abednego, M.P.; Frank-Jungbecker, A.; Jan, Y.A., Liu, Y.; Singh, L.B.; and G. Zhao (2009): Public-Private Partnership in Infrastructure Development. Case Studies from Asia and Europe. Bauhaus-Universität, Weimar

13 Norden (2016): Public-Private Partnerships for Climate Finance. Copenhagen

Box 9: International examples of PPPs in climate change adaptation

Enhancing Farming Productivity during Dry Season in Mangdan, China[14]

In 2015, a build-operate-transfer PPP project was launched in the Mangdan village, aiming to face the scarcity of local water resources. The actors involved were a private company and the local community, who signed an agreement under the supervision of the city government. The agreement was provided for the construction of two pumping stations by the company, which also provided for maintenance, one of which was transferred to the local community. In return, the local community leased out to the company 37 hectares of farmland in the hills for 10 years for free for the first six years and at a rate of USD 1,200/ha for the remaining years. The income from the land goes to the company, which sub-leased the land to a local farming company at a value of USD 2,400 to 2,880/ha. Farmers in Mangdan village formed an irrigation cooperative (community irrigation committee and the farmers) to run the pumping station and coordinate irrigation. The community irrigation committee was responsible for coordinating irrigation and collecting irrigation fees, setting an irrigation fee at USD 24/ha, and local governments guaranteed a 37% discount on the cost of electricity to support this innovative demonstration. The PPP has consistently allowed the supply of irrigation water for local off-season vegetable production.

Stormwater Management and Road Tunnel (SMART) in Kuala Lumpur, Malaysia[15]

In order to deal with the increasing frequency of flash flooding in Kuala Lumpur, a PPP was developed that aimed for the construction and operation of a dual-purpose tunnel under a regular road, serving as both toll road to reduce and avoid congestion and as stormwater storage to mitigate flooding. The PPP consisted of two private businesses and the Government of Malaysia. One of the private businesses was an engineering and construction company, the other a mining company, which together formed a joint venture to operate the toll plaza under a concession of 40 years. The government (the Malaysian Highway Authority and the Department of Irrigation and Drainage) maintained ownership of the tunnel and the land it was built on. The construction of the almost 13 km long tunnel commenced in 2003 and was completed in 2005. Overall costs for construction was USD 510 million, of which 2/3 was covered by the government and 1/3 by the private sector consortium. The PPP allowed to effectively lower costs on the side of the government, facilitated speedy infrastructure development and provided a viable solution for two critical challenges. Both functions, flood relieve and congestion reduction, proved to be effective since the tunnel's operation.

14 Zhang, L., Hu, J., li Y. & N.S. Pradhan (2018): Public-Private Partnership in Enhancing Farmers' Adaptation to Drought: Insights from the Lujiang Flatland in the Nu River (Upper Salween) Valley, China. Land Use Policy, 71(2018), 138-145

15 Gardiner, A., Bardout, M., Grossi, F. and S. Dixson-Declève (2015): Public-Private Partnerships for Climate Finance. University of Cambridge, Ecofys, and Norden; Denmark

PPPs in Indonesia

Introducing the PPP scheme as early as 1985, the initial regulation underwent reforms and adjustments until today. [16] In the meanwhile, **PPP became an established instrument to advance infrastructure development with more than 130 closed projects (investment volume USD 63.3 billion),114 active projects (investment volume USD 56.6 billion), [17] and more than 30 projects in the pipeline.** [18] The country supports both solicited and unsolicited PPP projects, covering 19 sectors along three themes: connectivity, urban infrastructure, and social infrastructure.

Indonesia is promoting its PPP scheme intensively as to advance its ambitious infrastructure development objectives. In order to boost PPP attractiveness, the country has, among others, established a Viability Gap Fund (VGF) in 2018. VGF is a support instrument which provides financial contributions to PPP projects which use the 'user-pays principle' to improve its financial viability and effectiveness. The contribution is be given to the PPP project in cash in order to partially fund the construction costs of PPP projects. It is required, however, that VGF funding does not dominate the construction costs of the project. An example is the SPAM projects in Umbulan (see Box 10), Semarang, and Bandar Lampung. The fund provides a subsidy on the water tariff in order to ensure that the tariff meets the consumers' capacity to pay while still remaining economically feasible for the developer.

The number of bidders in Indonesia reflects that **PPPs are highly attractive to the private sector.** Following the success of the Umbulan project, projects in Bandar Lampung and Semarang have received increasing numbers of bids, even from a foreign company in Semarang. In the case of the SPAM project, the private sector has been convinced that 1) water is a vital object with sufficient demand worthwhile investing into; and 2) the VGF support has minimized risks on tariffs, securing economic viability.

© William Manuel/Unsplash

16 Bappenas (2011): PPP Policy and Regulation in Indonesia, presentation
17 PPP Knkowledge Lab (2020): Indonesia. The World Bank Group. https://pppknowledgelab.org/countries/indonesia
18 Bappenas (2020): PPP – Project Digest, presentation

Box 10: PPP examples in Indonesia

Drinking Water Supply System in Umbulan, Indonesia[19]

An example of a successful PPP (despite its long lead time of 40 years) is the development of the regional drinking water supply system (SPAM) in Umbulan. The objective of the project was to provide drinking water from springs serving 1.3 million people of Pasuruan City, Pasuruan Regency, Gresik Regency, Sidoarjo Regency, and Surabaya City. Under the PPP scheme between East Java Provincial Government as the Government Contracting Authority (GCA) and PT Meta Adhya Tirta Umbulan as the business entity, the project was implemented with an investment value of IDR 2.05 trillion (USD 143 million). The contribution of the VGF was IDR 818.01 billion, while the business entity contributed IDR 369.59 billion, and the remaining part was financed through a bank loan.

Karian Dam, Banten, Indonesia

Another specific example for the water sector relates to the Karian Dam in Banten province which is under development. It is expected to irrigate 21,454 ha of land, providing 9.10 m^3/second raw water supply and generating 0.65 MW electrical power. In this context, an unsolicited PPP is under discussion for the development of a water treatment plant and transmission pipeline to the various offtakers in the wider Jakarta region, with estimated costs of approximately USD 172 million. The project involves several lenders, such as Korean ECA (K-EXIM), local banks, multilateral development banks and international banks, and the projected equity (30%) holders K-Water, LG International, and Adhi Karya. Furthermore, this is combined with a guarantee scheme provided by the Indonesia Infrastructure Guarantee Fund (IIGF) and a tariff and purchasing agreement with the offtakers.

Advancing Climate Change Adaptation through PPPs

Given the solid ground the concept of PPPs has gained in Indonesia, PPPs are a promising instrument to include the private sector in climate change adaptation both from public and private sectors' perspectives. Given its focus on infrastructure and large-scale investments, the potential areas of application within the priority adaptation areas should be elaborated in more detail, especially with respect to the key intervention items, both infrastructure and technology, identified in Indonesia's NAP, for instance (Table 4):[20]

Table 4: Potential intervention areas for PPPs

Priority Areas	Potential PPP-Supported Intervention
Agriculture	• Construction and maintenance of dams, retention basins, and detention ponds, which are needed for irrigation; • Construction and maintenance of irrigation networks; • System of piping and shallow well, irrigation systems.
Water	• Vegetation management at upstream area; • Construction and structure adjustment for rain harvesting/ provision for alternative sources of clean water.
Health	• Increase capacity and number of health facilities (e.g. hospitals); • Fogging (large-scale dengue vector extermination); • Development and operation of DBD-Klim[21] early warning & information system to prevent outbreak (daily reporting system).

To effectively make use of PPPs in the context of climate change adaptation, however, a number of challenges need to be addressed and overcome. Although the scheme as such is well established and the GoI has given priority to projects that help achieving the SDGs, climate change has not made it onto the top of the PPP agenda. Accordingly, there is a lack of incentive for the private sector to develop PPP projects that specifically aim to address climate change adaptation, while on the government side, a pipeline for potential PPP projects explicitly aiming for increased climate resilience is still missing. It is necessary to develop and implement a systematic process for the integration of climate change adaptation into PPP planning and establish a dedicated project pipeline while at the same time making climate resilience a criterion in selecting and prioritizing PPP projects.

19 Interview with PDPPI, 08.01.2020
20 Based on: Kementerian PPN/Bappenas (2019): National Adaptation Plans Executive Summary 2019
21 Indonesian Early Warning Program for Climate-Based Dengue Fever (DBD-Klim: Demam Berdarah Dengue-Iklim)

Furthermore, experience suggests that it is still difficult for local governments to apply PPP, due to the complexity of the procedures. In consequence, local governments prefer opting for CSR schemes to fund their activities leading to their development targets rather than PPPs. Support from the national government is needed to facilitate the development of projects and to ease the PPP process. The latter also applies with respect to seeking for ways to shorten the time horizon, given that the PPP process can take a long time from proposal stage to financial closing, which might cause insecurities on the investors' side. Here, the support from international organizations may also be sought.

4.1.4 Green Bonds

Bonds are debt instruments used to finance projects. The difference between conventional bonds and green bonds is in the proceeds of green bonds, which are earmarked for environmentally beneficial investments, including those for climate change adaptation. Sustainability bonds are similar to green bonds, but need to fulfill additional criteria of social bonds. [22] Green and sustainability bonds can be issued by either public or private sector actors up front to raise capital for green or sustainability projects or for refinancing purposes, freeing up capital and leading to increased lending. They can be structured as asset-backed securities tied to specific green or sustainable infrastructure projects, but to date have most commonly been issued in the form of "use-of-proceeds" bonds that raise capital to be allocated across a portfolio of green projects.

Due to the dedicated use of the respective funds (with a tendency to finance low-carbon assets), green and sustainability bonds can contribute to reduce transition risks in finance that emanate from the shift to a low-carbon, climate-resilient economy. Green and sustainability bonds, furthermore, may also support such risk reduction through the implicit signal that an issuer sends to its investors as well as through the likely increase of transparency in terms of the disclosure of specific climate-related risks.[23]

With the global blooming of green and sustainability bonds, interested investors are faced with the challenge whether such bond is truly keeping its promise, i.e. avoid cases of greenwashing and/or misleading claims about how green the issuer of the green bond is. To address this, regulators have started to work on standards for green and sustainability bonds, for example the Climate Bond Standard by Climate Bond Initiative [24] or the European Union standard and certification scheme for green bonds. [25] In Asia, as part of the ASEAN+3 Bond Market Forum, of which Indonesia is a member, an ASEAN Green Bond Standard has recently been developed in collaboration with the International Capital Market Association (ICMA) based on ICMA's Green Bond Principles (GBP).

Today, Indonesia's corporate bond market is one of the smallest in Southeast Asia, with IDR 441 trillion, or about 3% of Indonesia's GDP (2018). The corporate bond markets of the Philippines, Thailand, and Malaysia in comparison, equal about 8%, 21%, and 46% of their respective GDP. [26] However, when it comes to green bonds, Indonesia is well advanced, even winning the Environmental Finance Bond Awards 2019. Green Bonds can be an effective instrument to engage the private sector in Indonesia. On the one hand, the government can, just as with its successful green sukuk, attract investors from around the world to invest into government-led adaptation measures. On the other hand, corporate bonds dedicated to climate change provide a significant source of external finance for adaptation measures, be it for the development of products and services or for rendering business processes more climate-resilient. The size of bonds, however, is suitable particularly for large-scale investments such as the setup of manufacturing or production facilities and infrastructure in general. The context for issuing green bonds can be considered favorable, issuers are not bound to IDR, foreign investor registration is not required, and the involvement of foreign

22 For a distinction and the relevant criteria, see https://www.icmagroup.org/green-social-and-sustainability-bonds/
23 WEF (2018): Can green bonds help us manage climate risk?. https://www.weforum.org/agenda/2018/10/how-green-bonds-can-help-us-manage-climate-risk/
24 Climate Bonds Initiative (2020): Climate Bonds Standard and Certification Scheme. https://www.climatebonds.net/standard
25 EU Technical Expert Group on Sustainable Finance (2019): Report on EU Green Bond Standard. Proposal for an EU Green Bond Standard. June 2019. https://ec.europa.eu/info/sites/info/files/business_economy_euro/banking_and_finance/documents/190618-sustainable-finance-teg-report-green-bond-standard_en.pdf
26 Asia Money (2019): Indonesia's bond market: a land of opportunity. https://www.asiamoney.com/article/b1j5r0zklkfbcy/sponsored-content/indonesias-bond-market-a-land-of-opportunity

investors in local debt markets is not subject to quotas. Furthermore, Indonesia's regulation on green bonds explicitly specifies climate change adaptation as one of the eleven types of eligible projects.

In the scope of this study, however, no private sector corporate green bond explicitly dedicated to climate change adaptation could be identified. This may be rooted in various challenges, including:

a. Foreign investors face currency risks that often are required to be compensated by the issuer, which can be both costly and complicated to arrange, e.g. in the context of foreign exchange hedging tools;

b. Issuing bonds does make little economic sense if the bond size is too small, i.e. when costs related to the issuance are exceeding the costs of a corporate loan;

c. Green projects, including climate adaptation projects, often are perceived as not profitable. Accordingly, there is a lack of a pipeline of bankable projects that can be financed through bond issuance;

d. Indonesia faces a lack of awareness and knowledge among potential issuers of green bonds. At the same time, there is a lack of affordable service providers that could advice on green bonds.

4.2 Business Conduct

As private sector actors seek to reduce business risks and to perpetuate profit and income generation, they should have a genuine interest to increase their adaptive capacity in the light of climate change. For this reason, management approaches specifically geared toward rendering business activities to be more sustainable, such as CSR, Business Continuity Management (BCM), and CSV, may be promising candidates to encourage private sector engagement in climate change adaptation.

