MEMORANDUM

FOR : **Assistant Secretary for Biodiversity and BMB Director, in concurrent capacity**

OIC Assistant Secretary for Environment and EMB Director, in concurrent capacity

OIC Assistant Secretary for Field Operations-Mindanao and FMB Director, in concurrent capacity

THE DIRECTOR
Climate Change Service
Ecosystems Research and Development Bureau
Land Management Bureau
Mines and Geosciences Bureau

FROM : **THE OIC DIRECTOR**
Policy and Planning Service

SUBJECT : **REQUEST FOR COMMENTS AND INPUTS ON THE DRAFT DISCUSSION PAPER REGARDING CLIMATE CHANGE AND TRADE IN THE PHILIPPINES**

DATE : 30 AUG 2024

This pertains to the letter dated 19 August 2024 from the Department of Trade and Industry forwarding the draft discussion paper titled "*Climate Change and Trade in the Philippines*". The paper was shared with government stakeholders through its Interagency Mechanism and is part of the deliverables for the Climate Competitiveness Project that is funded by the European Union and implemented in partnership between the DTI and International Trade Centre. The project seeks to enhance the involvement of developing countries in the World Trade Organization on green issues and explore the nexus between trade and climate change.

The discussion paper aims to explore the nexus between trade and climate change in the Philippine context with a particular focus on the following: (a) identifying challenges presented by trade-related climate measures to Philippine exporters' market access, (b) exploring the country's potential in expanding market for green trade, and (c) mobilizing trade to increase resilience against climate change.

In this regard, we would like to request for your review and further comments on the draft discussion paper, specifically on the areas under your purview. We would appreciate receiving your official feedback through psddivision@gmail.com and policy@denr.gov.ph on or before **04 September 2024** to give us ample time for the preparation of our response to the Department of Trade and Industry.

MEMO NO. 2024 - 785

For your information and consideration, please.

CHERYL LOISE T. LEAL

2137

PHILIPPINES BAGONG PILIPINAS

19 August 2024

(Please see Distribution List)

Dear Sir/Madame:

At the outset, we would like to express our sincere appreciation to the relevant agencies which participated in the Trade and Climate Policy Dialogue organized by the International Trade Centre (ITC) and the Department of Trade and Industry (DTI) on 30 July 2024.

The Dialogue provided a platform to engage with public and private sector stakeholders, gather valuable insights, and guide the Climate Competitiveness Project. The feedback and insights received were useful in guiding our efforts to align the Project with the needs and priorities of all stakeholders.

As part of the deliverables for the Project, the ITC prepared the draft discussion paper (see enclosed) titled, "Climate Change and Trade in the Philippines". The paper aims to explore the nexus between trade and climate change in the Philippine context with a particular focus on the following: (i) identifying challenges presented by trade-related climate measures to Philippine exporters' market access, (ii) exploring the country's potential in expanding market for green trade, and (iii) mobilizing trade to increase resilience against climate change. The ITC also incorporated the feedback from stakeholders during the Dialogue and the bilateral meetings held in Manila.

In this regard, may we request your office to review the paper and provide insights and comments, specifically on the areas under your purview. We would appreciate receiving your valuable inputs **by 09 September 2024** through email at JanRedmondDelaVega@dti.gov.ph, RaissaFaminial@dti.gov.ph, and KareenHopeEltagon@dti.gov.ph.

Thank you for your continued support and cooperation.

Very truly yours,

Marie Sherylyn D. Aquia
Director

Copy : Undersecretary Allan B. Gepty, DTI-ITG

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DENR

Undersecretary for Policy, Planning and International Affairs <ouppia@denr.gov.ph>

[For inputs – Deadline by 09 September] Climate Competitiveness Project Discussion Paper "Climate Change and Trade in the Philippines" (IN00350302)

Kareen Hope A. Eltagon <KareenHopeEltagon@dti.gov.ph> Mon, Aug 19, 2024 at 2:07 PM
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Sent on behalf of DTI-BITR Director Marie Sherylyn D. Aquia

Dear Sir/Madame:

Please find attached a communication dated 19 August 2024 from DTI-BITR Director Marie Sherylyn D. Aquia regarding the request for your insights and comments on the draft discussion paper titled, "Climate Change and Trade in the Philippines". The paper aims to explore the nexus between trade and climate change in the Philippine context and is part of the deliverables for the Climate Competitiveness Project.

We would appreciate receiving your valuable inputs **by 09 September 2024** through email at JanRedmondDelaVega@dti.gov.ph, RaissaFaminial@dti.gov.ph, and KareenHopeEltagon@dti.gov.ph.

Thank you.

Best regards,

KAREEN HOPE A. ELTAGON (Ms.)
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2 attachments

IN00350302_TCWM TWG on Trade and Environment_Request for Comments_Discussion Paper_Climate Competitiveness Project_08192024.pdf
399K

[Draft] Discussion Paper_Climate Change and Trade in the Philippines.docx – 76 pages
923K

as of 16 August 2024

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International Trade Centre

CLIMATE CHANGE AND TRADE IN THE PHILIPPINES

A discussion paper

Not for circulation.

Version 14 August 2024

About this paper

The paper explores the nexus between trade and climate change in the Philippines. Its aim is to inform discussions on the issue beginning with a workshop organized in cooperation with the Bureau of International Trade Relations (BITR) of the Department of Trade and Industry in the Philippines. The workshop will consult stakeholders on priorities for sectors with respect to trade and climate change and identify areas of technical assistance and further research.

The scope of the paper is limited to three aspects of the trade and climate change nexus: the challenges presented by trade-related climate measures to exporters' market access; how exporters may explore the expanding market for green trade; and finally, how the Philippines may mobilize trade to increase its resilience against climate change.

ITC's Trade and Environment team has prepared this draft incorporating feedback from a workshop held with BITR and stakeholders in July 2024 in Manila. The paper is being shared through the Interagency Mechanism and stakeholder comments will be incorporated in a further draft. It has not been formally edited for style nor accuracy.

Table of Contents

Executive summary

This scoping paper explores the complex relationship between climate change and trade in the Philippines, aiming to stimulate discussions among the International Trade Centre (ITC), the Philippine government, and stakeholders. The paper examines three questions:

- How do climate change mitigation plans of importing countries and private buyers change export requirements and patterns of the Philippines?
- How do green trade offer export opportunities to the Philippines?
- How can the Philippines mobilize trade to increase its resilience against climate change?

The paper will be shared with government stakeholders through its Interagency Mechanism during August 2024 and inputs incorporated into the final draft of the paper for finalization in November 2024.

Background

The Philippines is one of the most climate-vulnerable nations, facing significant risks due to its location in the Pacific typhoon belt, with approximately 20 typhoons entering the Philippine Area of Responsibility (PAR) annually. The country's extensive coastlines make it prone to flooding and rising sea levels. The human and economic costs of hazards like floods, storms, droughts, landslides, earthquakes, and tsunamis are already high evidenced by the estimation that since 1990, 565 such disasters have occurred causing the loss of 70,000 people and costing USD 23 billion according to the World Bank. Climate change exacerbates these challenges. Climate change could reduce the Philippines' GDP by up to 7.6% by 2030 and 13.63% by 2040 based on extrapolations of the destruction caused by past typhoons[1].

The Philippines bears a negligible historic responsibility for climate change. The cumulative CO2 emissions for the country in 2020 was 3.68 billion tons whilst the global figure was 1.77 trillion tons[2]. This represents 0.2% of the global figure. The total Philippine carbon footprint has been growing since the year 2000 reflecting the country's economic growth and increasing energy demand although more moderately than in other fast developing countries.

The Philippines climate change mitigation ambitions are formulated in its 2021 Nationally Determined Contribution (NDC) which sets an ambitious target of reducing emissions by 75% compared to the business-as-usual scenario and excluding land-use change and forestry. The 75% target is, however, mostly – and in accordance with the Paris Agreement – conditional on foreign support. The World Bank predicts that the total emissions will continue to grow towards 2030 driven primarily by energy use and transport.

How may climate change mitigation plans of importing countries and private buyers change export requirements and patterns of the Philippines?

