



EXECUTIVE SUMMARY

Climate change—and efforts to mitigate and adapt to it—will affect global flows of trade and Indonesia’s ability to transition to a more environmentally sustainable economy on its path to become a high-income economy is, therefore, interlinked with trade policy. Regulatory initiatives on climate and the environment by Indonesia and its trading partners will impact trade significantly. Green policies in emerging markets and developing countries (EMDEs) have been found to improve export duration—especially when trading with high-income countries.¹ While Indonesia has put in place policies such as on deforestation, moving towards sustainable palm oil, curtailing plastic waste, and carbon pricing instruments, more needs to be done to position itself in the global transition to a low-carbon economy. The carbon intensity of Indonesia’s trade flows has seen a significant decline over the years—more than halving since 2005, but Indonesia has a high share of exports that have a high intensity of CO₂ emissions. About 60 percent of CO₂ emissions embedded in exports stem from agriculture (including mining and quarrying), manufacturing, and coal and petroleum products (refined and plastic).

Environmental policy stringency (EPS) is increasing around the globe—a crucial challenge lies in harmonizing these with sustained economic growth, yet both goals can be reached. EPS has been increasing over time across countries of all income groups in the last 20 years (Figure ES.1). The World Bank Climate Change and Development Report (CCDR) indicates that a balance between environmental goals and economic growth is attainable (World Bank 2023). This can be done by enacting reforms that simultaneously address short-term environmental concerns and contribute to the nation's long-term sustainable development—fostering a transition towards a greener, economically prosperous future. This includes making trade greener, as a larger portion of environmentally stringent countries record above-average green export survival rates than those below the overall mean EPS index value.

Although trade flows facilitate emissions, they are also a critical part of the solution, including through trade in environmental goods (EGs) and plastic substitutes—with important economic spillovers. First, trade can shift production towards cleaner

¹Türkcan et al. forthcoming.

production techniques. Second, EGs and services necessary for transitioning to low-carbon production can be distributed and third, countries can access critical goods and services after being affected by extreme weather events (Brenton and Chemutai 2021). The presence of green products in trade reduces a country's ecological footprint (Can et al. 2021b) and increases environmental quality (Sauvage 2014). Plastic substitutes could also cut global plastic waste by about 17 percent by 2040, and can foster growth, increase exports, reduce pollution and emissions, as well as create higher-value employment opportunities (United Nations Conference on Trade and Development–UNCTAD 2023). As EGs serve various environmental sustainability roles, more trade in these products would also have important spillover effects in making domestic production cleaner and therefore broader exports, greener.

This report provides a detailed analysis of the role of trade and trade policy on EGs and plastic substitutes in Indonesia's green transition. Chapter One describes the need for, and urgency of, this transition, by looking at the carbon intensity of Indonesia's trade, the impacts of environmental policies of Indonesia and key trading partners, and the roles of EGs. Chapter Two examines where Indonesia stands on the level of trade in EGs and plastic substitutes and the competitiveness of EGs trade. Chapter Three explores trade agreements and tariffs and simulates potential impacts of tariff reforms—including through multilateral actions. Chapter Four examines what non-tariff measures (NTMs) apply on these products including inputs of firms exporting EGs and assesses which NTMs may be costly. Finally, Chapter Five concludes with policy recommendations. While comprehensive, the report recognizes that other factors besides trade play a crucial role in climate change, and that an increase in trade in EGs and plastic substitutes is likely to have distributional effects which are not studied in this report.