4.2.1 Corporate Social Responsibility

In broad terms, CSR refers to a rather philosophical concept or set of principles, based on which a business recognizes itself as a responsibly acting member of society. Other than the term might suggest, the focus is not only on social aspects but the society at large, including not only social but also environmental issues. CSR denotes, that next to economic considerations, a business consciously takes into account, is responsible for, and tries to minimize undesirable societal and ecological impacts of its business operations. A company can use CSR as a philanthropic instrument to address issues outside of its business or take a more strategic perspective toward managing its business sustainably. Therefore, CSR can cover a wide array of activities, ranging from donations for community development to comprehensive approaches that align the business' core economic activity, strategy, supply chain, and processes with both internal and external stakeholders' needs and related environmental and social concerns.

Given the concept's intent, CSR can also play an important role in the context of the private sector's actions on climate change and climate change adaptation. CSR strategies can take a systematic approach to create or strengthen the resilience of human and ecological systems toward climate change that, at the same time, make business sense and contribute to sustainability. Businesses' fields of action may, for instance, include investments into innovative community resilience development programs, inclusive business approaches to increase the adaptive capacity of the poor, or the development of products and services reducing its own and the wider community's vulnerability to climate change impacts. [27] The following Box 11 provides international examples of CSR initiatives focusing on climate change adaptation. [28]

Box 11: International examples of climate change adaptation and CSR

Tackling Food Security, Water Scarcity, and Climate Change (Yara International ASA)

Yara is a Norwegian producer of fertilizer and agricultural solutions, producing ammonia, nitrates, and Nitrogen-Phosphorus-Potassium (NPK) as well as a member of the Alliance of Climate-Smart Agriculture. It supports farmers in its operating countries, such as Tanzania, in the development of a strategy to adapt to climate change impacts on water availability. To this end, it started assessing its own water footprint, launched research into balancing crop nutrition and water use, advising farmers on irrigation and water management. Yara also developed services and tools such as information provision, crop sensors, nutrient planning software, efficient irrigation technology, and fertigation systems to support industrial and smallholder farmers in increasing yield while reducing environmental impacts and promoting climate-smart agriculture, efficient water use, and soil preservation. Additionally, Yara is actively involved in creating an enabling environment for adaptation and enhanced resilience through its work with a network of various public and private stakeholders, including food industry and crop clinics to disseminate knowledge.

27 CSR Asia (2011): Climate Change Adaptation: Engaging Business in Asia. Sisa & CSR Asia
28 Caring for Climate (2015): The Business Case for Responsible Corporate Adaptation: Strengthening Private Sector and Community Resilience. A Caring for Climate Report: UN Global Compact, UNFCCC, UNEP, CEO Water Mandate, Oxfam, ARISE, WRI, UNEP, CDP, Four Twenty Seven, Rainforest Alliance, University of Notre Dame Global Adaptation Index

Climate-Sensitive Business Policies to Mitigate Water Risk and Ensure Financial Performance (Garanti Bank)

Turkey-headquartered T. Garanti Bank A.S. provides financial services in various segments, including corporate, commercial, SMEs, payment systems, as well as private and investment banking. The bank developed a strict environmental and social loan policy, according to which projects not complying with these criteria will be refused financing, e.g. projects too close to wetland or protected areas. Doing so, the bank reduces its own business risks and improves its long-term performance. The bank also enlarged its product portfolio by setting up an "agricultural irrigation systems loans" program, promoting sustainable irrigation systems. Additionally, Garanti Bank engages with a wide variety of stakeholders, such as civil society, public authorities, investors, communities, suppliers, and investors, in order to inform, raise awareness, and better understand each adaptation activity that is going to be or already implemented.

Improving the Climate Resilience of South African Fruit and Vegetable Farmers (Woolworths)

Woolworths is a retail group based in South Africa, selling clothing, food, homeware, and offering financial services. As part of its agriculture sustainability program, the company partnered with World Wide Fund for Nature (WWF), Marks & Spencer, and British High Commission to better understand, respond to, and communicate climate change risks and adaptation opportunities in the South African fruit and vegetable sector. The project comprises four components: i) understanding climate science in a local context through field research and stakeholder consultation; ii) practical climate adaptation for farmers through the collection of case studies to promote climate-smart agriculture along the supply chain, at the same time informing its own project "farming for the future"; iii) government dialog to inform policy-making; and iv) sharing the best practice and local climate-related information with other South African suppliers, exporters, and retailers to stimulate discussion and development of climate change adaptation strategies.

CSR in Indonesia

The notion of CSR by its conceptual nature often is considered voluntary engagement beyond regulatory requirements.[29] In Indonesia, CSR was made mandatory, initially for SOEs through Minister of SOEs Decree No. KEP-216/M-PBUMN/1999 and later enactment of Law No. 19/2003 and issuance of Regulation No. Per-05/MBU/2007. It stipulates that all SOEs have to allocate 4% of their net profit to support SMEs and communities living around the SOE. This contribution can come either in the form of low-interest loans in so-called partnership programs or through programs focusing on environmental is

With Law No. 25 and Law No. 40 of 2007, CSR was then also rendered mandatory for investments and for Limited Liability Companies, not least because many MNCs thus far were perceived neglecting their social and environmental responsibility when operating in Indonesia.[31] The law applies to all SOEs and to private domestic or foreign-owned companies operating and/or being related to natural resources.[32]

The two regulations, however, remain somewhat vague as the earlier refers to all businesses and the latter to those with direct or indirect links to natural resources. This required link to natural resources is leaving room for interpretation. [33] Furthermore, this concept of CSR remains vague regarding its scope when referring to "environmental and societal interests of the communities in which the company operates". [34] It is not clear whether this captures the wider notion of CSR and sustainable development, both of which go way beyond the local context, given that environmental and social issues are of global concern. Furthermore, the law for SOEs is suggesting that CSR is rather a question of donations and community devel

Broad empirical information on the current level and extent of application of CSR in Indonesia is scarce. A study conducted by Ridho (2017) analyzed the CSR performance of the 200 largest businesses in Indonesia (based on their annual revenue). It found that the level of application is still way below the standard set by

29 As for instance is also reflected in the EU CSR framework, CSR is "a concept whereby companies integrate social and environmental concerns in their business operations and in their interaction with their stakeholders on a voluntary basis" Com(2001)366, European Commission, Directorate-General for Employment and Social Affairs, Promoting a European framework for Corporate Social Responsibility, Green Paper (July 2001), p.7

30 Ridho, T.K. (2017): CSR in Indonesia: Company's Perception and Implementation. The EUrASEANs: Journal on Global Socio-Economic Dynamics, 3 (4), 2017

31 Maris, A. (2014): Compulsory CSR: Indonesia Takes a Tough Stance, but Clarity on Definitions is Lacking. IPRA International Public Relations Association; https://www.ipra.org/news/itle/compulsory-csr-indonesia-takes-a-tough-stance-but-clarity-on-definitions-is-lacking/

32 Ridho, T.K. (2017)

33 Maris, A. (2014)

34 Principle 3, "Responsibility", KNKG, "Indonesia's Code of Good Corporate Governance" (Jakarta: National Committee on Governance, 2006).

ISO 26000, an international standard for organizations to assess and address corporate responsibilities along 6 themes: human rights, labor practices, environment (including climate change mitigation and adaptation), fair operating practices, consumer issues, and community development. Of the companies surveyed, only 16% said that environmental issues would need to be addressed through their CSR activities, without, however, further specifying the specific issue to be tackled.

The study furthermore found that the forerunners in CSR are not the natural-resource-related businesses obliged to CSR by law but instead the financing sector, followed by the infrastructure, utilities, and transport sectors. [35] Typically, it is also large MNCs that strongly engage in CSR activities in a more comprehensive manner as consumers, shareholders, and other stakeholders especially in the companies' countries of origin became more and more critical toward large companies' business conduct. Given the limited scope of this study, however, it can rather serve as indication than providing a comprehensive picture of the actual spread and application of CSR across Indonesia. In contrast, the existence of various partnerships driving CSR fora in different regions of Indonesia (e.g. West Java, East Java, Central Java, Riau, Balikpapan) suggests a certain relevance of the concept for and prevalence within Indonesia's private sector.

Box 12: Indonesian example of climate change adaptation and CSR

Mitra Phast – Community-Based Clean Water and Safe Sanitation in Nanggerang, Indonesia **(Danone-AQUA)**

From 2010 to 2012, Danone's Indonesian subsidiary AQUA, which is a major player in Indonesia's bottled drinking water market, implemented a multi-party partnership project in the scope of its CSR activities in the village Nanggerang, Sukabumi, West Java, together with the central and local government and the NGO Yayasan Pembangunan Citra Insan Indonesia (YPCII). The objective of the program was to improve access to clean water and safe sanitation facilities. Furthermore, the program aimed for increased knowledge on and awareness of safe sanitation and hygienic behavior and water management among the residents. AQUA provided a part of the necessary funds, supplied almost 600 water meters to the initiative, and facilitated the communication between the MPW and YPCII. YPCII was responsible for community empowerment activities, such as technical and management trainings, and for project design, progress monitoring, and evaluation. The MPW provided the pipes necessary for water distribution from the respective water source (river, 12 km from the village), while the district government of Sukabumi was responsible for the physical construction of the facilities. The impact of the program was significant: access to clean water increased from 17% to 74% of residents (1,180 households), the number of diarrhea cases reduced from 20% to 11%, and open defecation was reduced as well. Overall, 47 km of pipeline were installed, 157 households provided with latrines, 1,250 families, 14 teachers, and 122 students were trained, and several schools were provided with wash basins and latrines.

CSR, thus, constitutes a valid instrument for the private sector in Indonesia to engage in climate change adaptation, also because it has a good reputation within large parts of the business community. It faces, however, a number of limitations and challenges, which keep its potential limited, including:

a. Legislation around CSR is ambiguous in terms of its scope and usually implemented to engage with local communities in the vicinity of the company's operations;

b. Although CSR can be a means to render the immediate local supply chain more resilient, it

35 Ridho (2018): The Development of CSR Implementation in Indonesia and Its Impact on Company's Financial and Non-financial Performance. ICIFEB – International Conference on Islamic Finance, Economic, and Business, Volume 2018.

is geared more toward societal contributions, gains in reputation, and legitimization of its own activities, especially at local level. Large tangible investments, such as rendering internal processes more efficient or developing new products or services, are typically not subject to CSR policies and strategies of businesses;

c. In order to be most effective, it ideally involves other organizations, such as NGOs, communities, etc. Mostly there is also no direct monetary return, but rather intangible benefits. This makes this instrument suitable mainly for large businesses with sufficient finance and HR capacity.

4.2.2 Business Continuity Management

The scope of events that can disrupt a business is wide, including cyberattacks, natural disasters, or supply chain failures. **Business Continuity Management (BCM), basically a crisis management system, aims to prepare a company for handling such eventualities**. In comparison to risk management, which focuses on risk identification, assessment of probability, and mitigation, BCM focuses on the most severe risks that may disrupt business activity and especially on how to deal with related events in a way that secures continuity. The Business Countinuity Plan (BCP) that details a system of preventing and recovering from disruptions. A BCP is a documented procedure that guides organizations to respond to, to recover from, and to resume their operations following a disruption. Over time, standards—such as ISO 22301—and guides for the application of BCM and BCP have evolved and facilitate its implementation.

BCPs therefore suggest itself as a suitable tool to increase climate resilience. Given that the biggest climate change adaptation risks are likely to derive from severe weather events, [36] this applies even more to the focal sectors of this study.

Box 13: International examples of climate change adaptation and BCM

Rapid Response to Extreme Weather (American Water)[36]

American Water (AW) is a US-based publicly traded water and wastewater utility company, providing wastewater and drinking water service in Canada and the United States. The company operates a piping system of about 45,000 miles and a vast network of treatment plants, pumping stations, and storage facilities. While it maintains a risk management system, it still has to deal with sudden events such as hurricanes or blizzards, for which its typical redundancies and back-up power are not enough to maintain the services they provide. To cope with such events, AW has developed and implemented various measures that allow the company to quickly restore services. The company cooperates with the federal, state, and local authorities, with whom it introduced an emergency response process. Furthermore, it has diversified its fuel mix for emergency fuel supply, increased its stand-by power, built redundancies into telecommunication systems, and ramped up its backstopping team, staff with non-operational responsibilities.

Climate Change Risk Matrix to Inform Operational and R&D Decisions (Bayer AG)

Bayer, one of the largest publicly traded players in the chemicals industry, active among others in pharmaceuticals and agricultural business, sees its business continuity planning as key to ensuring reliable and high-quality supplies of energy and water, and thus maintain continuity in times of severe events. Disrupting supplies of power or cooling water can force Bayer to halt its production plant for up to a week. Therefore, Bayer developed a climate change risk matrix that helps to anticipate future events and to prepare accordingly, increasing, for instance, its energy supply flexibility. Also, extreme weather and climate events are taken into account when it comes to major new investments. In coastal Caojing, China, for instance, Bayer introduced a safety program, applying the lessons learned from plant shutdowns elsewhere, with its Top Performance in Process and Plant Safety Program (TOPPS) employee safety training. It also prepared extensive plans to provide relief for its staff following any weather disasters.