The EU and other high-income economies are putting in place environmental regulations and measures that have an impact on market access and export supply chains. This will require the Philippines to formulate strategies for sectoral planning and investment in order to remain competitive. At the regional level, the ASEAN Strategy for Carbon Neutrality will be important for business as it seeks to align ASEAN policies with the increasing global demand for sustainable products and services, enhancing brand reputation and market competitiveness. It

[1] World Bank (2022).
[2] Our World our data https://ourworldindata.org/co2-and-greenhouse-gas-emissions.

opens opportunities for innovation, particularly in clean technologies and circular economy models, while helping businesses anticipate and comply with evolving environmental regulations.

In addition, private companies are also introducing mitigation measures. For instance, the electronics industry, a major export sector, needs to align its production processes with the environmental standards imposed by international buyers. Additionally, agricultural products like bananas are procured by multinationals that impose their own sustainability requirements. For example, the global fruit company Dole, which farms bananas in Mindanao, has announced plans to join the Science-Based Targets initiative (SBTi), a major business-driven initiative to reduce corporate carbon footprints.

How may green trade offer export opportunities to the Philippines?

The global shift towards sustainability presents new export opportunities for the Philippines in environmental goods and services (EGS). This shift is driven by increasing global demand for products and services that support climate mitigation and adaptation and other environmental concerns like biodiversity, reducing plastics pollution, and chemical safety. Satisfying these demands depends on access to, for instance, renewable energy technologies, energy-efficient products, and sustainable agricultural practices. The market for green goods is expanding, creating opportunities for countries that can supply these products. However, capitalizing on these opportunities, including for small businesses, requires significant investment in technology and infrastructure to produce and export green goods competitively.

With abundant geothermal, solar, and wind resources, the Philippines can further develop its renewable energy sector to meet both domestic and international demand. Investments in the production of solar PV equipment, as highlighted by the Asian Development Bank (ADB), could significantly boost the economy and create jobs. By focusing on green competitiveness and aligning its export strategies with global sustainability trends, the Philippines can strengthen its position in the growing green market.

How may the Philippines mobilize trade to increase its resilience against climate change?

Trade policies can enhance the Philippines' resilience to climate change by facilitating technology transfer and fostering international cooperation. Barriers such as tariffs, regulations, and lack of harmonized standards can hinder the flow of climate-related goods and services, which are crucial for building resilience. The Philippines has already reduced tariffs on 54 green goods under the APEC Environmental Goods List. Removing these barriers and promoting open trade in environmental goods and services can help countries like the Philippines access the technologies and innovations needed to address climate change impacts.

Creating mutual supportiveness between trade and environmental policies offers numerous advantages. By aligning these policies, governments can promote sustainable development while enhancing economic growth. The Philippines has focused on continuing export-led growth, as evidenced in its development plans, including the Philippine Development Plan (PDP) and the Philippine Export Development Plan (PEDP). Simultaneously, the country has developed a series of climate change and environmental policies, ranging from the Climate Change Act and the Nationally Determined Contribution to the soon-to-be-published National Adaptation Plan. Specific industry initiatives include plans to expand renewable energy production and advance in the semiconductor industry value chain.

1. Introduction

The Philippine archipelago consists of more than 7,000 islands located in the Pacific typhoon belt, exposing them to the worst effects of climate change. These include catastrophic events caused by devastating high winds and torrential rains, such as floods and landslides, as well as more insidious occurrences like rising sea levels and the deterioration of agricultural conditions, including the emergence of new pests and diseases. According to the 'Physical Vulnerability to Climate Change Index' (PVCCI)[3], the Philippines is the most exposed country among the ASEAN member states. The direct effects of a changing climate will be predominantly adverse. Although global efforts are in progress to mitigate these changes, some negative impacts are inevitable and must be addressed through appropriate adaptation measures within the country..

Climate change will also indirectly impact the Philippines through altering trading opportunities. The prospects for export-led growth depend, among other factors, on how comparative advantages and regulatory systems evolve in a global economy subject to changing prices and regulations related to climate change policies. Carbon-intensive inputs, particularly those relying on fossil fuels, are likely to become more expensive. Additionally, governments and businesses are expected to introduce regulations and private requirements to limit greenhouse gas emissions associated with production for export.

While the direct impacts of a changing climate will be overwhelmingly negative, the effects on trade opportunities may be mixed. New opportunities arise as demand shifts towards more climate-friendly goods and services. The Philippines is a major producer of semiconductors, a key component in the electronics essential for renewable energy technologies like PV solar equipment and wind turbines, and in many devices needed for climate-smart agriculture. Additionally, the Philippines is a source of minerals such as nickel, copper, and cobalt, which are crucial for technologies like electric vehicles and for the electrification of the economy.

The aim of this scoping paper is to stimulate discussions between the ITC and the Philippine government and among stakeholders in the Philippines about the nexus of climate change and trade. The scope is limited to discussing three main questions:

- How do climate change mitigation plans of importing countries and private buyers challenge the market access of the Philippines?
- How does green trade offer export opportunities to the Philippines?
- How can the Philippines mobilize trade to increase its resilience against climate change i.e. both mitigation and adaptation policy objectives?

Thus, **while providing an overview of how trade interacts with climate change, this report does not constitute an exhaustive study on the nexus between climate change and trade**. The first two chapters of this scoping paper provide the background for discussing the trade and climate change nexus in the Philippines. Chapters 2 and 3 examine how climate change impacts the Philippines and outline the nation's climate change policies. Chapter 4 details the Philippines'

[3] The French institution 'Fondation pour les études et recherches sur le développement international (FERDI) created the PVCCI as a composite index measuring climatic shocks and countries' exposure to these shocks. The PVCCI combines 10 components (5 measures of climatic shocks and 5 measures of countries' exposure to these shocks). The free database can be found at https://ferdi-indicators.shinyapps.io/PVCCI. The version of the database consulted on 30 June 2024 shows that the Philippines with a PPCCI of 55.84 ranks as the 68th most exposed country in the world (of 191). The other ASEAN members and their ranking are Brunei (157), Cambodia (120), Indonesia (159), Laos (141), Malaysia (180), Myanmar (77), Singapore (149), Thailand (117), and Vietnam (122).

trade profile. The subsequent three chapters address the main research questions. Chapter 5 explores how climate change mitigation plans of importing countries and private buyers may challenge the Philippines' market access. Chapter 6 investigates how green trade can offer export opportunities to the Philippines. Chapter 7 examines how the Philippines can mobilize trade to increase its resilience against climate change. Chapter 8 provides a discussion of the challenges and solutions related to green trade in the sectors of renewables, mining, agriculture, and the industrial, manufacturing, and transport cluster. Chapter 9 summarizes the findings and identifies areas for future work.

2. The Philippines and climate change

Impact of climate change in the Philippines

The Philippines is highly vulnerable to climate change due to its location in the Pacific typhoon belt, facing about 20 typhoons per year . Accelerating climate change and the resulting rising sea levels pose a significant threat to the Philippines' long coastlines that are prone to flooding during typhoons. Warming oceans harm marine biodiversity and thereby the fishing industry, a sector where around 1.4 million workers are employed.[4]. Droughts may be exacerbated, and rainfall patterns changed challenging agricultural productivity and thus impacting the Philippines' millions of farmers and putting at risk vulnerable population segments depending on affordable food. Urban areas including Metro Manila are expanding rapidly and face problems of insufficient drainage systems which in times of climate change poses a risk of flooding[5].

The socio-economic costs of climate change are profound. The Philippines are already exposed to natural disasters illustrated by the World Bank's observation that 60% of the land and 74% of the population are subject to hazards like floods, storms, droughts, landslides, earthquakes, and tsunamis[6]. Since 1990, 565 such disasters have occurred causing the loss of 70,000 people and costing USD 23 billion. Climate change will increase this human and economic toll as the natural hazards except for seismic events are all predicted to worsen with climate change. Less obvious but equally severe impacts like the increased health risks from vector-borne disease and heat-related illnesses and their associated socio-economic costs are also likely to increase.