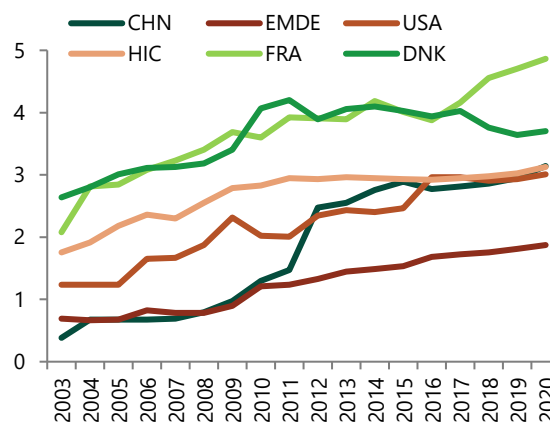
To analyze trade in EGs, this report refers to a list of products defined by the Green Transition Navigator (GTN), while plastic substitutes refer to the list by UNCTAD. The GTN compilation of EGs is based on classifications from the Asia-Pacific Economic Cooperation (APEC), the Organization for Economic Co-operation and Development (OECD), and the World Trade Organization (WTO) that use six-digit Harmonized System (HS) codes. The terms green trade and trade in EGs are used interchangeably. This includes 19 categories that have varying climate

mitigation, adaptation, and broader environmental roles. UNCTAD (2023) published a list of 282 6-digit HS codes as a reference for raw materials and products categorized as environmentally sustainable plastic substitutes.

Finding 1: Indonesia's green competitiveness has declined in recent years but Indonesia has untapped potential in exports of EGs and plastic substitutes and the private sector, especially firms involved in global value chains, will be key to realizing Indonesia's potential in green trade.

Indonesia has untapped potential in exports of EGs and plastic substitutes. Indonesia's potential to diversify into green, technologically sophisticated products, measured by its Green Complexity Potential (GCP), ranks relatively higher than other countries and was steadily improving until 2015 before it started declining again. While Indonesia is lagging in EG exports (Figure ES.2), EG imports (Figure ES.3) are at par with global and regional averages and represent an important source of access and transmission of new green technologies—underscored by the fact that Indonesia's EG imports are more technology-intensive than exports. The extent to which Indonesia can competitively export green, technologically sophisticated products is still low relative to other countries, however, its potential to diversify into these products is relatively high. Indonesia is a net exporter of plastic substitutes. While Indonesia is in the world's top 20 traders of plastic substitutes (Figure ES.4), the levels have remained relatively static over time.

Figure ES.1: Trends in EPS index values of selected countries between 2003 and 2020

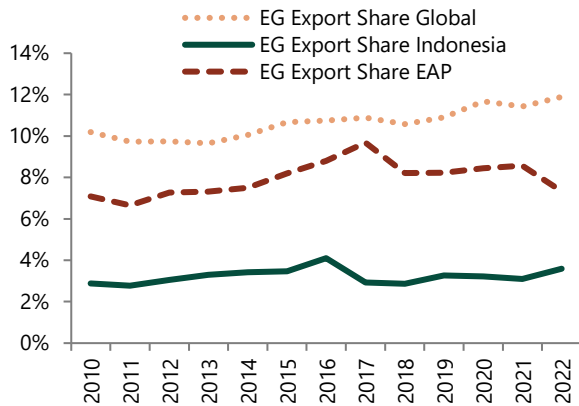


Source: OECD Stat database.
Note: HIC= selected High-income Countries; EMDEs: Selected emerging and developing economies.

The private sector, especially firms involved in global value chains, will be key to realizing Indonesia's potential in trade in EGs and plastic substitutes. The number of firms involved in EGs trade increased between 2014 and 2018 but dropped as a share of all Indonesian firms trading internationally. The report shows that the degree of involvement of Indonesian firms in international trade matters in trade of EGs—

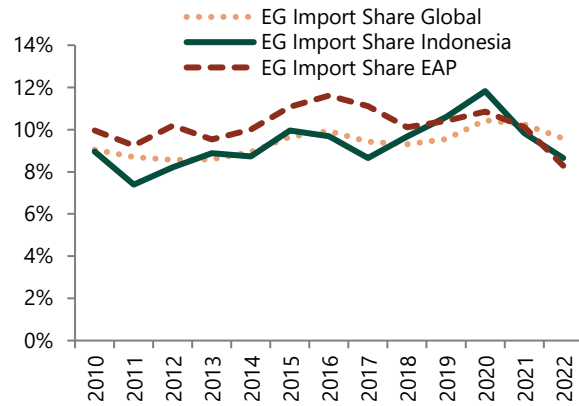
especially for exports. Two-way traders—firms that both export and import—export more green products, trade in higher-technology EGs, and have higher survival rates in export markets of EGs (Figure ES.5). As over 90 percent of these products are intermediate and capital goods products, and have relatively higher technological intensity, firms stand to benefit from technological spillovers and tools to facilitate greener production practices.