36 BSI (2014): Adapting to Climate Change Using Your Business Continuity Management System. BSI & Climate Ready, London, UK
37 Crawford, M & Seidel, S. (2013): Weathering the Storm: Building Business Resilience to Climate Change. C2ES – Centre for Climate and Energy Solutions
38 Crawford, M & Seidel, S. (2013): Weathering the Storm: Building Business Resilience to Climate Change. C2ES – Centre for Climate and Energy Solutions

BCM in Indonesia

In Indonesia, practice of BCP is mainly seen in the bank lending due diligence process. In the context of obliging banks to use BCP for information technology, BI defines BCP as "policies and procedures which contain a series of planned and coordinated actions regarding steps to reduce risks, the handling of the effects of problems/disasters, and recovery processes to ensure that the Bank's operational venture and service to customers can still proceed". [39] Apart from this, BCM currently is not regulated in Indonesia but a voluntary approach, whose level of application in Indonesia is barely documented

A consultation with BRI revealed that prior to lending approval, depending on the type of investment made, banks will require debtors to provide information on a list of requirements in order to analyze the credit risks. Such documents can include, for example, feasibility studies as well as environmental impact assessments (EIA). They also include issues on management of the surrounding ecosystems, projection of climate impacts and the associated risks, as well as the planned mitigation measures. By doing so, the banks will have a better understanding if the business will be disrupted by the degraded state of the environment, natural disaster, or any climate-related events. It allows the bank to assess the risk by which the liquidity of the debtor will be perturbed. These procedures, however, are deemed as common practices of risk management rather than BCM and BCP. Nevertheless, they force the respective debtor to contemplate the effects climate change may have on its own business and to ideally develop respective mitigation measures. Moreover, with risk management being not entirely uncharted waters, there is potential to extend this practice toward BCM and BCP. This enables companies not just taking climate risks into account in their investment decisions but also helps them to have suitable responses at hand should such risks materialize, hence increasing their climate resilience. This requires, however, intensively promoting the approach among private sector actors across the different sectors.

4.2.3 Corporate Shared Value

Translating societal challenges in the context of sustainable development into business opportunities is the core message of the CSV. The concept ultimately promises to legitimize business in times of evermore critical consumers and other members of society.

CSV is defined as "policies and operating practices that enhance the competitiveness of a company while simultaneously advancing the economic and social conditions in the communities in which it operates", [40] which shows its similarity to CSR. However, it is different from CSR in that it switches the perspective and more explicitly puts in the foreground of business activity not only the generation of economic but also of social value, i.e. leveling the two objectives. While the novelty of this idea can be and is contested, [41] it received considerable attention among practitioners, think tanks, and development organizations.

Examples of shared value creation include the introduction of innovative products or services to meet specific challenges and societal needs, such as health or adaptation to climate change, or enhanced productivity through process or product solutions geared toward reducing environmental or social impacts. CSV highlights the business opportunities that are to be found in today's most pressing challenges, including climate change and its expected impacts on the society at large.

39 BI Regulation No. 9/15/PBI/2007
40 Porter & Kramer (2011): "Creating shared value," Harvard Business Review, 89 (January/February 2011): p.66.
41 Crane, A., Pallazo, G., Spense, L.J. & D.Matten (2014): Contesting the Value of 'Creating Shared Value'. California Management Review, Feb 2014

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Box 14: International example of climate change adaptation and CSV

Shared Value for Health, Agriculture, and Education (Safaricom)

In Kenya, the biggest telecommunications company in the country, Safaricom, embraced the concept of CSV. The company provides services such as mobile money, voice, text, and data transfer. Safaricom uses mobile technology to deliver shared value propositions, disrupting inefficiencies and impacting lives positively in the health, agriculture, and education sectors. It developed an integrated agriculture platform called Digifarm. The platform aims to help agribusinesses and smallholder farmers to share information and transact. The company also integrated nine of the 17 SDGs into its core business strategy, focusing on health; education; affordable and clean energy; decent work and economic growth; innovation and infrastructure; reducing inequalities; responsible consumption and production; climate action; peace and justice; and partnerships.

CSV in Indonesia

In contrast to CSR, the concept of CSV so far received little attention in Indonesia. [43] **One company communicating its CSV approach in Indonesia is one of the leading crude palm oil producers, Asian Agri. It is highlighting its initiative to provide capacity building programs for the smallholder farmers it works with.** [44] However, just because a company does not communicate its societal contribution to sustainable development as a CSV approach does not mean it is not applied implicitly by the respective entrepreneur. PT Mitra Sejahtera Developing Nation, for instance, dedicates its skills and know-how to the development and marketing of innovative farming solutions that drive agriculture 4.0 in Indonesia. Through its technologies, it has the potential to contribute to increased climate resilience of the farming business. Additionally, a recent study found that both public and private sector stakeholders prefer the term CSR even if the notion may be slightly different from CSV. [45]

Against this background and given the little attention the approach has received so far, the immediate potential can be considered rather small. Nevertheless, making this approach more known can indeed facilitate the development of products and services that help increase Indonesia's climate resilience and therefore constitutes a suitable complement to CSR worthwhile considering to promote actively.

42 Kenya Organization for Environmental Education (2019): Faith-based Education for Sustainable Development. https://koeeorg.wordpress.com/2019/09/
43 Suripto (2019): Corporate Social Responsibility and Creating Shared Value: A preliminary Study from Indonesia. International Journal of Contemporary Accounting, 1 (1), 25-38
44 Asian Agri: Corporate Share Value. https://www.asianagri.com/en/corporate-shared-value
45 Suripto (2019): Corporate Social Responsibility and Creating Shared Value: A Preliminary Study from Indonesia. International Journal of Contemporary Accounting, 1 (1), 25-38

4.3 De-risking Instruments

Instruments to facilitate private sector investments that help reduce investment risks play an important role in private sector action toward climate change adaptation. Generally, there is a broad variety of instruments that has been developed over time and proven successful. GGGI just recently published a comprehensive study exclusively focusing on a diverse set of de-risking instruments in Indonesia.[46]

Even though the study focused especially on renewable energy, it provides a much more valuable insight into their functionality and prevalence in Indonesia than what would be possible in the scope of this study. For this reason, only two of the most common instruments—insurances and guarantees—will be discussed briefly and selectively.

4.3.1 Insurance

An insurer compensates specified losses or damages against an agreed premium. Important risks that are insured in the context of investments can include political risks, currency risks, liquidity risks, construction risks, environmental risks, upstream resource-related risks, and/or legal or regulatory risks. Furthermore, insurances may facilitate access to capital, as an appropriate insurance makes the investment environment more stable. Together with guarantees, it is also one of the most catalytic forms of blended

In the context of climate-change-related extreme weather events, particularly three insurance mechanisms are of interest: [47]

a. Financial compensation for large disaster-related losses with the aim to facilitate faster recovery of the affected;

b. Assessment, communication, and signalization of risks on the basis of the premiums, deductibles, and payments, helping to create a better understanding of the threat(s);

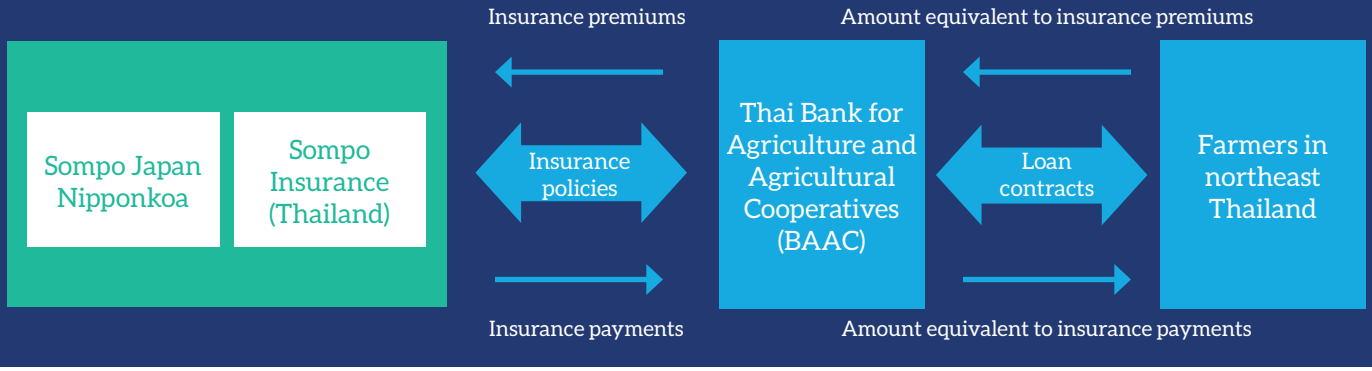
c. Generation of incentives or requirements for risk management, which in turn can contribute to increased resilience, e.g. by signaling through the price or insurance policy that measures to reduce risks will have an impact on the premium or payout time.

Box 15: International example of weather index insurance

Weather Index Insurance, Thailand (Sompo Japan Insurance)[48]

Because of a shortage of water resources, most farmers in Northern Thailand are relying on rainfall. Meteorological conditions therefore heavily influence the productivity of farmers. Due to climate change, rain patterns may become even more fluctuating and impact the farmers' businesses. In 2010, Sompo Japan Insurance developed a weather index insurance that helps Thai farmers reduce some of the risks associated with taking loans to invest into farming equipment that may be subject to losses in case of severe drought periods. The scheme was developed jointly with the Bank for Agriculture and Agricultural Cooperatives (BAAC). The weather index insurance is offered to farmers who took a loan from BAAC.

System for Insurance Sales and Claims Payment



46 GGGI (2019): Product Analysis of Diverse De-risking Financial Instruments Available in Indonesia's Market. October 2019
47 European Union (2018): Using Insurance in Adaptation to Climate Change; Luxembourg
48 Sompo Holdings (2020): Adaptation to Climate Change. https://www.sompo-hd.com/en/csr/action/community/content4/ ; UNDP (2020): Private Sector Initiative - Showcasing Good Practice. https://unfccc.int/topics/resilience/resources

In Indonesia, insurances against the impacts of climate change especially for the agricultural sector are currently offered by a government-owned and by a private insurer (see Box 16).

Box 16: Climate-change-related insurances in Indonesia

Indemnity-Based Insurance for Farmers and Fisheries

ACA, a private company, implements indemnity-based insurance for corn, rice, and fisheries. The pilot project was started in 2015 along with MercyCorps and other institutions in Dompu, Nusa Tenggara Barat. However, scaling up was considered challenging, given that privately funded piloting comes with relatively high cost. By 2019, ACA covered approximately 2,000-5,000 ha of corn farmers, less than 2,000 ha rice field farmers, and almost 15,000 ha of fisheries (in cooperation with Ministry of Maritime Affairs and Fisheries). ACA's policy includes specific underwriting requirements, similar to requirements in the lending process by banks, comprising several indicators that have to be fulfilled by the insurant. The requirements were developed together with ACA's partner involved in serving the farmer communities. The premium is about 3-10% of the input cost/ha/planting season, which is based on a baseline survey on the input cost. The total premium is paid by the farmer alone, i.e. not subsidized. Several claims have been successfully paid by ACA, many of which were self-initiated by ACA when the risk event had happened within their coverage area. [49]

ACA also cooperates with the Syngenta Foundation in a more comprehensive approach, integrating microfinance, weather-based index insurance, agriculture production facilities (sarana produksi pertanian/saprotan) and (chemical) fertilizer and pesticides, and providing agricultural extension services. It was found that a weather-based index insurance in which ground verification is not required is more reliable and easier to administer than an indemnity-based insurance. Yet, reliable scientific data is required. [50]

Indemnity-Based Insurance for Rice and Cow/Buffalo Farming

PT Asuransi Jasa Indonesia (JASINDO) is a 100% state-owned company, mandated to implement Law No. 19/2013 on farmer empowerment and protection through agricultural insurance. JASINDO offers an indemnity-based insurance for rice and cow/buffalo farming. The pilot project was launched in 2012 in East Java and South Sumatra by the Ministry of Agriculture and JASINDO and supported by CSR funding from a state-owned fertilizer company. In 2015, the project has been scaled up to extend the coverage. In 2019, the insurance covered 971,000 ha of the targeted 1 million ha, within 270 districts of 27 provinces. The premium is 3% of the input cost of IDR 6 million/ha/planting season, which is based on a baseline survey of the input cost. In total, IDR 180,000/ha/planting season is subsidized from state budget with 80% (at IDR 144,000). The claim is based on 75% threshold loss caused by drought, flooding, or pest. The claim is verified by the extension officers (PPL and PUPT) of Agriculture Office at district level and reported to JASINDO. The subsidy is under the coordination of Directorate of Agricultural Finance, Ministry of Agriculture. The Directorate provides technical guidance on agricultural insurance and involves Agriculture Offices at Provincial and District level. Currently, JASINDO is developing an online information system for registration and claim. [51]

49 Interview with ACA, 30. January 2020
50 Interview with Syngenta Foundation, 16. January 2020
51 Interview with JASINDO, 14. January 2020

Challenges

During the consultation of the different insurers, it was highlighted that it is very important to get other insurance companies to serve the farming businesses. It is expected that insurances would face a high loss ratio; therefore, a pool of insurances is needed to share risks and keep premiums affordable. Furthermore, a paradigm shift is needed, away from subsidies-minded farmers, in order to create a healthy farming insurance environment and competition in the market that currently is distorted by the subsidies provided within the JASINDO scheme, which otherwise would not be commercially feasible.