Impact of the Philippines on climate change

The Philippines bears a negligible historic responsibility for climate change. The cumulative CO2 emissions for the country in 2020 was 3.68 billion tons whilst the global figure was 1.77 trillion tons[7]. This represents 0.2% of the global figure. The fact that developing countries bear less responsibility was duly noted by the United Nations Framework Convention on Climate Change (UNFCCC) when it adopted the principle of 'Common but Differentiated Responsibilities and Respective Capabilities', which acknowledges the different capabilities and differing responsibilities of individual countries in addressing climate change

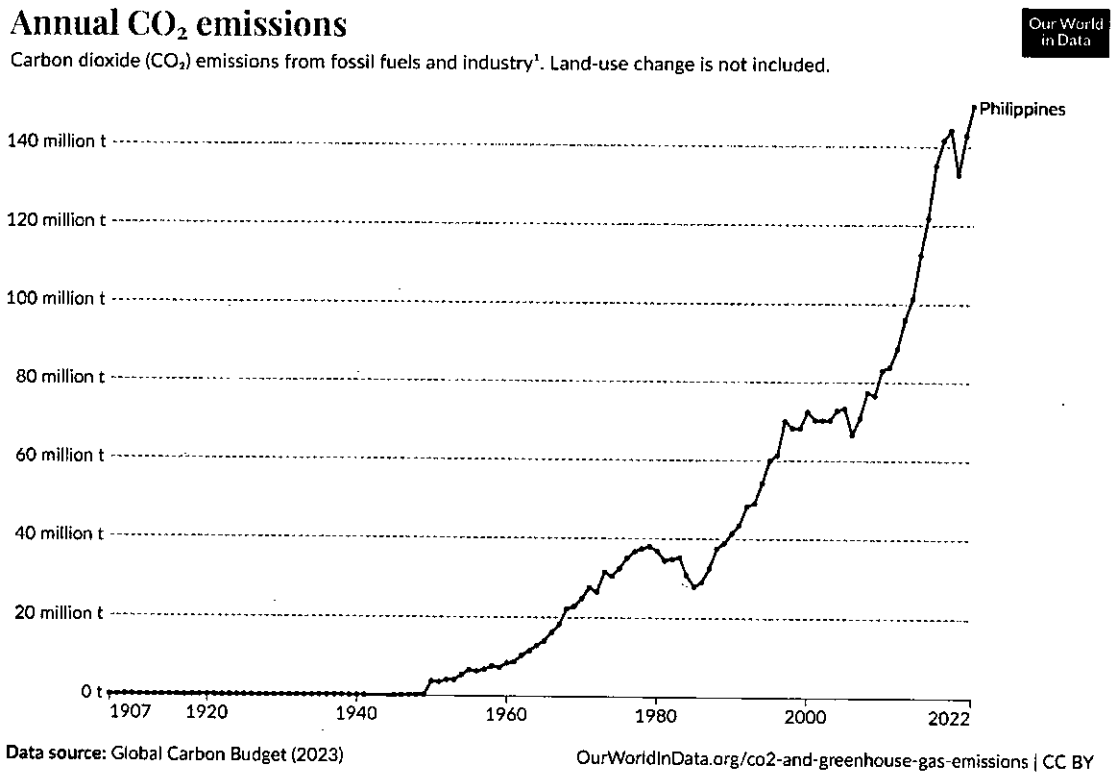
Yet, while the Philippines' carbon footprint is comparatively small, it is growing. According to the Our World in Data website[8], the per capita footprint was 2.4 tonnes of CO2e in 2022. The Philippine emissions are slightly higher than the average for lower middle-income countries (3.0 tonnes of CO2e), and about a third of the global average of 6.8 tonnes of CO2e. In comparison, the emissions of high-income countries stand at 12.6 tonnes of CO2e and the emissions of large economies like the EU, China, and the United States are, respectively, 7.5, 9.8, and 17.7 tonnes of CO2e per capita."

Data on the emissions of the most important greenhouse gas, CO2, which is linked with fossil fuel consumption, shows how the Philippines' growth affect energy demand. The total

[4] Philippines Employment: Agriculture: Fishing & Aquaculture | Economic Indicators | CEIC (ceicdata.com)
[5] For an overview of the predicted impacts of climate change on the Philippines, see ADB (2021), World Bank (2022, 2021), and USAID (2023).
[6] World Bank. 2022. Philippines Country Climate and Development Report. Washington DC: World Bank.
[7] See the Our World in Data website at https://ourworldindata.org/co2-and-greenhouse-gas-emissions.
[8] https://ourworldindata.org/co2-and-greenhouse-gas-emissions.

CO2 emissions of the Philippines are 150.40 million tonnes as illustrated in Figure 1. The Philippine CO2 emissions has been growing since 1985 reflecting the country's economic growth and increasing energy demand. World Bank (2022) predicts that the total emissions will continue to grow towards 2030 driven primarily by energy use and transport.

Figure 1. Total CO2 emissions in the Philippines 1907-2022 (million tonnes CO2)

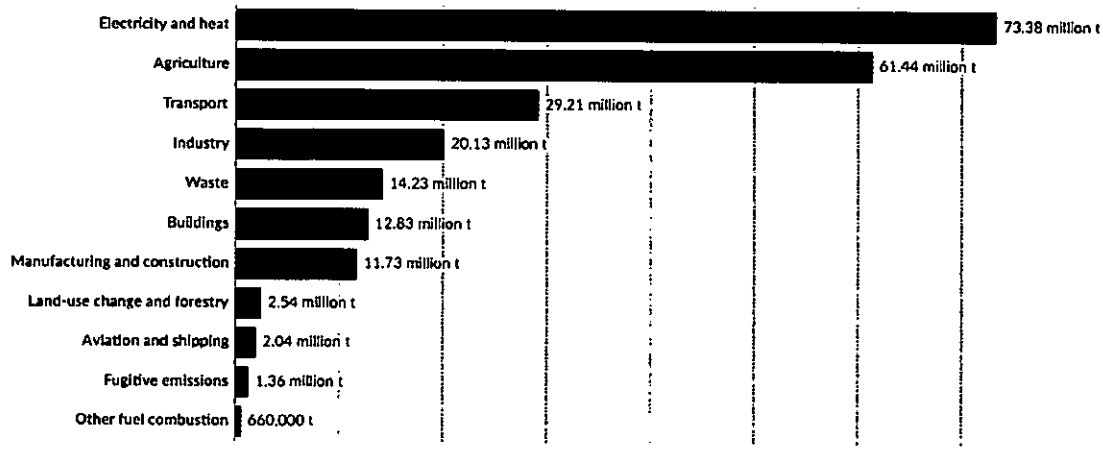


1. **Fossil emissions:** Fossil emissions measure the quantity of carbon dioxide (CO_2) emitted from the burning of fossil fuels, and directly from industrial processes such as cement and steel production. Fossil CO_2 includes emissions from coal, oil, gas, flaring, cement, steel, and other industrial processes. Fossil emissions do not include land use change, deforestation, soils, or vegetation.

Source: Our World our Data

The sectors electricity and heat, agriculture, and transport dominate emissions. In 2020, the most emitting sector was electricity and heat (32.0%), followed by agriculture (26.8%), transport (12.7%), industry (8.8%), waste (6.2%), buildings (5.6%), and manufacturing and construction (5.1%), while the remaining sectors were responsible for 2.9%.

Figure 2. Total greenhouse gas emissions by sector in 2020 (million tons CO2e)



Note: These greenhouse gas emissions cover the emissions of carbon dioxide, methane and nitrous oxide from all sources, including land-use change.
Source: World Bank Open Data website (https://data.worldbank.org).

The Philippines aims to increase the share of renewable energy in its energy mix, and in this context, the metrics of energy intensity (energy consumption per unit of GDP) and carbon intensity of energy production (carbon emissions per energy unit produced) are key. The Philippine economy has become considerably less energy intensive since the year 2000 where the energy intensity was 0.94 kWh per USD of GDP, while in 2022, the figure was 0.58 kWh. In the same period, the carbon intensity has remained about the same. In 2000, it was 0.24 kg CO2 per kWh while in 2022 that figure was 0.26 kg/kWh[9].

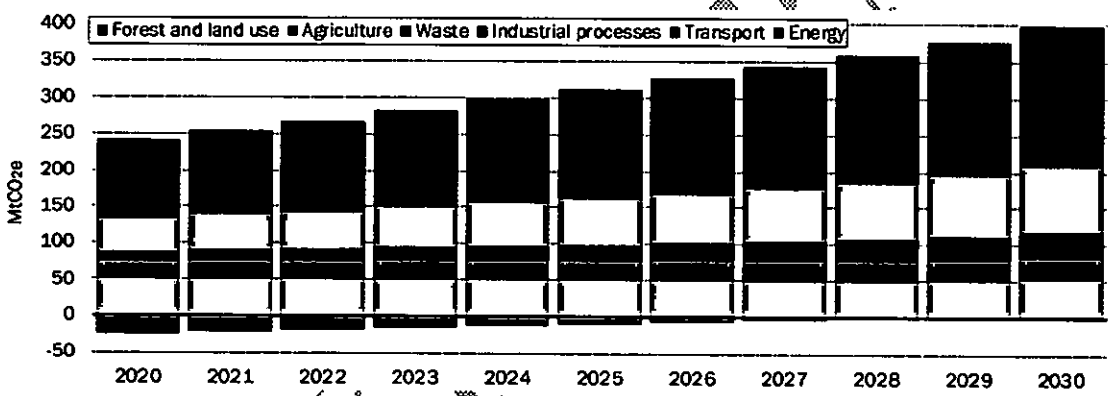
[9] World Bank Open Data website (https://data.worldbank.org).