Figure ES.2: Indonesia has a low share of EGs in its exports...



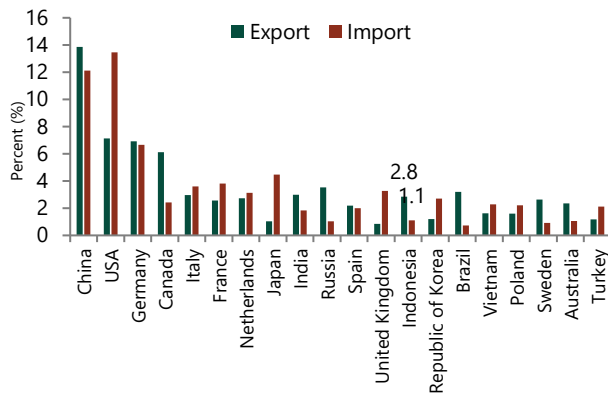
Source: World Bank staff calculations from BPS² and World Integrated Trade Solution (WITS) data.

Figure ES.3: ...while the EG share in imports broadly aligns with the global average



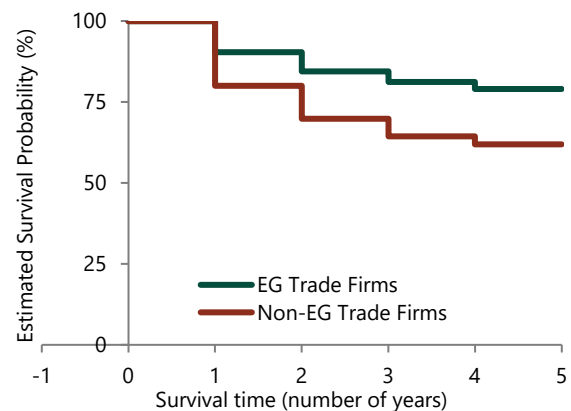
Source: World Bank staff calculations BPS and WITS data.

Figure ES.4: Indonesia is in the top 20 traders of plastic substitutes... (2021)



Source: World Bank staff calculations from WITS data.

Figure ES.5: Indonesian two-way traders in EGs have higher survival rates than non-EG traders (percent)



Source: World Bank staff calculations from Directorate General of Customs and Excise (DGCE) data.

² Statistics Indonesia (*Badan Pusat Statistik*: BPS) is a non-departmental government institute of Indonesia that is responsible for conducting statistical surveys. Its main customer is the government, but statistical data is also available to the public.

Finding 2: While Indonesia committed to reducing tariffs on some EGs and took steps to ensure more environmentally sustainable palm oil and timber exports, Indonesia does not participate in most multilateral initiatives and environmental provisions in trade agreements are weakly enforceable in most cases.

While Indonesia committed to reducing tariffs on some EGs, the country does not participate in most multilateral initiatives and environmental provisions in trade agreements are weakly enforceable. In the early stages, Indonesia was one of the signatories of the APEC agreement in 2012 committing to limit tariffs on 54 EGs to a maximum of 5 percent. Indonesia is not, however, one of the 46 members of the World Trade Organization (WTO) engaged in plurilateral negotiations seeking to eliminate tariffs on EGs under the Environmental Goods Agreement (EGA). Indonesia also does not participate in the three multilateral initiatives aimed at tackling issues at the nexus between trade policy and climate change—namely the Trade and Environmental Sustainability Structured Discussions (TESSD), the Informal Dialogue on Plastics Pollution and Sustainable Plastics Trade (IDP), and the Fossil Fuel Subsidy Reform (FFSR). Among Indonesia's 14 trade agreements analyzed at the time of writing, only six contain environmental provisions—of which only one (Indonesia EFTA) is strongly legally enforceable.