A broad variety of other specific challenges was identified:

a. Public awareness of climate change and insurance instruments is insufficient, but necessary;

b. Insurance business players lack capacity for product development and distribution channels. For PT Asuransi Wahana Tata (ASWATA), for instance, climate-change-related products are not yet on top of their priority list. If something in this direction is going to be developed, then it is rather based on governmental pressure than on own initiative. The insurer also mentioned that for the development of related products for the private sector, the related opportunities still need to be identified and framed better. At the same time, related calculations are considered too complicated, indicating a lack of necessary resources and capacity; [52]

c. Products suitable for communities need to be developed. A question to address here is to which extent standalone insurance such as JASINDO should be focused or 'closed/open economic ecosystem' approaches such as provided by the Syngenta led-initiative;

d. Answers need to be found on how to control the production performance to minimize loss, given that:

- the majority of farmers in Indonesia are smallholders and traditional farmers with little financial background;
- limited agricultural technology and infrastructures;
- farmers' behavior on adverse selection that they only tend to select insurance products that they perceived as high risks;

e. Data from the Meteorology, Climatology, and Geophysical Agency (Badan Meteorologi, Klimatologi, dan Geofisika/BMKG) and their rain observation stations is needed for weather-based insurance, but limited in terms of:

- difficult access to data, especially on daily rainfall;
- incompleteness of historical data;
- insufficient data quality and validity;

f. Agricultural insurance penetration and demand is still low, while the potential market is high. In combination with the subsidized insurance, private insurances fail to make the business case;

g. Number of account officers and field officers at finance agencies are limited;

h. Farmers lack awareness and business skills to demand insurance.

It must be taken into account that insurance as standalone solution is not yet proven to be effective for climate change adaptation in Indonesia. The low level of financial literacy among agricultural insurance target group has resulted in the lack of insurance uptake. Past experiences show that farmers use insurance when the premium is highly subsidized, or when the claim is higher than the projected harvest. Such behaviors are deemed counterproductive to the effort of developing agricultural insurance. Furthermore, the use of insurance as a standalone solution may even prevent businesses from investments into climate resilience, which, however, is critical in the long-term perspective.[53]

52 ASWATA currently provides microinsurance for flood damages, set up in cooperation with local government, but for private households only (interview with ASWATA, 29.01.2020)
53 Schaer, C (2018): Private Sector Action in Adaptation: Perspectives on the Role of Micro-, Small-, and Medium-sized Companies. UNEP DTU Partnership

4.3.2 Guarantees

Guarantees describe the use of a third party to provide a formal assurance for a defined performance to the beneficiary (instead of to the defaulting party) and to ensure that the innocent party does not suffer losses. Guarantees are a form of credit enhancement and strengthen the creditworthiness of the investment. Guarantees are one of the most catalytic forms of blended finance. They come in different forms, including for instance first loss, partial risk, or credit guarantees, and are typically used for infrastructure—energy, transportation, sanitation, or communications—and capital market development projects as well as for export financing.

Especially in the context of private sector financing, guarantees may be made directly to private businesses without government guarantees on the basis of market-based pricing. Typical risks in financing that are addressed through the use of guarantees include credit risks, technical risks, demand risks, or offtake risks. Guarantees therefore can play an important role when it comes to larger scale investments into resilience building measures that come along with respective risks, whereby a guarantee can cover parts or the entire investment.

For example, to reduce the risk that the income generated through a water treatment facility is lower than expected or construction costs are overrun, a performance guarantee could be used. Credit guarantees could be used to reduce the risk related to an offtaker agreement failing due to bankruptcy. Regulatory guarantees may be of interest to cover losses resulting from changing tax incentives. [54]

Box 17: Example of partial credit guarantee

Partial Credit Guarantee for Slum Redevelopment Project in Pune, India (GuarantCo)[55]

GuarantCo is a specialist provider of guarantees for infrastructure projects in least developed, low-income, and lower-middle-income countries. It operates by partnering with local banks and financial institutions to jointly evaluate projects and to share financing risk. Uniquely, GuarantCo operates only in local currencies. The real estate developer Kumar Urban Development Ltd. (KUDL) set out to redevelop Pune's slum area. Local banks refused to provide seed funding for this property development given the complex social and environmental issues at hand and given KUDL's insufficient track record of similar projects. GuarantCo therefore provided, in cooperation with Deutsche Bank and the Dutch Entrepreneurial Development Bank (FMO) for the financing part, a partial guarantee over USD 15 million, equal to about 4.5% of the overall investment costs.

54 IDB (2013): Financial Instruments and Mechanisms for Climate Change Programs in Latin America and the Caribbean. A Guide for Ministries of Finance. IDB Climate Change and Sustainability Division, Policy Brief No. IDB-PB-112

55 GuarantCo (2011): Kumar Urban Development Ltd. https://guarantco.com/portfolio/kumar-urban-development-ltd/

In Indonesia, the use of guarantees and its provision with the support from the government could help to catalyze more uptake of adaptation projects by the private sector. In 2009, the Indonesian MoF established the Indonesia Infrastructure Guarantee Fund (IIGF) with the aim to improve the creditworthiness of infrastructure-related PPPs in Indonesia. Covering 19 different infrastructure sectors in line with the country's PPP scheme, the guarantee scheme is also relevant to critical sectors for climate change adaption, such as hospitals and water supply, even though climate change is not yet on the PPP agenda. The SOE provides guarantees for financial obligations of a public contracting authority participating in a PPP consortium. Risks covered include the inability or the unwillingness to pay on the side of the respective public contracting agency as well as the early termination or project default caused by the government, including e.g. changes in law, expropriation, or currency inconvertibility. The private contractor of the PPP has to pay either a one-time or recurring fee for the guarantee, in consideration of project value, risk profile, guarantee coverage, and period. In the case that a project exceeds the capacity of IIGF in terms of guarantee coverage, the MoF acts as a co-guarantor with the IIGF.

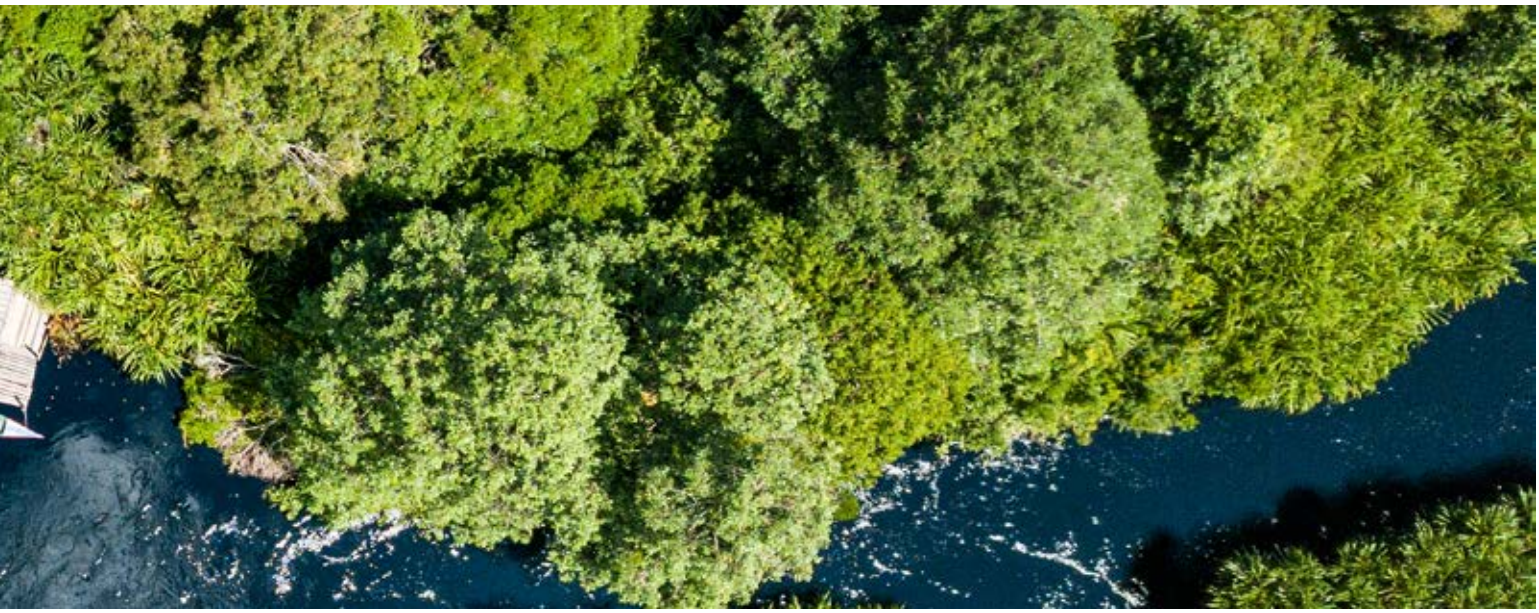
Apart from this, guarantee schemes are provided through support of development agencies such as USAID. In order to offer security to bond holders that invested into the multi-tranche, long-dated Sustainability Bond arranged by BNP Paribas and issued by TLFF for RLU's sustainable rubber plantation, USAID provided a partial guarantee. The guarantee serves as instrument to mitigate risks related to the investment and thus as lever to broaden the investor base.

Challenges

There are two major, interlinked challenges with respect to guarantees:

a. The IIGF currently only covers risks related to the failure of the public partner of the PPP consortium. It does not, in contrast, reduce investment risks that are linked to the project itself and outside of the responsibilities of the respective public contracting agency.;

b. Furthermore, no government-backed general guarantee schemes for investments outside the scope of PPPs is currently available in Indonesia.



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05 PROSPECTS OF PRIVATE SECTOR ENGAGEMENT IN INDONESIA

Based on the insights gained throughout the study, this chapter develops specific opportunities to engage Indonesia's private sector in climate change adaptation. It looks at the role the different actors can play along the value chains of the priority sectors (5.1) and provides an overview of the potential instruments that can facilitate private sector engagement in consideration of the different sectors (5.2). Lastly, a roadmap highlights the recommended actions for the GoI to create an enabling environment for private sector action in climate change adaptation (5.3).

5.1 Potential Private Sector Actors to be Engaged

This sub-chapter carves out potential private sector actors to be engaged in climate change adaptation projects. It takes into account the respective sector's value chain and economic structure, the actors' financial capacity, and the sector's key challenges in facing climate change.

Engagement of private sector actors requires that the actors are aware of the climate change challenges and the need for adaptation activities, and that they have the respective sensitivity, resources, and tools at hand to engage accordingly. Independent from the specific sectors, it is important to note that business size matters when it comes to adaptation action. MNCs, for instance, typically have greater financial resources than local businesses and MSMEs. They are globally connected, with the ability to move adaptation resources and know-how around the world and across sectors. MNCs are considered to contribute significantly to growth and innovation. Through their networks and the related level of visibility, their adaption action may have a multiplier effect. Furthermore, MNCs are subject to particularly strong exposure to climate change impacts given their global value chains. [1] These big corporations, thus, are particularly well positioned to engage in several different ways in climate change adaptation.

On the other end of the spectrum are MSMEs. Their often limited resources and know-how can be a challenge in adapting to climate change. Also, typically MSMEs have more difficulties to access external funds. Yet, climate change impacts can have particularly severe consequences up to the point of existential crises. At the same time, MSMEs play a crucial role in innovation and in certain aspects may have advantages over bigger corporations, e.g. higher flexibility, faster decision-making, and often better access to local comm

In the following, a closer look is taken for each of the priority areas as well as for the financial sector.

1 Averchenkova A., Crick F., Kocornik-Mina A., Leck H. and Surminski S. (2015): Multinational Companies and Climate Adaptation-Are We Asking the Right Questions? A Review of Current Knowledge and A New Research Perspective; The Centre for Climate Change Economics and Policy (CCCEP) & The Grantham Research Institute on Climate Change and the Environment, London. Working Paper 183

5.1.1 Water

Overall, the sector is very diverse throughout Indonesia. Its private sector actor structure as well as its climate-change-related challenges are highly location-specific. A one-size-fits-all approach, thus, is little promising, as is to point out a single specific business to engage in climate change adaptation action. It needs in-depth sector-and actor-mapping and market research within the various administrative regions. Nevertheless, a few conclusions can be drawn from the insights the study gained (see Table 5 below).

Table 5: Overview of private sector opportunities in the water sector

Value Chain Step	Actors	Potential Engagement Area
Source	Community enterprises, cooperatives, smallholder farmers	• Knowledge creation/awareness raising (impacts and challenges of water sourcing, water management) • Operations and maintenance of small water projects (financed e.g. through village funds)
	Large companies and MNCs (e.g. industry, agriculture)	• Facilitate knowledge creation/awareness raising for communities, provide extension services • Support protection of upstream water sources through CSR measures • Technology development to anticipate water security or impact from climate change
	All types/sizes of businesses	• Solar water-pumping facilities (hybrid project: renewable energy and water security) • Nature-based solutions on water management, e.g. upstream projects related to peat land areas that provide ecosystem services, including water supply protection
Water treatment and distribution	MSMEs, large-scale businesses, MNCs involved in related processes	• Apply/invest in adaptation measures against climate change impacts (e.g. climate risk planning, infrastructure development such as resilient treatment plants and distribution network, also through PPPs)
Consumption	All corporate consumers (MSMEs, large-scale businesses, MNCs)	• Increase water efficiency (e.g. through development of or investment into water-saving technologies, improving process efficiency, investment into water-saving technologies, where suitable incentivized through dedicated regulation)
Transversal	Construction, engineering, and tech companies	• Infrastructure development (e.g. piping, retention basins, flood prevention)
	Financial Service Institution	• Provide loans and other financial products.

Firstly, a cross-cutting yet key role in the water sector's adaptation efforts can be taken by companies that contribute to infrastructural development along the value chain, be it the construction of more resilient distribution piping systems, of retention basins, of treatment plants, or sourcing and irrigation technologies. Accordingly, the type of businesses potentially involved is broad, ranging from construction and engineering businesses to tech companies. Generally, it was found that there is strong interest from the private sector's side to participate in adaptation activities in the water sector.