3. The Philippines' policy measures supporting the trade and climate nexus

Nationally Determined Contribution

The Philippines climate change mitigation ambitions are formulated in its 2021 Nationally Determined Contribution (NDC) which sets an ambitious target of reducing emissions by 75% excluding land-use change and forestry by 2030. Reduction of 75% means reducing emissions compared to the business-as-usual scenario. The target is mostly, and in accordance with the Paris Agreement, conditional on foreign support. Specifically, 72.29% of the emissions reduction target is conditional on such international assistance, while the remaining 2.71% will be met through the country's own efforts. Furthermore, the reductions are referenced against a projected business-as-usual (BAU) scenario which are depicted in Figure 3. The main sectors addressed by the NDC are Agriculture, Waste, Industry, Transportation and Energy.

Figure 3 Predicted future emissions (BAU scenario) in the Philippines



Note: The data reflect a business-as-usual scenario predicting emission in the case of no mitigation action.
Source: World Bank (2022), Figure 2.2, p. 6 based on background data from Climate Change Commission (2021).

The World Bank assesses that the Philippines can easily meet the unconditional part of the NDC. The unconditional portion, however, is "highly ambitious" and the World Bank assesses that the Philippines will only succeed in meeting it if net emissions will be cut to zero before 2030.[10] The Philippines has, for example, issued a moratorium on endorsing new greenfield coal-fired power plants in 2020. The Philippines also plans to increase its renewable energy capacity.

Currently, **the NDC Implementation Plan (NDCIP) is under development.** The NDCIP is set out to detail the implementation plan for each mitigation actions for the priority sectors identified under the NDC PAMs.

[10] World Bank Group: Philippines Country Climate and Development Report 2022, https://thedocs.worldbank.org/en/doc/4ec3282919652f7545bc25c49c1811e4-0070012022/original/PHCCDR-FINAL-formatted.pdf

National Adaptation Plan

The Philippines has published the National Adaptation Plan (NAP) for 2023 – 2050. on 30 May 2024[11]. The Philippines had already developed and implemented a series of policy initiatives addressing adaptation beforehand. Figure 4 illustrates a series of initiatives taken by the Philippines on adaptation.

The National Climate Change Action Plan (NCCAP) 2011-2028 outlines the country's agenda for adaptation and mitigation. The NCCAP prioritizes food security, water sufficiency, ecological and environmental stability, human security, climate-smart industries and services, sustainable energy, and knowledge and capacity development as the strategic direction for 2011 to 2028. Further, this regulation serves as baseline in designing national priority programs that address the needs of the most climate vulnerable sectors.

Building on the NCCAP, Local Climate Change Action Plans (LCCAP) are developed on municipality level. According to the Climate Change Commission, by 15 January 2024, 1500 of 1715 Local Government Units (LGUs) had submitted their LCCAPs.

Figure 4 Policy Issuances Related to Climate Change Adaptation

2009	Climate Change Act of 2009 (RA 9729), RA 9279 IRR
2010	Philippine Disaster Risk Reduction and Management Act of 2010
2010	National Framework Strategy on Climate Change
2011	Executive Order 43 Creating the Cabinet Cluster on Climate Change Adaptation and Mitigation
2011	National Climate Change Action Plan
2012	People's Survival Fund (RA 10174)
2013	DBM-CCC JMC 2013-01 Guidelines in Tagging/Tracking Government Expenditures for Climate Change in Budget Process
2014	DBM-CCC-DILG Joint Memorandum Circular2014-01 Tagging/Tracking Climate Change Expenditures in Local Budget
2014	Executive Order 174 Institutionalizing the Philippine Green House Gas Inventory Management and Reporting System
2015	Revised Implementing Rules and Regulations for RA 9729 as amended by RA 10174
2015	PSF Proponent's Handbook

Source: Climate Change Commission (2018).

National laws and policies

The Philippines has developed a comprehensive climate change policy framework including the overarching 2009 Climate Change Act[12]. The Climate Change Act provides general strategic guidance and served to mainstream climate change considerations into other Philippine policy instruments including into the policies, strategies, and support of agencies and sectoral actors. The Act created the Climate Change Commission to coordinate climate-related policymaking.

The National Framework Strategy on Climate Change 2010–2022 (NFSCC) and the National Climate Change Action Plan (NCCAP) 2011–2028 develop the Philippines' climate change policies and implementation measures. Both the NFSCC and the NCCAP include both mitigation and adaptation issues.

[11] Countries that have submitted a National Adaptation Plan and their submitted plans can be found at https://napcentral.org/submitted-naps.

[12] The Climate Change Act was amended in 2012 and created additional policy instruments as, for example, the People's Survival Fund (PSF), which is a fund intended for local government to implement climate change adaptation projects.

Links to trade in national climate policies

Neither the NFSCC nor the NCCAP contain many discussions of trade or trade policy issues, despite focusing on selected sectors. However, *trade-relevant* issues are discussed. The NFSCC, for example, discusses the risks that climate change poses for agricultural productivity which likely influences export capacity and future food import needs, and the risks of damages to infrastructure like ports which risks disrupting international supply chains.

The NCCAP has more specific trade-related content. The Action Plan, for example, discusses the Philippines' reliance on the import of oil, coal, and ethanol and how to reduce this trade through renewable energy production. The plan also discusses the need to review and harmonize policies, like for trade, investment, sustainability, tourism, and agriculture, to create a conducive policy framework for climate-smart industries and services. The NCCAP includes discussion of the development of climate-smart industries and renewable energy, sectors that depend on the import of technology. Issues such as tariff and non-tariff barriers or the removing of behind-the-border barriers to the trade of technology are not discussed.

Integrating climate change with trade policies and strategies

Two current policy developments may promote the mutual supportiveness of trade and environmental policies. **From 2024, signatories to the Paris Agreement begin to submit new NDCs known as NDC 3.0.** UN Trade and Development has argued that countries should include trade flows and trade policy explicitly in the new NDCs and has mapped how trade-related measures are included in current NDCs[13]. It asserts that trade policy measures can serve as practical instruments to reach objectives, such as enabling local industries to access environmentally favourable goods and services.

The Philippines could link trade with mitigation through analysing the impacts of lowering tariffs on renewable energy products, components, and technology lowering the costs of renewable energy and mitigate climate change by promoting the conversion from fossil fuels to renewable energy.

Furthermore, **the Philippines could link trade with adaptation by ensuring trade policy allows trade flows to adjust to shifting agricultural production capacity** and volatile food prices following changed rainfall patterns, droughts, changed disease pressure, etc. Furthermore, Dekens *et al.* (2021) argue that the NAPs may be used to incorporate trade measures that address climate change adaptation. They review submitted NAPs and find that the NAPs contain a range of measures that address the observed and anticipated impacts of climate change on productive capacities which in turn may affect trade prospects.

The other current development is the ongoing trade agreement negotiations between the EU and the Philippines. The Philippines and the EU have resumed talks over their trade and investment agreements. Negotiations for a trade and investment agreement had begun in December 2015 but were put on hold in 2017 after two rounds of negotiations. In March 2024, the two countries resumed negotiations and both parties have announced that trade and environment will play a prominent role. The bilateral FTA would replace the Philippines' current preferential market access arrangement under the EU's Generalised Preference System Plus (GSP+), which is otherwise in place until 2027. Annex 1 provides more information on the arrangement.

[13] UNCTAD (2023).