Finding 3: Average tariffs are low, but Indonesia's MFN tariffs on EG imports remain high. Tariff reductions and the regional liberalization of tariffs on EGs trade among APEC countries and under the WTO EGA would create important "trade creation" effects, boost Indonesia's EG trade and facilitate firm entry into EG markets.

While average tariffs are low, Indonesia's Most Favored Nation (MFN) tariffs on EG imports remain high (7.2 percent), and tariff reductions would have positive effects on trade in EGs. At an average of 2 percent in 2021, Indonesia's tariffs on EGs are generally low. Indonesia's MFN regime has several product lines with tariff peaks of above 25 percent. Results of simulations using a partial equilibrium trade model at the product level suggest that the unilateral, regional, and multilateral liberalization of tariffs on EGs trade would have previously untapped benefits for Indonesia. First, unilateral liberalization of tariffs would boost the private sector's access to cheaper and cutting-edge EGs and technologies. Second, regional liberalization of tariffs on EGs trade among APEC countries would create important "trade creation" effects with other

participating countries and would benefit Indonesian exporters of EGs such as Energy Efficiency; Resources and Pollution Management; and Water Supply (Figure ES.6). Third, liberalizing tariffs on EGs under the umbrella of the WTO EGA is estimated to boost Indonesia's EG exports by 1.1 percent (US\$99 million) and green imports by 1.2 percent (US\$214 million) (Figure ES.7). Tariffs on imports of EGs also reduce the probability of firm entry, as a one percentage point increase in tariffs reduces the probability of firms starting to trade in EGs by 9.3 percent. In addition, a tariff increase in imported inputs for EG exports reduces the export value of EGs.

Finding 4: Estimates suggest that some NTMs impose significant costs—equivalent to up to a 30 percent tariff for some EGs and plastic substitutes, and some measures negatively affect firms. In addition, local content requirements (LCR) aimed at creating local manufacturing capacity could also be a deterrent to growth.

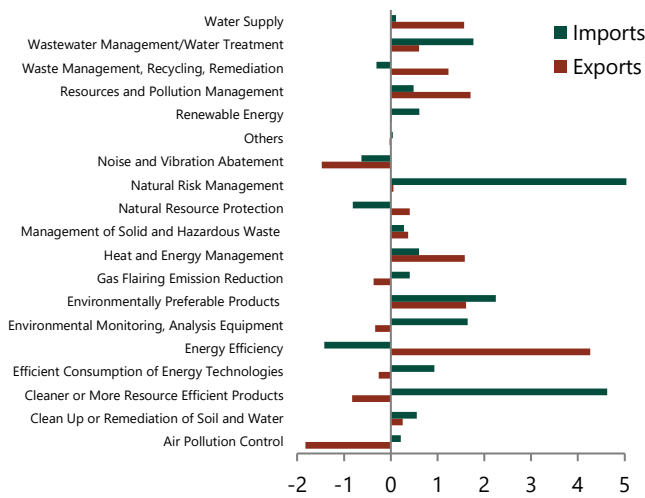
NTMs are regulations such as packaging or licensing requirements, price controls, and import quotas that aim to fulfill public policy objectives but can also affect the flow of goods and services. Some of these measures are necessary—for example, to ensure the compliance with health and safety standards, while others result in costly trade without achieving their primary policy objective.