At the upstream end of the value chain, the focus is on the sourcing process, but the discharge of waste water also plays a role in the context of water contamination. Private sector engagement is dependent on the type of actor involved in these processes, which, however, vary from source to source. Given their limited resources, community enterprises, cooperatives and smallholder farmers' engagement may rather be of passive nature. They can be involved in knowledge creation and awareness raising on the impacts and challenges of water sourcing and climate-smart management of water resources, including the exploitation of alternative sources such as rainwater. Bigger companies and MNCs, be it industries or agricultural businesses, can play a key role in facilitating such initiatives, acting as, complementing, and cooperating with Indonesia's public and non-profit extension service agents, for instance in the scope of their supply chain management and CSR or related activities. In more general terms (i.e. not explicitly linked to water), this is already done for instance by Danone, Nestlé, Cargill, Syngenta, or Partnership for Indonesia Sustainable Agriculture (PISAgro). [2]

In the areas of water treatment and distribution, the number of private sector actors involved, ranging from MSMEs to MNCs, is increasing over time, with the GoI aiming to further expand the involvement of private sector. Both centralized and decentralized treatment plants (to be) constructed and operated by these actors, as well as distribution networks, may need protection measures against climate change impacts, for instance with respect to flood management or decreased water quality. This should be taken into account when handing the water business to the respective actors. Measures could relate for instance to obligatory climate risk planning, resilience building, and adaptation measures along set norms, standards, or procedures. This could be done when it comes to contracting or in the scope of guarantees and subsidy provision as provided with Government Regulation No. 46/2019.

Finally, at the consumption end, the focus is mainly on the efficient use of water by the various consumers, from microbusinesses to large-scale industries.

2 GFRAS (2012): World Wide Extension Study - Indonesia. https://www.g-fras.org/en/world-wide-extension-study/94-world-wide-extension-study/asia/south-eastern-asia/291-indonesia

5.1.2 Agriculture

The engagement in climate change adaptation of specific companies depends on various factors, such as the type of agricultural produce, as well as regional and site-specific characteristics. Yet, some more general conclusions can be drawn. The following table provides an overview of the potential roles of the different types of actors.

Table 6: Overview of private sector opportunities in the agricultural sector

Value Chain Step	Actors	Potential Engagement Area
Inputs	MNCs and domestic businesses (providers of farming equipment, seed stock, pesticides, fertilizers)	• Development and provision of climate resilient crops, organic fertilizers • Provide finance for climate-resilient infrastructure development and/or extension services, e.g. through microfinancing
	Technology companies	• Provide solutions for digital/precision/smart farming (agriculture 4.0)
	Construction, engineering and tech companies, community businesses, farmer cooperatives/groups	• Climate-resilient infrastructure development (e.g. retention basins, irrigation networks, dam building, rainwater harvesting)
Cultivation and post-harvest	Farmer groups and KUD, large-scale plantations	• Adaptation-related education/extension services, provision of credits • Facilitate or implement collection and mapping of data and information
	Smallholder farmers	• Recipients and/or providers of knowledge/awareness raising for traditional and climate-smart farming p • Application of climate-smart farming methods and related technologies
Distribution and market	Food processing industry, both domestic and MNCs	• Provide finance for climate-resilient infrastructure development and/or extension services
	Markets/retail stores, wholesalers, exporters, inter-island traders	• Facilitate market creation for/marketing of new, climate resilient produce
Transversal	Farmer associations (e.g. Indonesian Peasant Alliance (Asosiasi Petani Indonesia/API), Indonesian Peasant Union (Serikat Petani Indonesia/SPI), Forum for Farmers and Fishermen Indonesia Society (Wahana Masyarakat Tani dan Nelayan Indonesia/WAMTI), sustainable agriculture initiatives (e.g. PISAgro)	• Support coordinated action between public and private sector actors • Develop specific strategies for private sector adaptation action
	Financial Services Institutions (FSIs)	• Development of a portfolio of finance products (including microfinance) that caters the climate-change-adaptation-related investment and finance needs
	MNCs, domestic businesses, distributor companies, business associations	• Facilitate knowledge creation/awareness raising for communities, provide extension services.

On the input side of agricultural value chains, various types and a broad number of private sector actors are contributing. They all have the potential to engage in climate change adaptation. The suppliers of seed stock, for instance, which often are MNCs such as Syngenta, DuPont, East West, or Bayer, cannot just develop and market more resilient crops but combine this with the provision of know-how and finance to render the farming processes more climate-resilient, as is shown by Cargill in Blitar, West Java (see Box in Chapter 2.1.2). Working

closely—be it in the scope of their CSR activities or their internal supply chain and risk management—with local farmer associations, MFIs, NGOs and/or development agencies can be of value, given their local know-how and access to communities. This can even include cooperating with smaller businesses, local tech companies, and producers of farming equipment to develop and implement more holistic approaches. Tech companies and providers of farming equipment, both local and international, are good examples for companies to invest in developing and marketing products and services that capitalize on climate-change-adaptation-related business opportunities through the provision of equipment that facilitates climate change adaptation in the agricultural sector (e.g. CV Karya Hidup Sentosa, PT Mitra Sejahtera Membangun Bangsa).

When it comes to cultivation and post-harvest activities, it is especially farmer groups and cooperatives, but also large-scale plantations that can engage in adaptation-related education/extension services. They can also provide credits and facilitate or even implement the collection and mapping of data and information that are crucial for climate-smart farming (which in turn may be facilitated by or implemented in cooperation with equipment providers). Individual farmers, in contrast, should focus on strengthening their capacity to adapt their processes to become less vulnerable. Ensuring that farming processes are adapted to climate change, requires know-how on climate science, management techniques, use of technology, etc. Therefore, these actors are primarily potential target groups for knowledge/awareness-raising initiatives for climate-smart farming practices and related technologies.

On the downstream side of agricultural value chains, the role of the food processing industry as well as retailers, both domestic and MNCs, can be seen in the same way as for the input side. Engaging in climate change adaptation on the supply side will help rendering their supply chains less vulnerable to climate change impacts and secure their business. A similar form of engagement could be taken by larger retail or wholesale businesses. Food processing industry and retailers are the most resilient actors in the food supply chain. However, their strongest vulnerability to climate change lies in the dependence on farmers. [3] Therefore, facilitating change toward more climate resilient farming, for instance through (ideally long-term) partnerships, where also NGOs are involved, can be beneficial to both farmers and the companies themselves.

5.1.3 Health

The health sector is very diverse and more complex than, for instance, agriculture. For this reason, providing a simplified value chain is not considered conducive to the analysis. Instead, a distinction is made between prevention and cure (see Chapter 2.2.3). The following table provides an overview of potential engagement areas of the different actors.

3 Paloviita, A. (2016): Food Processing Companies, Retailers, and Climate-Resilient Supply Chain Management. In Paloviita, A. & M. Järvelä (Eds), Climate Change Adaptation and Food Supply Chain Management. Routledge, Abingdon & New York

Table 7: Overview of private sector opportunities in the health sector

Healthcare Focal Area	Actors	Potential Engagement Area
Prevention	Sanitary solution providers, including water companies	• Rendering sanitation infrastructure more climate-resilient • Support education on sanitary hygiene
	Pharma industry (both domestic and MNCs)	• Development and provision of vaccination and preventive medication • Awareness raising/health promotion • Cooperation with GoI on critical R&D
	Mosquito fogging companies	• For larger-scale fogging
	Private insurance	• Awareness raising/health p • Promotion of preventive measures
	Private companies and business associations	• Employee programs sensitizing for climate-related health risks and providing respective education
Cure	Private health facility providers (hospitals, general practitioners)	• Investments into expanding the capacity of existing and creating additional treatment facilities/close disparity gap across regions (e.g. hospitals) as well as in building human resources
	Pharma industry (both domestic and MNCs)	• Development and provision of affordable medication for diseases expected to increase number of cases due to climate change
	Private insurance	• Increase coverage of affordable insurances throughout Indonesia, specifically for climate-related diseases
	Data service providers	• Databases and information systems, e.g. on occurrence of diseases, treatment facilities, etc.

On the prevention side, water and sanitation companies have a crucial role to play, given the health risks associated with sanitation and climate impacts, such as increased flooding. The actors in this sector are diverse, ranging from producers of household latrines to pit emptiers and water-related companies such as treatment plant operators. Involvement or engagement of water companies in the context of climate change adaptation and preventive measures to illness refers especially to ensuring the supply of clean water, also in times of water shortages, and rendering the water supply and discharge infrastructure for consumers less vulnerable to flooding events. Their engagement refers to the development of technological solutions and expansion of infrastructure, such as piping networks and treatment facilities. This might require close cooperation or establishment of partnerships with authorities and the establishment of a reliable data and information base (e.g. hydro-meteorological data; flood risk mapping; ground and surface water variability) to facilitate decision-making and setting the right priorities. Sanitation companies, often smaller-scale businesses, are especially relevant for providing adaptation solutions to pit and latrines (e.g. through elevation) and piped sewer systems, and can be involved in the education of hygienic practices. Partnerships with MFIs may be one option to help provide affordable investment solutions for communities and households.

The pharmaceutics industry, typically larger-scale businesses and especially MNCs, has shown the role they can play in prevention. They tend to pursue strategies and activities in the context of their supply chain and risk management, but also through their larger CSR budgets and activities. Their (further) engagement could focus on engaging multiple stakeholders in order to increase awareness of and understanding for the different challenges and opportunities (e.g. through stakeholder exchange platforms related to climate-change-induced health issues, including the public sector, CSOs, communities). They could also drive research and innovation through their knowledge base and targeted

investments into R&D, support the establishment of climate and health observatories, develop and facilitate affordable access to vaccines and medication.

Especially when it comes to the expected increase of dengue, fogging companies can be engaged into regular, systematic, and large-scale fogging activities, e.g. through PPPs.

Health insurance companies, on both the preventive and curative side, also play a key role. Investing into awareness raising and health promotion, facilitating access to vaccination, and promoting preventive measures helps to reduce their risks for the occurrence of insured events. Insurance products covering diseases that are expected to increase due to climate change (e.g. vector-borne diseases such as dengue) should be further developed and made more accessible, especially to particularly exposed communities.

Any company independent from sector and size can actively contribute by sensitizing their employees for health risks related to climate change. Helping to create an understanding for related risks and preventive measures will at the same time reduce risks of illness from staff and thus render business processes less vulnerable. Sector associations can play a key role by cooperating with and/or support of the businesses.

One priority area of the GoI in adapting the health sector to climate change is increasing the capacity of health facilities. This refers especially to curative capacities and facilities and includes hospitals, general and specialized practitioners, as well as dedicated stores such as pharmacies ensuring access to medication. Private investors are not only needed to increase capacity of existing facilities (e.g. hospital and ICU beds to respond quickly to high demand), but also to establish new facilities.

Lastly, data service providers and providers of technologies are key to support the establishment of databases and information systems that facilitate easy access to critical information on health and disease-related data, supporting rapid response where needed.

Coordinated action and working hand in hand with key stakeholders, including NGOs/CSOs, and communities, and across different types of companies will be an important element to both promote engagement and ensure its effective implementation.

5.1.4 Financial Services Sector

On the financing side, both banks and insurance companies play an important role across the different economic sectors and adaptation priority areas. The following table provides an overview of the potential engagement areas of banks and insurers, which then are described in more detail in the table.

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Table 8: Overview of engagement areas in financial sector

	Engagement Area	Potential Government Support
Banks	• Strengthen internal capacity and improve risk assessment for finance products and investment portfolio (climate-related risks) • Mandate potential debtors to include climate risk management in credit application	• Monitor and evaluate the implementation of sustainable finance principles with respect to climate change adaptation
	• Develop strategic product portfolio for private sector investments into climate change adaptation, such as • Lending to businesses willing to invest into climate change adaptation for own business processes • Develop products for resilient infrastructure development • Develop products for small-scale and micro-investments (especially rural banks/MFIs) explicitly dedicated to the business' climate-proofing • Promote corporate green bonds, including sharia-compliant green bonds, dedicated to climate change adaptation projects	• Develop incentives for the FSIs to provide dedicated climate change adaptation finance products
	• Promote financial literacy, where suitable, in cooperation with business incubators, NGOs, and development agencies	• Support program for related initiatives (e.g. through communication/campaigns, information material on legislation)
	Especially ISFI: • Strengthen cooperation with the government to identify projects/market • Support development of portfolio targeting adaptation-related investments	• Facilitate cooperation of relevant governmental bodies at national and sub-national levels
Insurers	• Develop product portfolio that caters to the insurance needs of the vulnerable private sector actors	• Develop incentives to provide dedicated climate change adaptation insurance products
	• Non-competitive inter-insurance cooperation to identify strategies to develop the market for climate-change-related products	• Develop mechanism that facilitates market entry/overcome entry barriers (such as subsidies for state-owned insurance)
	• Cooperation with NGOs, research institutions, international organizations, and development agencies to increase insurance and climate literacy (across sectors) • Combine insurance with extension services (agriculture) and/or microfinance	• Support program for related initiatives (e.g. through communication/campaigns, information material on legislation)

Banks

Banks, for the sake of their own resilience and sustainability, can contribute to climate change adaptation by giving explicit attention to climate change and its adverse impacts, including when it comes to the formulation of their commercial strategies and internal processes. Despite commitment especially by Indonesia's "first movers on sustainable banking" to take sustainability seriously and although OJK is actively driving and facilitating a sustainable finance sector, climate change adaptation seems to rarely find explicit consideration (in contrast to e.g. climate change mitigation). [4] Banks, thus, need to engage in strengthening their internal capacity and improving their risk assessment for finance products and investment portfolio, explicitly taking into account climate-related risks. This also includes mandating potential debtors to include climate risk management in their credit application, which will also create awareness for the topic. That is, banks may require from businesses that request a loan to disclose climate-related risks and potential impacts of climate change on their business as well as their strategy to cope with such (e.g. in the scope of a BCP). In this context, banks can play a crucial role in providing guidance on doing appropriate risk assessments, on BCM and BCPs.