It is very early to discuss the outcome of the bilateral negotiations, but the trade and environment provisions will possibly take inspiration from recent EU trade agreements. Especially, the new EU-Kenya trade agreement may provide a glimpse into the kind of issues likely to be negotiated. In December 2023, the EU signed what it calls the most ambitious EU trade deal with a developing country when it comes to sustainability provisions such as climate and environmental protection. This agreement is the new Economic Partnership Agreement (EPA) with Kenya. This deal is the first trade agreement with a developing country that reflects the EU's new approach to trade and sustainable development. It includes articles on multilateral environmental agreements, climate change, biodiversity, forests, marine resources and aquaculture, and sustainable development within trade and investment. The articles include both hard and soft commitments of the parties, and devices elaborate and (to some extent) binding mechanisms for consultation, arbitration, and dispute settlement. Annex A presents the environmental disciplines in the agreement.[14]

While these disciplines appear to be a new development in the EU's trade relationship with a developing country, the implications are still uncertain. The language is generally soft and the consequences (if any) of non-implementation are not defined with one exemption. On climate change, the EU-Kenya EPA warns that the "*Party may take appropriate measures*" if the other party violates a commitment "*to refrain from any action or omission which materially defeats the object and purpose of the Paris Agreement.*" Despite the uncertainty of how new environmental disciplines will be implemented in a new trade agreement, it is likely that sustainability provisions will be a high priority for the EU Commission in new trade agreements.

The new interest in sustainability provisions was announced by the 2022 communication from the European Commission drawing on the 2022 Trade and Sustainable Development Review[15]. In this communication, the European Commission identifies six policy priorities in new trade agreements:

1. The need to be more proactive in cooperating with partners.
2. Stepping up a targeted and country-specific approach to TSD.
3. Mainstreaming sustainability beyond the TSD chapter of trade agreements.
4. Increasing monitoring of the implementation of TSD commitments.
5. Strengthening the role of civil society.
6. Strengthening enforcement by means of trade sanctions as a measure of last resort.

The Philippines commits to sustainable development and environment provisions in an increasing number of trade agreements.

The Japan-Philippines trade agreement, which was the Philippines' first bilateral trade agreement, for example, stipulates that the parties shall cooperate on conformity assessment for environmental standards like vehicle emission standards and furthermore recognizes that it is inappropriate to encourage investments by investors of the other Party by relaxing its environmental measures (Department of Trade and Industry 2006). The more recent 2016 EFTA-Philippines Free Trade Agreement contains a specific trade and sustainable development chapter. This chapter establishes principles (i) on the right to regulate environmental issues considering science and international standards, (ii) on obligations not to weaken environmental regulation to attract trade and investment, on implementation of Multilateral Environmental Agreements,

[14] Source: ITC (forthcoming).
[15] European Commission (2022, 2024).

(iii) on the facilitation of trade and investment in green goods and services, and (iv) on the trade in forest-based products to reduce greenhouse gas emissions from the degradation of forests and peat lands (Department of Trade and Industry 2016).

In addition, the Second Protocol to Amend the ASEAN-Australia-New Zealand Free Trade Area (AANZFTA), signed in August 2023, also contains a Chapter on Trade and Sustainable Development. Accordingly, the agreement encourages further economic co-operation through the FTA Joint Committee on matters such as the climate and environment; the green and blue economy; circular economy in manufacturing; among others.[16]

[16] https://www.dfat.gov.au/trade/agreements/in-force/aanzfta/official-documents/second-protocol-to-amend-the-agreement-establishing-asean-australia-new-zealand-free-trade-area-aanzfta

4. Exploring the Philippines' potential in the expanding market for green trade

Philippines' export profile

The Philippines is a trading nation with diversified exports and imports comprising both primary products, manufactured products, and services. The country is well integrated in global supply chains, especially for electronics. It supplies a range of products relevant for the global green economy like semiconductors (needed for the electronics in renewable technology) and essential minerals for electrification (like copper, nickel and cobalt for electrical vehicles.

The top destination goods markets (67% of the total) are the United States, China, Japan, Hong Kong, China and the EU.

The Philippines exports are dominated by electronics and electronic equipment. The electronics industry exports a diverse array of products including semiconductors, electronic data processing equipment, and office equipment

The Philippines also exports an array of goods derived from primary activities like mining, agriculture, and fisheries, either in raw or processed form. Agricultural exports, either primary or processed, amount to nearly the same as mineral exports at USD 6.7 billion representing 8.4% of the total.

The Philippines is a notable exporter of services, with significant contributions from various sectors. The total value of services exports in 2022 was USD 41.1 million or about half the value of goods exports. According to the ITC Trade Map, the four largest service export categories[17] were 'Other business services', 'Telecommunications, computer, and information services', 'Travel', and 'Transport'.

Annex 2 describes in further detail the trade profile of the Philippines.

Green market opportunities

Climate change and other environmental concerns create new export market opportunities of the Philippines. These arise as demand shifts towards more climate-friendly goods and services. Climate change induces the transformation towards a new and more sustainable global economy that replaces the old economy shaped by endowments in fossil fuels[18]. In this new climate-constrained economy, the patterns of comparative advantage changes and this change affects a multitude of products and markets. Locations to produce renewable energy like solar and wind will be more widespread than fossil fuel endowments ever were. Inputs, intermediaries, and final products based on carbon-intensive manufacturing will lose to low-carbon ones. In agriculture, higher temperature and changing rainfall patterns will influence countries' export prospects and import need changing the comparative advantages of agro-food exports and calling for trade itself to become an instrument of climate change adaptation[19]. Overall, the competitiveness of countries relying on carbon intensive inputs like fossil fuels, agricultural practices causing the emission of greenhouse gases, and air freight may worsen. On

[17] Classified using the conventional IMF Balance of Payments and International Investment Position Manual, sixth edition (abbreviated BPM6).

[18] *Kyriakopoulou, Kyriacou & Pearson (2023).*

[19] Bozzola, Lamonaca & Santeramo (2023).

the other hand, countries with the strength to innovate and manage the green transition may gain in the global marketplace.

One example of new export opportunities is the growing market in climate-related goods and services (EGS). Such goods according to the OECD and Eurostat comprise "activities which produce goods and services to measure, prevent, limit, minimise or correct environmental damage to water, air and soil, as well as problems related to waste, noise and ecosystems".[20] There is a lack of recent data on the market size for EGS. According to the ITC, the market in EGS was expected to rise to USD 1.9 trillion by 2020.[21] The World Economic Forum estimates that the share of environmental goods as a share of total manufactured goods trade in 2030 could reach 15%, up from 11% in 2022[22]. Traditional exports such as agricultural products and manufacturing goods might face stricter environmental regulations, potentially increasing production costs and limiting market access. However, this also incentivizes the Philippines to innovate and invest in sustainable practices and green technologies.

The Philippines can leverage its abundant natural resources to develop renewable energy sources, including geothermal, solar, and wind power. The Philippines can aim to power its industrial parks entirely with renewable energy, thereby reducing the carbon footprint of exports from these areas. By offering renewable energy options, the government could attract investments in the crucial and energy-intensive semiconductor industry allowing brands to offer more sustainable electronics[23]. Aligning with international environmental standards and certifications could make the Philippine goods more attractive to environmentally conscious global consumers, thereby opening up new markets and strengthening its competitive edge in the global economy. An array of opportunities exists for exporters under emerging climate constraints and other environmental concerns. This section outlines the types of opportunities for developing countries in the green transition and discusses potential opportunities for the Philippines.

The Philippines' strategy for building green competitiveness

The Philippines has developed a series of policy documents and capacity building initiatives that incorporate issues of green competitiveness. The Philippines, however, does not have a single, unified strategy for building green competitiveness. In this section, the scoping paper discusses the Philippine Export Development Plan (PEDP) for the 2023 to 2028 period and the World Bank report *'A New Dawn for Global Value Chain Participation in the Philippines'* on which the PEDP is partly based[24]. The section also looks at the Strategic Investment Priority Plan (SIPP) from 2022 and at selected trade initiatives in particular those involving the Department of Trade and Industry (DTI).

The Philippine Export Development Plan (PEDP) aims to establish the Philippines as an exporter of high-value goods and services in line with the 1994 Export Development Act

[20] OECD (1999). Organisation for Economic Co-operation and Development (1999), The Environmental Goods and Services Industry: Manual for Data Collection and Analysis, https://unstats.un.org/unsd/envaccounting/ceea/archive/EPEA/EnvIndustry_Manual_for_data_collection.PDF

[21] Bucher, H, Drake-Brockman, J., Kasterine, A., and M. Sugathan (2014). Trade in Environmental Goods and Services, International Trade Centre, Geneva.