Estimates suggest that some NTMs impose significant costs—equivalent to up to a 30 percent tariff for some EGs and plastic substitutes, and some measures deter firm entry. This leads to lower participation rates of firms in import and export markets of EGs. NTMs affect the inputs into the production of EGs and can lower the number of firms trading those goods and the export value of EGs. Between 2014 and 2018, on average, 92.4 percent of all exported EGs used imported inputs that were exposed to NTMs (Figure ES.8). In 2018 for example, NTMs affected inputs of 7,421 products out of 7,801 total exported products. Survey results also show that firms trading in EGs indeed consider some NTMs to pose a challenge—including the lack of harmonization on standards (Figure ES.9). Among NTMs, compliance with national standards (*Standar Nasional Indonesia: SNI*), the requirement to pass through a specific port of customs, and pre-shipment inspections (PSI) are more costly than the same measures on EGs in other ASEAN countries (Figure ES.10). Several NTMs also increase the cost of imported plastic substitutes and reforming them would potentially allow cheaper access (Figure ES.11).

In addition, without the right conditions, LCR aimed at creating local manufacturing capacity could also be a deterrent to growth. Indonesia has set LCRs on solar panels but the realization of the LCR of solar modules currently does not reach the set minimum. LCRs also apply to the electric vehicle (EV) industry in Indonesia, compensated by generous incentives to attract investors. For two- and three-wheeled EVs, a minimum local content of 40 percent and for four-wheeled EVs a minimum 35 percent local content is required. LCRs act as barriers to international public

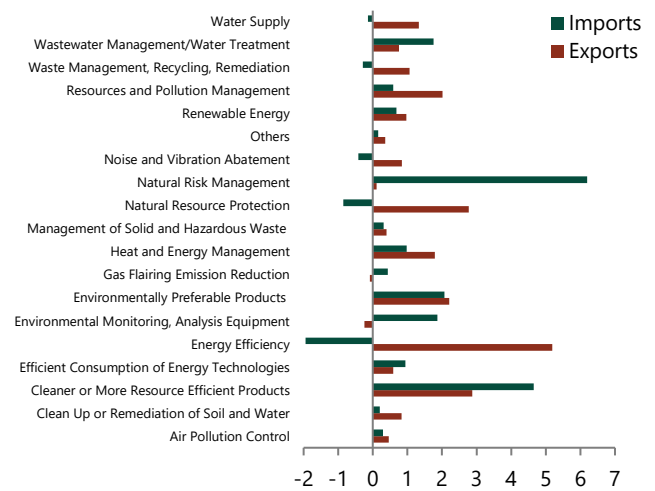
procurement and, therefore, reduce the attractiveness of major renewable energy sector public procurement projects. LCRs applied in other countries for the purposes of developing domestic productive capability of renewables have mostly led to increased costs.³ LCRs are far more likely to succeed if the market size is large and the market's demand is stable. Small or unstable markets may prevent firms from taking advantage of economies of scale, exacerbating the rise in production costs that result from LCR policy implementation.

Figure ES.6: The impact of regional liberalization of EGs trade among APEC countries (percent change)



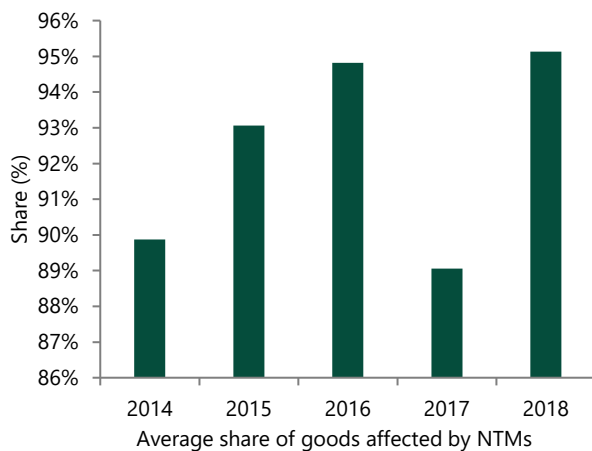
Source: World Bank staff calculations from DGCE data.