At the same time, climate change adaptation does not find explicit mention in sustainable business activities, i.e. product portfolio, and the finance of related projects grows slowly. [5] Banks should develop a strategic portfolio of products for private sector investments into climate change adaptation, providing finance products such as green lending to businesses willing to invest in climate change adaptation. The portfolio, of course, should be aligned with the overall focus of the bank's business strategy. For green infrastructure development, for instance, forerunners are Bank Artha Graha Internasional and Bank Pembangunan Daerah Jawa Barat dan Banten. They may further refine their products and investments specifically toward infrastructure projects. Suitable providers of finance products targeting small-scale investments for smallholder farmers and farmer groups that are the various rural banks operating throughout Indonesia as well as BRI. The latter not only belongs to the first movers and is active in sustainable agriculture as well as small scale and micro finance.

BRI also chairs the ISFI supported by OJK and WWF. It aims to drive sustainable and inclusive finance products and serves as dialog partner with the GoI. ISFI can play a key role, in adding an explicit focus on climate change adaptation in the development of a sustainable finance services sector. It can help to and strengthen cooperation with the government to identify relevant projects suitable for finance through banks and support the development of new sector portfolios. This also applies to rural banks and cooperation with local government.

A key form of engagement, especially for rural banks and those focusing on small scale and micro finance is to promote financial literacy. Whereas the link to climate change adaptation is rather indirect, financial literacy is a key requirement for access to finance, including finance needed for investments into climate change adaptation. This will increase the readiness of businesses, especially microbusinesses such as smallholder farmers, to invest in adaptation. Initiatives can be coupled with increasing climate change literacy and offering tailored finance products. This can also include cooperation with business incubators, NGOs, and development agencies.

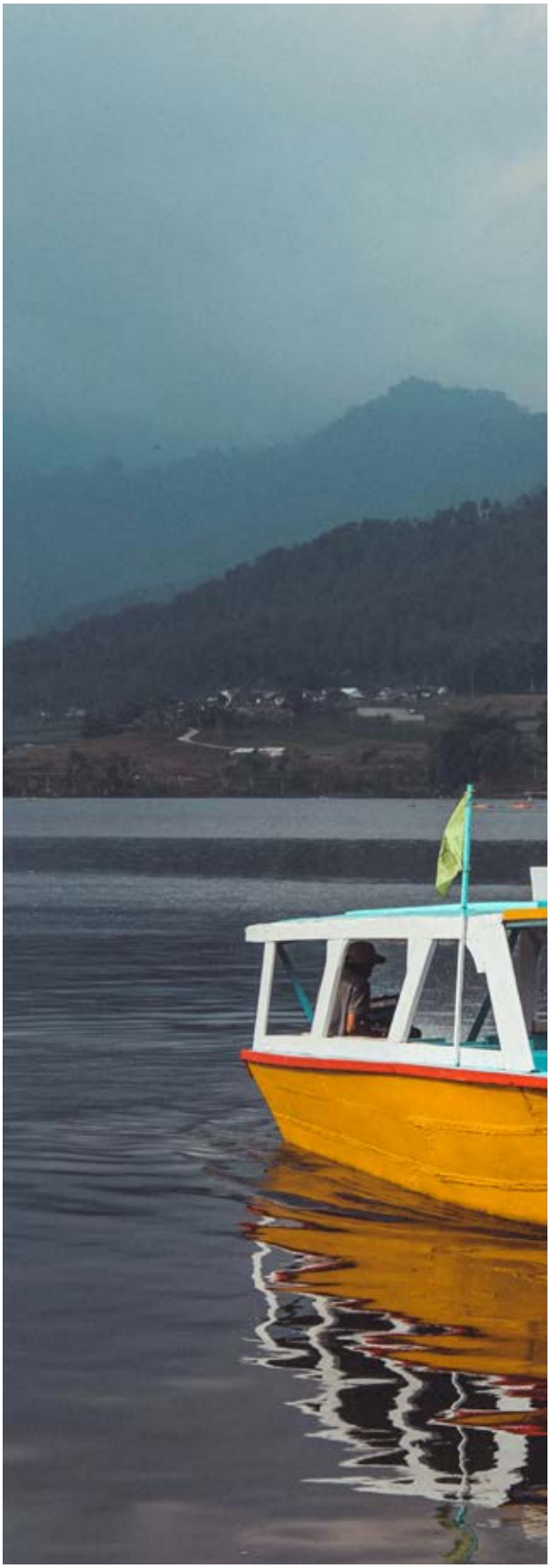
Especially for larger investments, bigger banks and "first movers" can also play a key role in promoting corporate green bonds, including sharia-compliant green bonds, dedicated to climate change adaptation projects. There is a clear market demand on the investor side, institutional and private, to invest into sustainable projects, including such dedicated to climate change adaptation. [6] This opens an additional door for businesses that are seeking to develop and implement projects in Indonesia but require larger amounts of capital. Interested investors from around the world are therefore important private sector actors to engage, though indirectly, into climate change adaptation in Indonesia. Not only corporates but also the GoI can draw on this funding source, building for instance on its successful green sukuk experience.

4 See e.g. Ruhiyat, E. & E. Murwaningsari (2019): Development of Sustainable Banking in Indonesia. International Journal of Business, Economics and Law., 20 (5), 177-185
5 Ismalina, P. (2019): Market Assessment of Potential National Direct Access Entities of Green Climate Fund from Indonesia's Financial Sectors. GGGI – Secretariat NDA-GCF Jakarta, April 2019
6 Asia Money (2019)

Insurers

Among the various insurers, the two forerunners in terms of climate-change-related insurance solutions for farmers are ACA and JASINDO. They are in the most advanced position to further drive the development of a product portfolio that caters to the insurance needs of the vulnerable private sector actors. However, ACA and other private insurers need to find a way or mechanism that allows for competitive insurance solutions (making the business case) which is currently perceived as impossible, given the prevalent subsidies provided as part of the JASINDO scheme.

Overall, insurers from the private sector may invest in cooperating in a non-competitive way to identify strategies to develop the market for climate-change-related products, i.e. to overcome the limited demand and market penetration. This also includes capacity building for the insurance industry and product portfolio development for insurance solutions, as they do not seem to be prioritized. These insurers may also consider cooperating with NGOs, research institutions, international organizations, and development agencies to increase insurance literacy combined with awareness raising for climate-related risks. This may also involve developing schemes that combine insurance with extension services and/or microfinance to reduce the risk that insurants rely on insurance only and forego investments into climate adaptation.



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5.2 Potential Instruments to Mobilize Private Sector Investments

The following table provides an overview of the applicability and suitability of the instruments discussed in the previous chapter (4) for the different sectors and highlights the potential measures to be undertaken to promote these instruments.

Table 9: Applicability of instruments to engage the private sector

Instruments		Sectors			Requirements (What Needs to be Done)
		A	W	H	
Business Conducts	Corporate Social Responsibility	✓	✓	✓	The scheme is widely used in the country. The critical buy-in required from the government is available and should continuously be utilized. However, some aspects that needs/could be improved include: • Refine the current CSR regulations, i.e. clarity on which type of business and size are obliged to undertake CSR. This may also include specifically mentioning contributions to climate resilience as a priority area for CSR action; • Continue to facilitate and coordinate CSR activities in their areas of jurisdictions, provide direction for potential CSR activities that can benefit communities' resilience; • Provide awareness raising about the impacts and risks of climate change; • Establish or maintain close collaboration with private companies/CSR forum existing in respective administration areas and provide direction on how the private sector can allocate their CSR funds.
	Corporate Shared Value	✓	✓	✓	The scheme is relatively novel in the country. CSV programs generate economic benefits to the business owner. CSV can also be deemed as a way to increase business resilience as well as resilience in the communities. CSV may have the potential to be implemented in the country, but given the similarity to and the success of CSR implementation, the scheme may be implemented under the CSR framework.
	Business Continuity Plan	✓	✓	✓	BCP is deemed a crucial instrument for businesses rendering themselves climate-resilient, and it can be applied for any size of business as it is flexible. • The GoI could support the introduction of such an engagement model by developing guidelines and/or conducting trainings on how to implement BCP in business; • Guides and trainings should be tailored to the different sectors and company sizes.
De-risking Instruments	Insurance	✓	✓	✓	Implementation of agriculture insurance, while still limited, is already more advanced than in the other sectors. Health insurance is widely used in Indonesia but not discussed within this study. Key is increasing awareness of climate risks and promoting the relevance of insurance.
	Guarantee	✓	✓	✓	Currently available as standard product by financial service providers. However, when it comes to leveraging private investment in public projects (i.e. projects related to climate change adaptation), the GoI may need to review the possibility of providing guarantee to its private counterparts to increase their interest.

Legend:
A: Agriculture, H: Health, W: Water

Table 9: Applicability of instruments to engage the private sector (cont)

Instruments		Sectors			Requirements (What Needs to be Done)
		A	W	H	
Finance (debt) Instruments	Public-Private Partnerships	✓	✓	✓	PPPs are particularly suitable for infrastructure projects aiming to increase climate resilience. • Provide awareness raising and capacity building for local government to enable them using the PPP model for adaptation projects; • Moreover, the GoI and the local government jointly set up a pilot PPP project at the local level to allow learning by doing, and compile lessons learned for continuous improvement, e.g. identifying further needs to ease implementation.
	Green Bonds	✓	✓	✓	Suitable particularly for large-scale investments. Indonesia can build on its solid experience and regional forerunner status in (green) bond is • Maintaining good credit rating along international standards is important to also attract foreign in • Increase awareness and knowledge among potential issuers of green • Improve services that facilitate affordable bond issuance in the context of climate change adaptation.
	Microfinancing	✓	✓	✓	• Particularly interesting to help small businesses such as smallholders to invest into increasing their own climate resilience. • Improve efforts on financial literacy, particularly in remote areas; • Enhance access to microfinancing, enhanced use of the KUR; • Foster the use of BPDLH for microfinance; • Review the possibility to lower the interest rate; • Review the possibility to loosen the collateral requirements, or develop alternatives.

Legend:
A: Agriculture, H: Health, W: Water

5.3 Roadmap for an Enabling Environment for Private Sector Engagement in Climate Change Adaptation Projects

In the light of the opportunities and challenges identified throughout the study, the following action items in the form of a roadmap are recommended. The roadmap distinguishes three closely related dimensions to be addressed, as follows:

Additionally, as an element transversal to all three dimensions is improved coordination and collaboration among the relevant actors and activities.

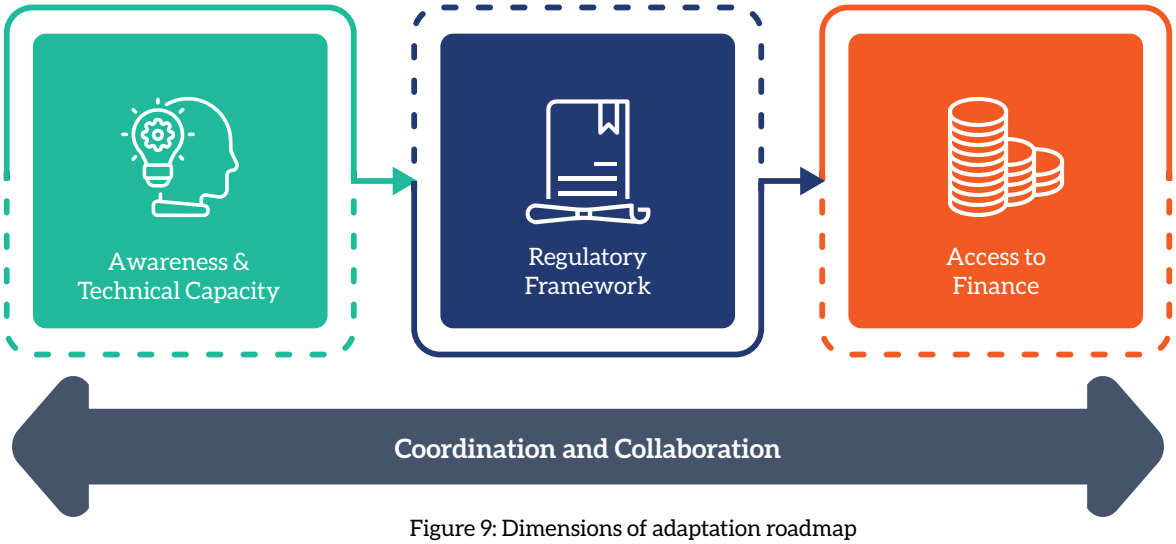

Figure 9: Dimensions of adaptation roadmap

Enhancing Awareness and Technical Capacity

Despite being at the heart of the Indonesian climate change strategies, adaptation so far seems to have been taken rather lightly. This impression may be due to the high overlaps between certain adaptation actions-such as provision of clean water, access to sanitation, extension to farmers, and enhancement of healthcare system-and the BAU development efforts. There is a need for an improved understanding of the climate risks and the associated impacts, as well as what they mean for the current development efforts and plans in terms of adaptation and resilience building.