[22] WEF (2023).

[23] Göke *et al.* (2022) discuss how the semiconductor industry, which is a major greenhouse gas emitter and very energy intensive, may reduce its emissions, and they find that 45% of the greenhouse gas emissions come the purchase of energy sources like electricity, steam, heat, or cooling.

[24] Arenas & Coulibaly (2022).

(EDA). The PEDP expresses concern that the Philippines has only seen its exports nearly double over 21 years, whereas other ASEAN countries have tripled their exports or more. The Philippines shows particularly weak performance in agricultural exports but excels in services.

The PEDP focuses on increasing exports from global supply chain clusters, food and agri-marine sectors, and labour-intensive manufacturing. The PEDP explicitly states that the goal is to develop an export industry that includes green products and services, although it does not define such exports or specify initiatives that could promote them. The PEDP does not identify green goods and services as independent industries. **When discussing global market prospects, the PEDP emphasizes the impacts of climate change**. The plan acknowledges that climate change has harmed the production base of agricultural exports and warns that weak adaptation and mitigation efforts by the global community risk prolonging these negative impacts. Although the PEDP specifically acknowledges the adverse effects of climate change, it does not address climate change and environmental concerns as generators of a new class of exports, such as green goods and services. Nor does it treat these concerns as cross-cutting topics that could create demand for better quality infrastructure services, such as standards and conformity assessment measures to support green certification, or the provision of renewable energy to help export industries lower their carbon footprints. In a couple of cases, the PEDP specifies green industry initiatives. The PEDP encourages using advanced technologies in synthetic fibre manufacturing to produce hybrid green textiles that combine synthetic and natural components, reducing the industry's carbon footprint. Furthermore, the PEDP sees emerging markets for renewable and biodegradable fuels as an opportunity.

The World Bank, through a recent report by Arenas and Coulibaly (2022), has contributed to the discussion on increasing the Philippines' participation in global supply chains. The report identifies 'mega-trends' influencing Philippine exports but does not recognize the incorporation of environmental concerns as one of these trends. Environmental issues appear most notably in discussions about energy. The World Bank argues that the government should provide incentives, such as subsidies, to attract private investment in renewable energy within industrial parks. This would promote the Philippines' engagement in global supply chains for the clusters of (i) industrial, manufacturing, and transportation, (ii) technology, media, and telecommunications, and (iii) health and life sciences.

The Strategic Investment Priority Plan (SIPP) priorities a series of green products for government incentives. The SIPP is a three-year plan formulated by the Board on Investments, an attached agency of the Department of Trade and Industry. The SIPP lists the economic and business activities that may be given investment incentives under Philippine legislation[25]. The 2022 SIPP includes electrical vehicle assembly and manufacturing of parts, operation of energy efficient maritime vessels, electronic devices and circuits for smart grid and renewable energy like solar equipment, bioplastics and biopolymers, renewable energy, energy efficiency and conservation projects, energy storage technologies, and finally integrated waste management, disposal, & recycling.

The DTI has launched a series of green trade initiatives. These include, amongst other things, a green economic development initiative targeting MSMEs, the advance of sustainable production, and green public procurement as well as joint efforts with development partners like

[25] See https://insightplus.bakermckenzie.com/bm/industrials-manufacturing-transportation/philippines-philippine-president-approves-2022-strategic-investment-priority-plan for an explanation of the incentives that are accessible for activities included in the SIPP.

a project with the Global Environment Facility addressing chemicals and waste management and a GIZ implemented project on greening industrial activities focusing on auto, paper, plastics, copper, furniture, and mass housing.

Expand exports by pursuing opportunities in climate-related goods and services

The global markets for environmental goods and services are expected to provide increasing opportunities. These goods and services in one way or another benefit the transition to a green economy including climate mitigation and adaptation. There is no universal agreement as to what constitutes an environmental good. Yet, much analytical and policy work has used a list of 54 environmental goods defined by APEC in 2012 as the starting point. Some organizations like the IMF have subsequently defined their own lists of goods that they view as being environmental. A significant challenge in analysing and negotiating environmental goods in trade agreements, such as the plurilateral Environmental Goods Agreement (in which the Philippines does not participate), is the dual nature of many goods. These goods can be used for both environmental and conventional purposes, complicating their classification and negotiation. For example, bearings can be considered a dual-use good as they are essential components in wind turbines for renewable energy generation, but they are also widely used in machinery and vehicles that rely on fossil fuels.

The Philippines is a member of APEC and has participated in APEC efforts to cut tariffs for a select list of green goods. The Philippines has implemented the APEC Environmental Goods List, which included reducing tariffs on 54 products to no more than 5%. The implementation was relatively straightforward in so much as MFN tariffs of products on the APEC list were already at or below 5% except for 6 tariff lines, none of which were on renewable energy[26]. APEC is, however, discussing extending the original list of environmental goods including adding a list of environmental services[27].

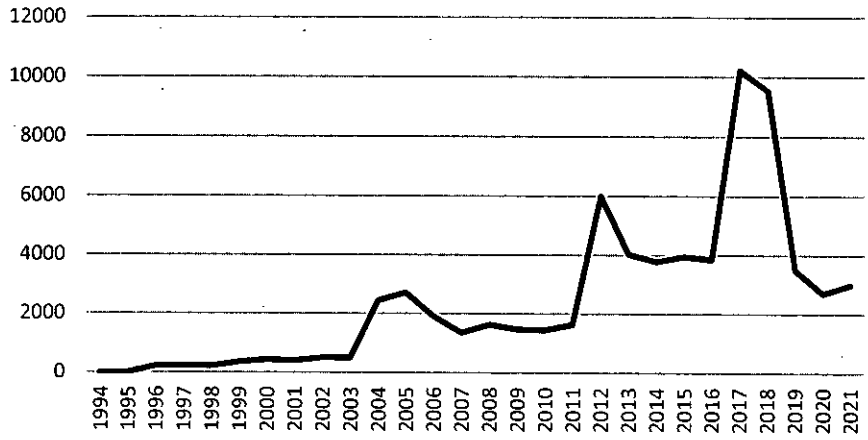
The Philippines' exports of environmental goods have developed substantially. According to the environmental goods definition applied by the IMF[28], the Philippines in 2021 exported USD 3 billion worth of environmental goods equivalent to about 4% of total goods exports. This number was much lower than the export prior to Covid-19. In 2017 and 2018 exports peaked at around USD 10 billion in 2017 and 2018 or about 15% of all exports. Table 5.1 depicts the development since 1994.

[26] See the Philippines' implementation plan for tariff reductions on environmental goods available at www.apec.org/groups/committee-on-trade-and-investment/apec-economies-implementation-plans. Only 6 tariff lines had tariffs above 5% prior to the adoption of the APEC list. These six were 8404.20.00 (condensers for steam) at 10%, and 8417.20.00A (waste incinerators) and 8421.21.11 to 23 (various machinery and apparatus for water filtering), which were at 7%.

[27] Carlos Kuriyama (2021): A Review of the APEC List of Environmental Goods. Policy brief No. 41, October 2021. APEC Policy Support Unit.

[28] Annex 3 presents a list of included tariff lines in the definition applied by the IMF.

Figure 5 Philippines environmental goods exports, 1994 to 2021



Source: IMF Climate Change Dashboard[29]

The Asian Development Bank (ADB) sees considerable potential for the Philippines to develop its production of solar PV equipment for both domestic use and exports. According to the ADB's Renewable Energy Manufacturing report (ADB *et al.* 2023), the development of the solar PV industry in the Philippines could grow its GDP by USD 175 million in seven years. Half of the production would target exports.

Trade in both environmental goods and EPPs often requires agreement on sustainability criteria and standards. Countries need to have developed traceability systems, certification and inspection services to demonstrate that a product is genuinely preferable and thus gain access to overseas markets (Brenton and Chemutai 2022).

Non-tariff measures on environmental goods and EPPs tend to be more prevalent in high-income than in low-income countries reflecting regulatory requirements. These requirements can easily become barriers to trade and are particularly challenging for developing countries whose exporters tend to be smaller and less able to absorb additional costs (Brenton and Chemutai 2022).

[29] Data available at https://climatedata.imf.org/datasets/8636ce866c8a404b8d9baeaffa2c6cb3_0/about.