Figure ES.7: The impact of the WTO EGA with Indonesia on EGs trade (percent change)



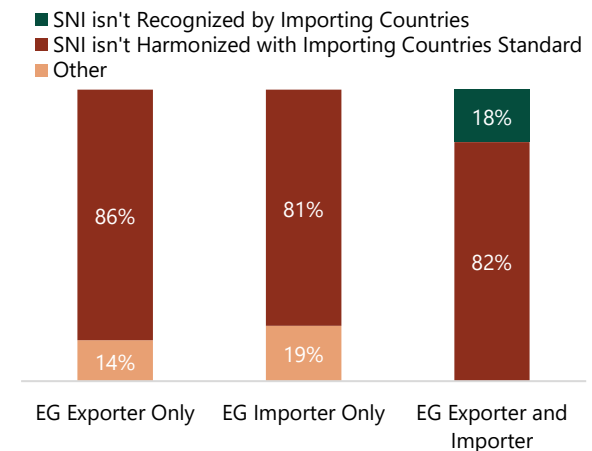
Source: World Bank staff calculations from DGCE data.

Figure ES.8: Average share of goods affected by NTMs



Source: World Bank staff calculations from DGCE data.

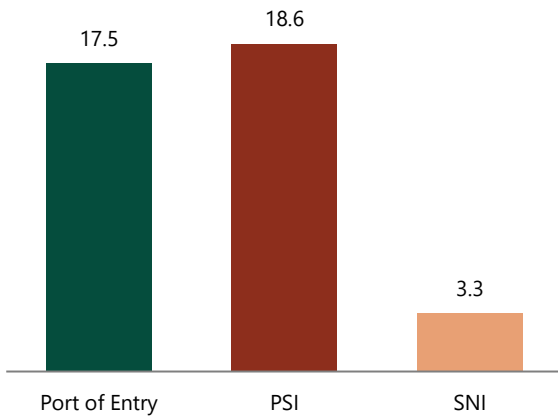
Figure ES.9: Challenges with product standards remain



Source: World Bank staff calculations from DGCE data.

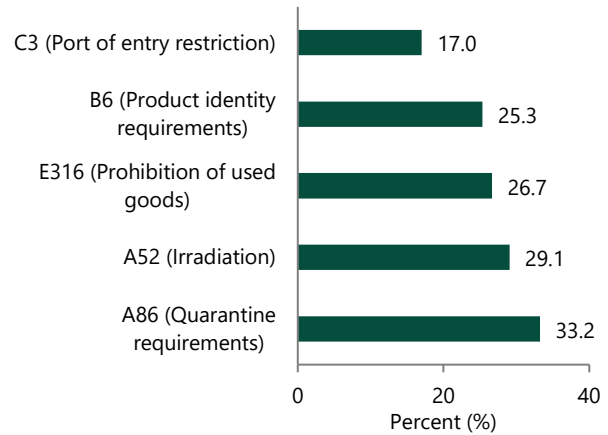
³ For example, in Brazil, India, and South Africa as discussed in Bazilian et al. (2020).

Figure ES.10: Tariff equivalent of most problematic NTMs on EGs are relatively more costly compared to EAP (Ad Valorem Equivalent: AVE difference)



Source: World Bank staff calculations from WITS data.

Figure ES.11: NTMs increase the cost of imported plastic substitutes



Source: World Bank staff calculations from WITS data.

Finding 5: LCRs and nine out of nearly 90 non-tariff trade measures—including their estimated tariff equivalents, cost relative to ASEAN countries, overall incidence and a survey of firms trading in EGs—are suggested for review and possible reform.

The recommendations emerging from these findings are as follows:

Recommendation One: Reduce remaining tariffs on imports of EGs and plastic substitutes—including through multilateral participation. Reducing import tariffs on EGs will lower their price, boost access to lower-cost, more energy-efficient technologies and incentivize the use of environmentally friendly alternatives. This is particularly important for industries that must comply with climate change mitigation policies. Unilateral, regional, and multilateral liberalization of tariffs on EGs trade would have previously untapped benefits for Indonesia and facilitate firm entry into trading of EGs.