Raising awareness and at the same time enhancing capacities of all relevant actors, including the private sector, are therefore highly important. Systematic dissemination of bundled information on climate-related risks and guidance on capitalizing on associated opportunities is critical to securing the interest of the private sector while simultaneously equipping them with the necessary knowledge and tools to cope with the changing climate.

Based on the findings and analyses, actions may include:

1. Disseminate to the general public information on climate risks and the associated impacts as well as opportunities that can be reaped from the changing climate. Infographics, social media campaigns, and public figures appointed as ambassadors in combating climate change can also further outreach and enhance effectiveness.
2. Promote adaptation and potential associated projects, especially to FSIs. The GoI can facilitate by providing guidance to banks on climate financing, lessons learned, and success stories about financing adaptation-related projects. The initial success of the Sustainable Banking movement, especially in mitigation-related portfolios, can be leveraged as a momentum in encouraging banks to continue developing their

lending portfolio to finance adaptation projects.

The BAU of the current credit assessment process is that banks will assess a project based on sponsor rather than type/sector, meaning climate change projects will be treated the same as any other commercial projects.

3. Promote public financial literacy, especially on the importance of insurance and financial products as well as how to access them and fulfill related requirements, in order to adapt to the changing climate. This is especially relevant to micro-insurance and micro-credit for small holders, MSMEs, and rural communities.
4. Improve the management of climate change adaptation-related data and information, i.e. climate and risk and vulnerability data. Better data management and accessibility would allow businesses to make use of this data to: 1) assess their business risks from climate change (based on information on climate change observations and projections for specific sectoral and geographic needs, as well as the associated impacts) and 2) identify new business opportunities or services, e.g. insurance will be able to develop better climate index-based products.
5. The GoI to act as a hub to facilitate private sector partnerships targeted toward specific priorities and needs of the private sector. The information and/or support to be provided may include:
   a. General information/support:
      - Climate vulnerability and risk assessments made available and disseminated to the private sector;
      - Guides on risk assessments and cost-benefit analyses of climate change adaptation measures to ensure programs and activities are inclusive in a way that they take into account marginalized communities and local/indigenous knowledge;
      - Examples of and training/guidance on developing a climate-smart business plan;
      - Potential opportunities for specific sectors or geographies and best practices from existing successful private sector projects/ models;
      - Green innovations/technologies and strategies in adapting to climate change, such as water-efficient irrigation, drought-resistant crops, etc.; and
      - Mechanism and accessibility of available financing instruments (e.g. loans, guarantees, and VGFs) to boost private sector investment.

   b. Sectoral information/support:

Water	• Impacts of climate change on the health sector;
Agriculture	• Increased climate risk awareness among farmers, especially smallholders;
	• Guidance for smallholder farmers to access finance and market;
Health	• Impacts of climate change on the health sector; and
	• Guide on and established minimum standards for climate-resilient healthcare facilities.

Furthermore, such hub could develop and implement a program to champion/award private sector forerunners in climate change adaptation.

6. Replicate and strengthen existing private sector engagement practices in existing adaptation-related activities such as:
   - Expansion and improvement of agricultural and disaster insurance models; and
   - Strengthening of mechanisms that facilitate the private sector in providing extension services to smallholder farmers.
7. Build technical capacity and facilitate the operationalization of PPP projects for local and regional governments, in combination with potential ease of process for smaller-scale PPP projects.
8. Raise the awareness of large and multinational companies about funding sources for large-scale investments in climate change adaptation, e.g. the GCF's Private Sector Facility.

Refining the Regulatory Framework

Reforming the regulatory framework will be essential to ensure that policies, laws, and regulations create an enabling environment for private sector investment in adaptation. Based on the analyses and discussions with stakeholders, actions may include:

1. Formulate an official green taxonomy and define sectors for adaptation. The GoI is to conduct regular stakeholder consultations, assess engagement requirements, and promote disclosure and consideration of climate risks, opportunities, and adaptation, not only with the private sector but also among governmental bodies.
2. Upgrade the status of the national vulnerability and risk assessment of climate change adaptation and use it to increase the GoI's positioning in negotiation to allocate more financial aid to adaptation.
3. Ensure the consistency of laws and regulations, as well as their implementation at the sub-national level.
4. Make vulnerability assessment a mandatory part of KLHS, as a basis to formulate development plans, and budget allocation.
5. Include climate resilience as a criterion for developing, selecting, and prioritizing PPP projects. This would require clarity as to what exactly climate resilience entails as well as what the specific climate risks and projected impacts are.
6. Devise an appropriate subsidy system to ensure access to basic needs, such as clean water, sanitation, and healthcare, especially in rural and more remote areas, to leverage private interest.
7. Integrate assessments of the impacts of changing climate conditions and consider adaptation measures as a requirement to access funds, which can be initiated by the first Sustainable Banking movers, guided by the GoI and preferably recognized with an incentive.

It should also be noted that technical assistance combined with policy dialog, for example on building codes and planning rules, could improve the regulatory environment as removing regulatory constraints would drive private sector investment in adaptation.

Facilitating Access to Finance

The analyses and consultations with various stakeholders under the framework of this study show that broadening access to finance is necessary to drive private sector investment in adaptation. Accordingly, this may be facilitated by:

1. Providing/developing incentives for the private sector to support:
    - the purchase of climate technologies,
    - the implementation of adaptation actions along with business and production processes, and
    - the research and development of adaptation action-oriented products and services.
2. Providing non-financial incentives/recognition, such as green label and climate resilience certification, to financial institutions for developing climate-related financial products.
3. Expanding the scope of KUR to include adaptation-related financing, for which the GoI and banks may determine the types of adaptation projects eligible for KUR, e.g. development of community/household sanitation facilities.
4. Strengthening the implementation of PES, especially for water resource management, as regulated in the Government Regulation No. 46/2017.
5. Improving or maintaining a good credit rating to facilitate access to funding.
6. Regulating the possibility of project bundling, especially small-scale projects, for the private sector to attract more private sector investments.
7. Providing technical guidelines on adaptation-related programs/activities for local governments and private sector.
8. Clarifying the roles and responsibilities of private sector actors in the implementation of MoEF Regulations No. 33/2016 and No. P.7/MENLHK/SETJEN/KU.1/2/2018.

Improving Coordination and Collaboration:

Strengthening climate governance can help bring together private, public, and civil society actors to incorporate climate change adaptation into their decision-making and also encourage multi-stakeholder partnerships and collaborations. Such a participatory approach can help create a certain degree of ownership and motivation, embed climate change adaptation into the stakeholders' respective decision-making, and address their needs more effectively. Specific coordination actions may, for instance, include:

- Improve vertical and horizontal coordination in climate change adaptation between the national, regional, and local governments (leadership at the sub-national level is highly instrumental), across the different governmental silos, as well as with the private sector.
- Engage the private sector in national or local policy processes, e.g. national adaptation planning.
- Coordinate agencies encompassing the government, private sector, civil society, non-governmental organizations (NGOs), and academia with activities focused on climate risk and adaptation, including funding for climate change adaptation in the private sector.
- Align actions related to awareness and technical capacity, regulatory framework, and access to finance (e.g. in terms of timing and responsibilities).

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Table 10: Roadmap for an enabling environment for private sector engagement in climate change adaptation project

Actions	Category	Characteristic of actions	Priority Level	Urgency	Key actors
Disseminate to the general public information on climate risks and the associated impacts as well as opportunities that can be reaped from the changing climate.	Enhancing Awareness and Technical Capacity	Technical	High	Immediate	MoEF
Promote adaptation and potential associated projects, as well as provide guidance on implementation to FSIs.	Enhancing Awareness and Technical Capacity	Strategic	High	Immediate	MoEF and OJK
Promote public financial literacy, especially on the importance of insurance and banking products.	Enhancing Awareness and Technical Capacity	Strategic	High	Immediate to Medium-Term	MoEF and OJK
Improve the management of climate change adaptation-related data and information, i.e. climate and risk and vulnerability data.	Enhancing Awareness and Technical Capacity	Technical	High	Immediate	MoEF, BMKG, and related line ministries
The GoI to act as a hub to facilitate private sector partnerships.	Enhancing Awareness and Technical Capacity	Strategic	High	Medium-Term	MoF (in collaboration with MoEF, Chamber of Commerce, and other relevant ministries
Replicate and strengthen existing private sector engagement practices in existing adaptation-related activities.	Enhancing Awareness and Technical Capacity	Technical	Medium to High	Immediate to Medium-Term	To be coordinated by MoF
Build technical capacity and facilitate the operationalization of PPP projects for local and regional governments.	Enhancing Awareness and Technical Capacity	Technical	Medium to High	Medium-Term	National Development Planning Agency
Raise the awareness of large and multinational companies about funding sources for large-scale investments in climate change adaptation.	Enhancing Awareness and Technical Capacity	Strategic	Medium to High	Immediate to Medium-Term	MoF
Formulate an official green taxonomy and define sectors for adaptation.	Refining the Regulatory Framework	Strategic	High	Immediate	OJK, MoF, Bappenas, MoEF, and other relevant line ministries
Upgrade the status of the national vulnerability and risk assessment of climate change adaptation and use it to increase the GoI's positioning in negotiation to allocate more financial aid to adaptation.	Refining the Regulatory Framework	Strategic	High	Immediate	MoEF, Bappenas, and centers of excellence (e.g. universities and research centers)
Ensure the consistency of laws and regulations, as well as their implementation at the sub-national level.	Refining the Regulatory Framework	Technical	High	Medium-to Long-Term	Respective ministries/ authorities

Table 10: Roadmap for an enabling environment for private sector engagement in climate change adaptation project

Actions	Category	Characteristic of actions	Priority Level	Urgency	Key actors
Make vulnerability assessment a mandatory part of KLHS, as a basis to formulate development plans, and budget allocation.	Refining the Regulatory Framework	Technical	Medium	Long-Term	MoEF, Ministry of Home Affairs, and sub-national governments
Adopt policies, laws, and regulations encouraging or requiring climate change adaptation by: a. Including climate resilience as a criterion for selecting and prioritizing PPP projects, and b. Devising an appropriate subsidy system to ensure access to basic needs, such as clean water, sanitation, and healthcare, especially in rural and more remote areas, to leverage private interest.	Enhancing Awareness and Technical Capacity	Technical	High	Immediate	MoEF
The first Sustainable Banking movers, within their ESG framework, to integrate assessments of the impacts of changing climate conditions and consider adaptation measures.	Enhancing Awareness and Technical Capacity	Strategic	High	Immediate	MoEF and OJK
Provide incentives for the private sector to support: • the purchase of climate technologies, • the implementation of adaptation actions, and • the research and development of adaptation action-oriented products and services.	Enhancing Awareness and Technical Capacity	Strategic	High	Immediate to Medium-Term	MoEF and OJK
Provide non-financial incentives/ recognition, such as green label and climate resilience certification, to financial institutions for developing climate-related financial products.	Enhancing Awareness and Technical Capacity	Technical	High	Immediate	MoEF, BMKG, and related line ministries
Expand the scope of KUR to include adaptation-related financing, for which the GoI and banks may determine the types of adaptation projects eligible for KUR, e.g. development of community/household sanitation facilities.	Enhancing Awareness and Technical Capacity	Strategic	High	Medium-Term	MoF (in collaboration with MoEF, Chamber of Commerce, and other relevant ministries
Strengthen the implementation of PES, especially for water resource management.	Enhancing Awareness and Technical Capacity	Technical	Medium to High	Immediate to Medium-Term	To be coordinated by MoF
Improve or maintain a good credit rating to facilitate access to funding.	Enhancing Awareness and Technical Capacity	Technical	Medium to High	Medium-Term	National Development Planning Agency

Table 10: Roadmap for an enabling environment for private sector engagement in climate change adaptation project

Actions	Category	Characteristic of actions	Priority Level	Urgency	Key actors
Regulate the possibility of project bundling, especially for small-scale projects, for the private sector to attract more private sector investments.	Enhancing Awareness and Technical Capacity	Strategic	Medium to High	Immediate to Medium-Term	MoF
Provide technical guidelines on adaptation-related programs/activities for local governments and private sector.	Refining the Regulatory Framework	Strategic	High	Immediate	OJK, MoF, Bappenas, MoEF, and other relevant line ministries
Upgrade the status of the national vulnerability and risk assessment of climate change adaptation and use it to increase the GoI's positioning in negotiation to allocate more financial aid to adaptation.	Refining the Regulatory Framework	Strategic	High	Immediate	MoEF, Bappenas, and centers of excellence (e.g. universities and research centers)
Ensure the consistency of laws and regulations, as well as their implementation at the sub-national level.	Refining the Regulatory Framework	Technical	High	Medium-to Long-Term	Respective ministries/ authorities
Make vulnerability assessment a mandatory part of KLHS, as a basis to formulate development plans, and budget allocation.	Refining the Regulatory Framework	Technical	Medium	Long-Term	MoEF, Ministry of Home Affairs, and sub-national governments

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06 CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusions

The study shows that private sector engagement in adaptation projects in Indonesia exists, despite still being in its infancy and not being pursued in a systematic manner. The main drivers for their engagement are new business opportunities (profit) and initiatives led by international donor agencies. Nevertheless, in the recent years, ESG has slowly penetrated the private businesses and served as a premise to why the private sector actors are willing to engage in adaptation projects.

Various engagement models and instruments, previously used for other than adaptation-related projects, do exist and can be further utilized to increase private sector involvement. Nevertheless, engagement of private sector actors requires actors that are aware of the climate change challenges and the need for adaptation activities. Consequently, efforts must, among others, be directed to sensitizing the private sector for the risks and the opportunities that come along with the climate change.