5. Trade-related climate measures are changing export requirements

The Philippines' exports reach a wide array of national markets through long and complex supply chains. Many of the governments of these national markets and the private firms that control the supply chains are increasingly focused on reducing greenhouse gas emissions. Table 1 shows a non-exhaustive list of key regulatory and private sector initiatives.

Table 1 Examples of mitigation regulations and requirements affecting the Philippines' export markets

Topic or sector	Description	Regulation *	Buyer requirement **
Climate change			
Emissions	Regulations and requirements to reduce emissions	EU CBAM	Private carbon management like the Science Based Targets initiative (SBTi)
Energy efficiency	Requirements for reducing energy consumption and improving efficiency in production processes	US ENERGY STAR certification; EU energy label	Apple's energy efficiency requirements for suppliers
Deforestation	Requirements to combat deforestation	Regulation on Deforestation-free products (EU 2023/1115)	Forest Stewardship Council; Rainforest Alliance
Transport	Requirements to reduce climate impact	CORSIA (Carbon Offsetting and Reduction Scheme for International Aviation)	Maersk Emissions Dashboard; retailer bans of air freight; food/air miles
Other environmental issues			
Chemical management	Regulations on the use and disposal of chemicals and waste to minimize environmental harm	EU REACH regulation, US EPA Toxic Substances Control Act	Zero Discharge of Hazardeous Chemicals (ZDHC); Greenpece Detox Commitment for clothing
Tourism	Initiatives to increase the sustainability of tourism		Global Sustainable Tourism Council (GSTC)
Agriculture	Regulations and private initiatives to reduce the environmental impact of agriculture		Cargill coconut GAP; Barry Callebaut Supplier Code GlobalG.A.P., the Rainforest Alliance, Fairtrade, organics
Electronics	Broad regulations and private initiatives addressing a series of energy, climate, and other environmental concerns	EU eco-design for sustainable electronics	SERI (Sustainable Electronics Recycling International); Blue Angel; Siemens DEGREE sustainability framework
Clothing	Regulations and initiatives to reduce the clothing industry's environmental impact	EU textiles strategy and eco-design	H&M sustainable impact partnership programme ; OEKO-TEX standards; EU ecolabel
Copper, nickel	The Copper Mark is an industry standard promoting responsibly produced copper, molybdenum, nickel and zinc.		Copper Mark
Seafood	Dolphin bycatch concerns and sustainable fisheries	NOAA Fisheries' Tuna Tracking and Verification Program	Marine Stewardship Council; Walmart seafood policy
Gold	Private initiatives addressing both environmental and social concerns		Responsible Gold Mining

* Regulations are established in legal texts and may be mandatory as bans on hazardous chemicals or voluntary as energy labels. Included are UN conventions like the ICAO's CORSIA.
** Buyer requirements are formalized demands made by buyers of the Philippines' exports. While voluntary in nature, they are often a prerequisite for sales to a specific buyer.

Regulations in export markets

The desire to mitigate climate change has prompted governments to consider and in some cases design and implement measures that affect market access. Table 4.1 illustrates such regulations. The EU, for instance, is in the process of putting in place import tariffs calibrated to the carbon content of selected imports (iron and steel, cement, fertilizers, aluminium, hydrogen, and electricity) under its Carbon Border Adjustment Mechanism (CBAM), similar considerations are underway in different markets, including the UK.[30]

Analysis by the Asian Development Bank (ADB) [31] shows that **the overall economic impact of the CBAM appears to be limited for Asian economies, but some countries will face significant cost increases at the sector level**, such as India in the iron and steel sector and Kazakhstan in aluminium. It argues that the CBAM presents an opportunity for Asian economies to focus on developing their carbon markets, while tackling shortfalls in investments that are required to develop renewable energy sources. The Center for Global Development[32] highlights the very limited carbon pricing schemes in lower income countries and suggests a substantial challenge for affected economies.

In its analysis of the impact of CBAM in Trinidad and Tobago, the International Institute for Sustainable Development (IISD)[33] develops further possible strategic responses to the CBAM. These include *inter alia* the following:

Short term

- Identify opportunities to reduce GHG emissions by seeking out and supporting existing low-carbon production processes within border carbon adjustment (BCA)-affected industries.
- Actively engage in international negotiations and forums to advocate for the fair, equitable, and WTO-compliant implementation of BCA
- Seek international financial and technical assistance from developed countries to facilitate the transition to a low-carbon economy, especially those countries seeking to introduce BCAs.

Medium term

- Invest in policies and programs to improve energy efficiency within affected industries to reduce carbon emissions per unit of production.
- Develop robust carbon accounting systems for measuring and reporting emissions to ensure accurate assessment of carbon footprints and facilitate fair application of BCAs
- Implement domestic carbon pricing through a carbon tax or emissions trading scheme (ETS).

Long term

[30] https://trade.ec.europa.eu/access-to-markets/en/news/carbon-border-adjustment-mechanism-cbam.
[31] Asian Development Bank (2023). European Union Carbon Border Adjustment Mechanism: Economic Impact and Implications for Asia. http://dx.doi.org/10.22617/BRF230561-2
[32] Centre for Global Development The EU's Carbon Border Tax: How Can Developing Countries Respond? | Center For Global Development (cgdev.org)
[33] IISD (2024). Border Carbon Adjustments: Trinidad and Tobago country report July 2024, Preeya Mohan and Jaymieon Jagessar (University of West Indies – St Augustine Campus)

- Diversify the economy away from carbon-intensive exports toward low-carbon products.
- Invest in clean technologies and infrastructure like green hydrogen; renewable energy, in particular solar and wind; and carbon capture, utilization, and storage, which can reduce emissions and improve competitiveness. °
- Embed sustainability principles into long-term economic planning and development strategies.

In the region, several initiatives focus on climate linkages of economic activity. The ASEAN Strategy for Carbon Neutrality aims to make ASEAN carbon neutral and accelerate the green transition. The strategy will, amongst other things, develop green industries, for example by standardizing corporate climate reporting and facilitating the movement of professionals with green skills including by creating appropriate qualification standards for green skills and providing policy support for green upskilling. Furthermore, the upgrade of the free trade agreement between ASEAN and New Zealand (AANZFTA) introduces a new framework for cooperation on sustainable trade issues like the environment, labour standards and women's economic empowerment.[34]

Regulations on energy efficiency, such as the United States' Energy Star system, push suppliers to enhance the energy efficiency of their products. These systems directly influence the Philippine exports of electronics. The Energy Star label signals to consumers which products are most energy-efficient, thereby increasing competition among producers on this parameter. The system is developed by the US government in collaboration with the US industry. The US system has parallels in the EU energy efficiency labels and similar schemes in other countries. The EU is also considering legislation to extend the ecolabelling system it currently uses for energy efficiency to other products and environmental concerns.

Private buyer and supply chain requirements

Many Philippine exports ranging from electronics to fruits are dominated by big buyers like large electronics designers and brands and global fruit multinationals. Such big buyers are able to impose their product requirements on producers to a similar effect like regulations. How such big buyers interpret the need for action on climate mitigation and other environmental concerns is therefore of paramount importance in many supply chains. Table 4.1 illustrates such private requirements.

Over the past two decades, there has been a significant rise in public demand for businesses to address environmental issues more responsibly. Among the industries responding to these pressures, semiconductors and bananas provide notable examples relevant to the Philippines. The semiconductor industry has seen initiatives like the creation of the Semiconductor Climate Consortium aimed at reducing carbon footprints[35]. Similarly, the global fruit company Dole, which farms bananas in Mindanao, has announced plans to join the Science-Based Targets initiative (SBTi). Dole wants to set an emissions reduction target that it plans to reach through, for example, the use of renewable energy in their operations and improving shipping efficiency[36]. The next two

[34] https://www.mfat.govt.nz/en/trade/free-trade-agreements/free-trade-agreements-in-force/asean-australia-new-zealand-free-trade-agreement-aanzfta/upgrading-aanzfta

[35] See, for instance, the first report by the semiconductor industry that calculates its carbon footprint at https://www.semi.org/en/industry-groups/semiconductor-climate-consortium and the discussions of how the industry plans to accelerate access to low-carbon energy in the Asia-Pacific region.

[36] Dole (n.d.).

sections delve deeper into regulations and private requirements addressing mitigation and other environmental issues.