Recommendation Two: Streamline NTMs on EGs and plastic substitutes and conduct a systematic and periodic review of trade regulations. Given that there are many different NTMs by different government ministries and agencies, identifying which policies and measures warrant a closer look for reform is key. To that end, we triangulate the results on both the cost and the incidence of NTMs to narrow down measures that could be improved or relaxed for EGs and plastic substitutes. The recommendations also account for feedback from the survey of firms such as on standards and previous work the World Bank has conducted on specific non-tariff trade measures that may be burdensome. These are presented in Table ES.1. A responsible government agency that conducts such holistic reviews on NTMs would be an important first step in this regard.

Table ES.1: NTM recommendations based on findings in the report

NTMs for Potential Reform	EGs	Plastic Substitutes
Authorization requirement for SPS reasons for importing certain products (A14)	Renewable Energy	
Traceability requirements (A85)	Renewable Energy	
Quarantine requirement (A86)		Plastic Substitutes
Certifications complying to national standards (SNI, B7)#	All EGs*	
Authorization requirements for importing certain products (B14)	Management of Solid and Hazardous Waste and Recycling Systems; Waste Management, Recycling and Remediation	
Authorization requirements for importers (B15)	Waste Management, Recycling and Remediation	
Traceability requirements (B85)	Waste Management, Recycling and Remediation	
Pre-shipment Inspections (C1)#	All EGs*	
Requirement to pass through specified port of customs (C3)	All EGs*	Plastic Substitutes

Source: World Bank staff calculations from BPS and World Bank NTM Database based on 2008-21 sample years.

Note: Color codes: Orange affects some categories of EGs; Red affects all EG categories.

*AVEs for all EGs are in relation to AVEs for ASEAN countries applying the same measures on the same products.

While PSI measures were dropped in 2021, they have historically been high and new post-border and pre-border inspection changes yet to be implemented will likely increase this share. SNI measures are included due to high cost and recurrent concerns from the private sector including those trading in EGs.

Recommendation Three: Work toward a harmonization of product standards across markets, mutual recognition, as well as coordination on climate policies that are likely to affect trade to better enable the private sector. Harmonization of standards and mutual recognition could be a supportive policy to encourage imports of EGs, exports in new export markets with comparable standards, and facilitate product upgrading for firms. There is a need to harmonize existing local standards with international ones and develop new standards that are aligned with international standards and practices. Improving the coordination of climate-related policies would also reduce policy fragmentation and compliance costs for firms from administrative difficulties and potential complexities.

Recommendation Four: Review and relax local content requirements (LCRs) to accelerate renewable energy (RE) sector growth through strengthening domestic supply chain and establishing demand for RE and RE enabling projects. Given progress by, and lessons from, other countries, Indonesia may consider reducing minimum requirements on LCRs and allow the market to first develop to a point where domestic production could achieve the economies of scale required to keep prices affordable. There may be scope for countries to agree to cooperate on green industrial policies (procurement, subsidies, LCRs, investment, technology transfer, and IP).

Recommendation Five: Include enforceable

environmental provisions in trade agreements and participate in plurilateral and multilateral trade policy initiatives on EGs. On the one hand, environmental provisions and commitments will need to become more detailed in terms of scope and ambition. On the other hand, direct participation in multilateral and plurilateral environment-related trade policy initiatives would not only allow Indonesian exporters to benefit from improved market access in destination markets but would also give Indonesia a seat at the table to shape the content and course of discussions.

Recommendation Six: Strengthen the complementarity between trade and climate policies. This includes more systematically integrating trade policies and trade facilitation measures as part of broader climate strategies—including in Nationally Determined Contributions (NDCs).

These policies will need to ensure equity and will have broader economy-wide effects that will need to be analyzed further. As trade in EGs and plastic substitutes increases, possible impacts on jobs and the labor market for various industries, as well as impacts on other macroeconomic outcomes is expected. Climate-related trade policy instruments also need to ensure non-discrimination and be administratively feasible. These aspects are beyond the scope of this report but will be taken on in the next phase.