From the GoI side, despite being at the heart of the Indonesian climate change strategies, compared to mitigation actions, adaptation so far seems to have been taken rather lightly. This impression may be due to the high overlaps between certain adaptation actions-such as provision of clean water, access to sanitation, extension to farmers, and enhancement of healthcare system-and the BAU development efforts.

Both the public and the private sector actors need to improve their awareness and understanding of the climate risks and the associated impacts, as well as what they mean for the current development efforts and plans in terms of adaptation and resilience building. This refers to the national, but even more so, to the local level, given that climate change impacts and respective adaptation measures are largely determined by and dependent on the local context.

Systematic dissemination of bundled information on climate-related risks and guidance on capitalizing on associated opportunities is critical to securing the interest of the private sector. Meanwhile, simultaneously equipping them with the necessary knowledge and tools to cope with the changing climate is key to moving forward. Moreover, stakeholders underscored the need for defining green and/or adaptation projects, and what they constitute, as a fundamental element to be addressed in the Sustainable Financing Roadmap 2020-2024.

Furthermore, to be able to invest more systematically in climate change adaptation, the necessary enabling conditions with regard to the regulatory framework as well as the financial infrastructure to access finance need to be in place, both nationally and locally.

Last but not least, improved coordination and collaboration are crucial. This refers, on the one hand, to the various public sector actors, i.e. horizontally between different line ministries and authorities at the national, regional, and local levels, as well as vertically between these different administrative levels. On the other hand, strengthening climate governance can help bring together private, public, and civil society actors to incorporate climate change adaptation into their decision-making and identify the most suitable options to render Indonesia climate resilient. Coordination and collaboration are thus also needed between the public and the private sector actors. Such a participatory approach can help create a certain degree of ownership and motivation, embed climate change adaptation into the stakeholders' respective decision-making, and address their needs more effectively.

6.2 Recommendations

To follow up on the findings of the study and move forward effectively, the following three action areas may be addressed in a next step:

1. On the government side, well-coordinated action is key. It is therefore recommended to revitalize or strengthen Indonesia's current adaptation task force. The coordinating role may be taken by the Ministry for Economic Affairs, specifically the Coordinating Minister, while the FPA may assume the roles of the initiator and the driving force. In order to make sure that the key areas are covered and government actions are well-aligned, all line ministries as well as Bappenas should be on board of the task force. Furthermore, the involvement of the Ministry of Home Affairs is crucial to ensure the link to and the representation of the provincial and local governments.

   The FPA can take the role to facilitate the process, e.g. by providing guidance on effective coordination and climate change adaptation mainstreaming and bringing in international best practices and lessons learned.

2. Given that adaptation is primarily a local issue, local private sector engagement strategies need to be developed. To this end, the local governments need to have the required capacities available. The national and provincial governments therefore need to provide the appropriate framework, i.e. removing potential barriers at policy and regulatory levels and providing support in terms of know-how and resources, within which the local level can act accordingly. Developing local private sector engagement strategies implies conducting studies at the local level, analogous to the one at hand, but with a much higher level of detail. This includes identifying the specific vulnerabilities and what the government can do in response with its own resources, and mapping the private sector to identify where and how the different actors can contribute to increase the local climate resilience.

   In this context, the FPA can facilitate pilot studies in selected regions. Such pilots can also test the suitability of the different instruments discussed in here within the local context, and record the lessons learned that may be further utilized to develop guidelines to help local governments in other areas develop their respective private sector engagement strategies.

3. Intermediary and umbrella organizations, such as sector associations and chambers, can play a key role in sensitizing private sector actors and lending them a helping hand (by providing guidance, for example). The study suggests that these organizations, however, currently have little awareness of, interest in, or resources available to address climate change adaptation. Nevertheless, given their function and networks, they can act as an effective multiplier, i.e. having great potential to reach a broad number of businesses, from large to micro-scale, and across different sectors. They can facilitate awareness raising campaigns, help businesses to identify, get access to, and utilize tools to increase their climate resilience, and advocate the businesses' needs to the government and other key stakeholders. To do so, however, they must themselves have the awareness and capacity to take over this role. It is therefore recommended to systematically identify and explicitly address the various intermediary and umbrella organizations, sensitize them for the topic at hand, and jointly identify their needs and the steps they can take to contribute to private sector engagement in climate change adaptation.

   The FPA can drive this process, for instance, by identifying and mapping the relevant organizations, identifying their level of awareness and needs to effectively engage in this endeavor, initiating targeted campaigns, and offering support by providing tools and know-how. This may be done, on the one hand, at the national level and, on the other hand, combined with the pilot studies at the local level.

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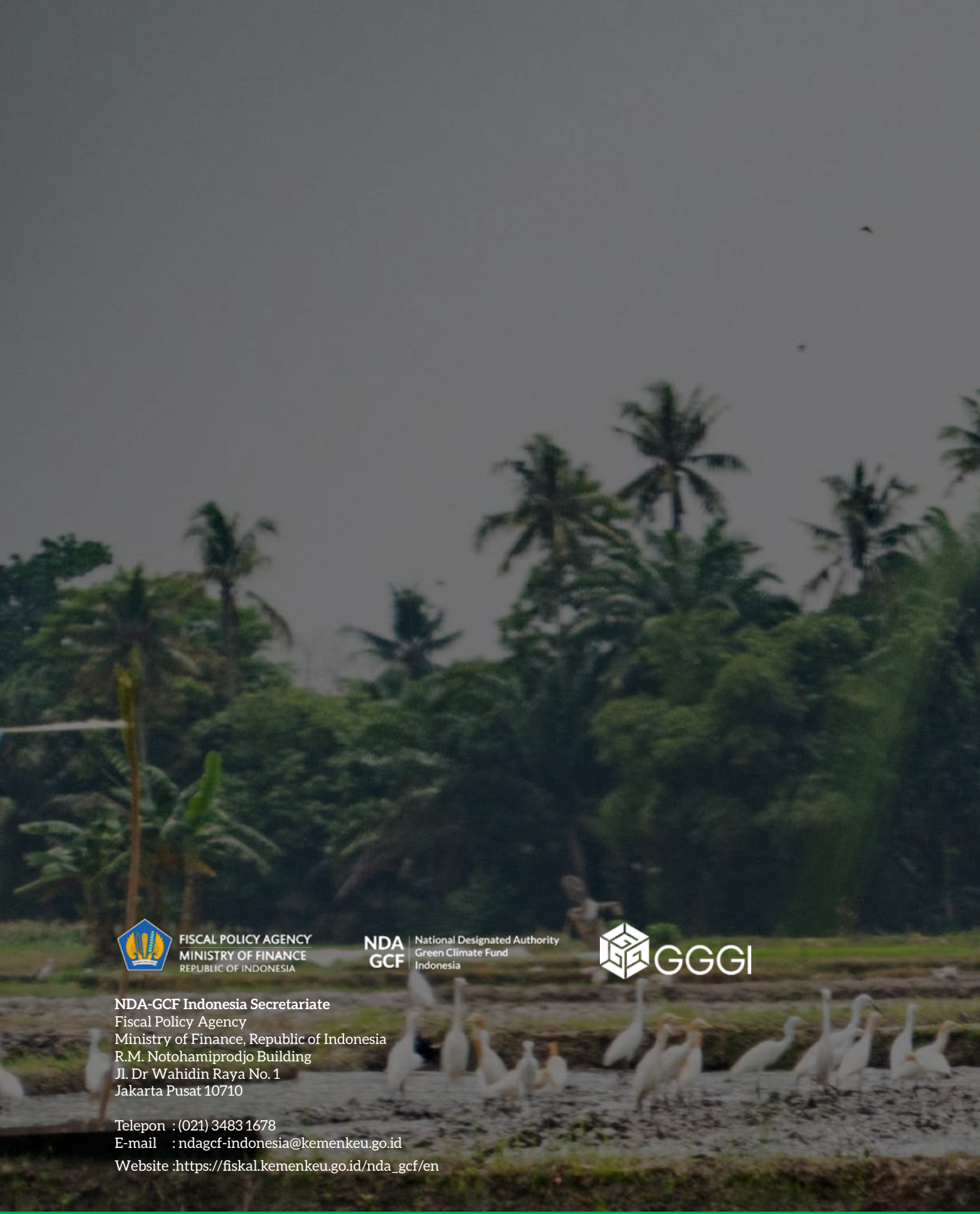
Annex – List of Consultations Conducted

No.	Date	Organization	Category (Government, Finance, Private Sector, etc.)	Interviewee's Name/Position
1	06 January 2020	• GIZ SUTRI	International Development Organization	• Gan Gan Dirgantara, Former SMI Executive Vice President, Head of Division for Sustainable Finance and Renewable Energy
2	06 January 2020	• BKF (NDA-GCF)	Government	• Dudi Ruliadi • Joko Tri Haryanto
3	07 January 2020	• GGGI	International Development Organization	• Norbert Maass • Dessi Yuliana
4	07 January 2020	• Bappenas	Government	• Darmastyo Sudarto, Consultant for PPP Project Monitoring and Evaluation Specialist
5	07 January 2020	• GIZ Climate Governance	International Development Organization	• Novita Sari
6	07 January 2020	• UNDP Innovative Financing	International Development Organization	• Didi Hardiana
7	08 January 2020	• JICA Project of Capacity Development for the Implementation of Agricultural Insurance	International Development Organization	• Akiko Aikawa, Chief Advisor • Cometta S. Guritno, Project Officer
8	08 January 2020	• Directorate of Government Support Management and Infrastructure Financing	Government – MoF	• Farid Arif Wibowo, Deputy Director of Government Support Approval • Wayan Sutana • Kristin Darundiyah, S.Si, M.Sc.PH, Section Head of Radiation Security
9	13 January 2020	• Directorate of Environmental Health	Government – MoH	• dr. Imran Agus Nurali, Sp. KO, Director
10	13 January 2020	• International Federation of Red Cross Red and Crescent	International NGO	• Raja Siregar
11	14 January 2020	• JASINDO	State-Owned Insurance Company	• Ika Dwinita Sofa, Group Head of Agriculture, Micro Insurance, and Government Program • Muhamad Iqbal, Head of Commercial Line • Irwan Sofiansyah, Head of Underwriting & Claim
12	15 January 2020	• USAID APIK	International NGO	• Hidayatullah Al Banjari, Private Sector Engagement Advisor
13	16 January 2020	• Syngenta Foundation for Sustainable Agriculture	Private Sector	• Mori Prananto, Indonesia Insurance Country Manager
14	17 January 2020	• WWF Indonesia	International NGO	• Rizkiasari Yudawinata
15	20 January 2020	• ASWATA	Private Sector	• Widyawati, Finance Director • Rainier Kurniawan, Compliance Director
16	30 January 2020	• Sub-Directorate of Climate Change Adaptation	Government – MoEF	• Tri Widayati, Head of Sub-Directorate of Artificial Adaptation
17	30 January 2020	• ACA	Private Sector	• Jakub Nugraha, ANZIIF (ASSOC) CIP – ACA Senior Vice President of Microinsurance & Agriculture Insurance • Brikson Pronatal Simanjuntak, ACA Head of Sales & Distribution Microinsurance

No.	Date	Organization	Category (Government, Finance, Private Sector, etc.)	Interviewee's Name/Position
18	7 February 2020	• Agency for Improving the Implementation of Water Supply System	Government – MPW	• Oscar R.H. Siagian, Head of Services, Information, and Cooperation Section
19	13 February 2020	• OJK	Government – OJK	• Istiana Maftuchah, Senior Analyst at International Department
20	20 February 2020	• Directorate General of Human Settlements	Government – MPW	• Dr. Maryoko Hadi, Deputy Director of Planning and Partnership Linkage
21	20 February 2020	• ICCTF	Government	• Dr. Tonny Wagey, Executive Director • Mega Gusti Rama, Finance & Operation Manager • Febrianty, M&E Specialist • Aksa Prima, Finance Project • Wildan Kautsar, Program Officer at WG III on Marine and Fisheries
22	25 February 2020	• RLU	Private Sector	• Meizani Irmadhiany, Director of Corporate Affairs
23	30 March 2020	• BRI	Private Sector	• Kristina Lestari Ningsih, Division Head of Banking Transaction • Tria Mutiari Meilan, Sustainability Manager • Hanif, Enterprise Risk Management Department
24	3 June 2020 FGD	• WWF Indonesia • Bank Mandiri • BNI • Hivos • PT. SMI • Bank Syariah Mandiri • BCA • BRI Syariah • ACA • Indonesia Water Partnership (Kemitraan Air Indonesia) • BRI • BJB • JASINDO • PT. RLU • ASWATA • ISFI • PKPPIM, BKF, MoF • GGGI	Private Sector	
25	4 June 2020 FGD	• Secretariat of LCDI • Directorate of Climate Change Adaptation, MoEF • ICCTF • Directorate of Government Support Management and Infrastructure Financing, Directorate General of Budget Financing and Risk Management, MoF • Directorate of Environmental Health, MoH • Regional Infrastructure Development Agency, MPW • Directorate General of Climate Change, MoEF • Directorate for the Environment, Bappenas • UNICEF • PKPPIM, BKF, MoF • GGGI	Public Sector	



FISCAL POLICY AGENCY
MINISTRY OF FINANCE
REPUBLIC OF INDONESIA

NDA GCF | National Designated Authority
Green Climate Fund
Indonesia

GGGI

NDA-GCF Indonesia Secretariate
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