Many large brands including in electronics have committed to greenhouse gas emissions reduction targets that cover both their own direct emissions and emissions occurring in the supply chains including in Philippine production sites. The Science-Based Target initiative (SBTi) is one such initiative. Companies that source from the Philippines like Walmart participate in the SBTi. The SBTi is a partnership between three international NGOs – the CDP, the World Resources Institute and the WWF – and the UN-linked corporate responsibility initiative UN Global Compact. SBTi assists firms to set and verify carbon reduction targets. SBTi maintains that 17% of Fortune Global 500 firms have committed to set science-based emissions reduction targets (SBTi 2018). In March 2024, the telecommunications company Globe was the first publicly listed company in the Philippines to get the SBTi validation and approval of its near-term and net-zero science-based greenhouse gas (GHG) emission reduction targets[37].

The Philippines' exposure to mitigation regulations and requirements

A country's exposure to mitigation efforts depends on its export portfolio and the nature of its exports, especially the balance between supply and demand. For example, gold production often suffers from hazardous working conditions and poor environmental performance, such as the use of mercury, particularly in artisanal mining. Despite these issues, strong demand makes it challenging to enforce environmental standards. The export portfolio of a country is shaped by its national markets and its participation in supply chains. Markets in high-income countries are more likely to have in place stringent mitigation regulations. Additionally, large corporations such as Siemens in Germany, Samsung in Korea, and major retailers like Walmart in the US and Tesco in the UK are more inclined to implement private mitigation efforts compared to smaller companies focused on commodity markets. Table 4.2 shows how the nature of the Philippines' major exports and its export portfolio influence the impact of mitigation efforts.

Philippine exports vary in their exposure to mitigation efforts (see Table 2). Few Philippine exports rely heavily on countries and supply chains where such efforts are strongest. Exports such as gold, coconut products, fruits, and fishery products are prominent in high-income countries, where discussions on mitigation efforts and environmental concerns are intense. Many exports, including copper, gold, and ores, are traded as commodities in anonymous world markets, obscuring the identity of the supplier.

The electronics industry serves a mix of high-income and developing countries. Philippine electronics, such as semiconductors, often travel through complex supply chains, with final products assembled using Philippine components in other production centres in Asia. The mitigation efforts of brands selling these assembled products potentially have an impact on suppliers in the Philippines. Some brands have announced plans to work with their suppliers throughout the supply chain to reduce carbon footprints. Additionally, the legislative framework in end markets, such as EU regulations on energy efficiency, influences suppliers of electronic components like the Philippines. Chapter 8 will analyze the situation of specific industries in greater depth.

Table 2 Exposure of major Philippine exports to mitigation efforts

[37] Tanner (2024).

Export	Nature of export	National market	Supply chain
Copper	Strong demand because of electrification	Mainly China (44%) and developing Asia	Commodity
Gold	High-value commodity in strong demand	Hong Kong (45%), Switzerland (37%)	Commodity
Coal and oil	Demand for coal and oil will fall longer term, yet still strong in many markets	China (40%) and the rest also mainly in Asia. South Korea (25%) only major HIC	Commodity
Ores (nickel, iron)	In strong demand	China nearly two-thirds, Japan a quarter.	Commodity
Coconut	Strong demand as coconut oil seen as healthy and greener substitute for palm oil	Mainly HICs (EU 46%, US 20%)	Commodity procured by branded and non-branded companies
Fruit	Highly competitive world markets	A diverse mix of HICs and developing countries led Japan (33%) and China (27%)	Branded foods in supply chains dominated by big agribusiness companies
Fishery products	Mainly high-value tuna	Mainly HICs (EU 25%, US 21%, Japan 16%)	Non-branded product procured by companies like supermarkets
Electronics	Semiconductors a strategic product facing rapidly increasing demand	Diverse portfolio, mainly US, EU, China, Hong Kong and other Asian countries	Supply chains controlled by large, branded companies catering to all countries

Notes: HIC: High-income country.
Source: Trade Map and author's own compilation.

Market access conditions

The EU is a significant market for Philippine exports, making EU regulatory developments crucial for Philippine exporters. The EU influences Philippine exports through four main channels (see Box 1):

1. Direct market influence: Exports like coconut and fishery products are predominantly sold to EU countries.
2. Indirect market influence: Exports like electronics often reach the EU market after assembly in other Asian countries.
3. Corporate influence: EU-based companies, such as Siemens, dominate complex supply chains, imposing private mitigation requirements on Philippine exports.
4. Regulatory influence: The EU leads in developing regulations on mitigation and environmental concerns, inspiring other national markets to adopt similar policies.

Box 1: EU Green Deal and implications for the Philippines

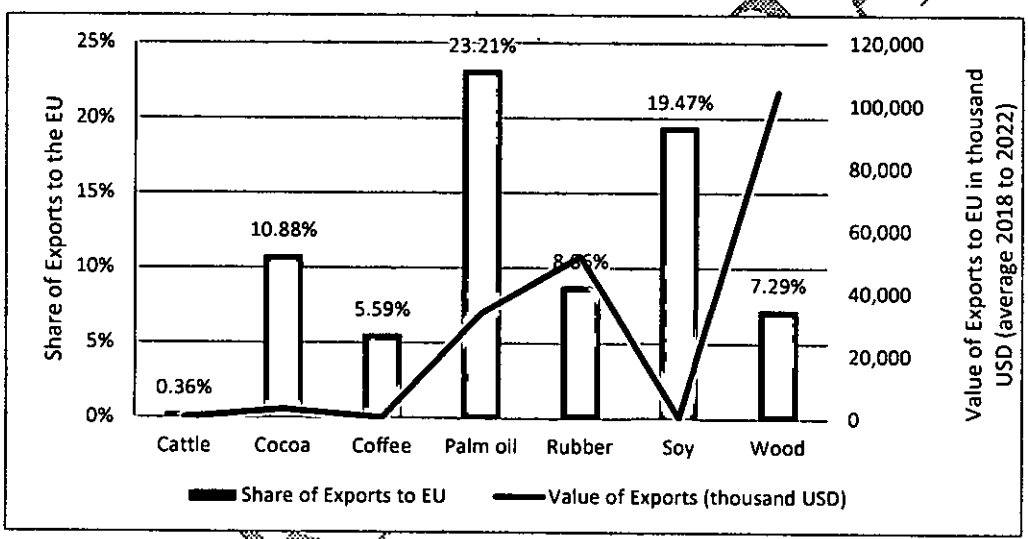
In 2019, the European Commission launched the European Green Deal, the EU's long-term growth strategy with significant implications for all exporters to the EU. The Green Deal aims to decarbonize the EU and ensure environmental sustainability, including trade with countries like the Philippines. This initiative marks a shift towards environmental sustainability as a transnational regulatory force. A key component of the Green Deal is the Carbon Border Adjustment Mechanism (CBAM), operational from October 2023. The CBAM imposes a carbon cost on imports of certain goods, levelling the playing field between EU producers and global counterparts. Additionally, the Ecodesign for Sustainable Products

Regulation, agreed upon in December 2023, sets sustainability standards for products sold within the EU, including digital product passports and prohibitions on destroying unsold goods.

Further legislation supports circular economy goals, such as the draft 'Right to Repair' directive and updates to the industrial emissions directive. Another directive combats greenwashing by requiring substantiation for green claims like "50% recycled plastic" or "climate-neutral." While the exact formulation of these requirements remains uncertain, exporters can anticipate varied performance and information mandates across different product groups. Key sectors affected may include clothing, plastics, and food.

The Regulation on Deforestation-Free Products (EUDR), which applies from 30 December 2024, mandates that exporters of seven commodities and selected derived products (cattle, cocoa, coffee, oil palm, rubber, soya, and wood) prove their goods do not contribute to deforestation. For exports from the Philippines, the palm oil and soy sectors show the highest exposure rates, with 23.21% and 19.47% of exports respectively.

Figure 1 Exposure of the Philippines' exports to the EUDR



Source: ITC's Analysis of Exposure Rates to EUDR, https://tradebriefs.intracen.org/2023/11/spotlight

The Green Deal's sustainability requirements present both challenges and opportunities. Exporters must engage with the entire lifecycle of their products, focusing on reuse, repair, and recycling. While this demands significant changes, it also offers avenues for innovation and improved supply chain positioning. The Philippines has a relatively high capacity for managing complex requirements exemplified by its electronics industry which is part of supply chains where quality control, technological innovations, and the proper development of human resources are key. In an evolving landscape where supply chain management become an asset in competitiveness, countries like the Philippines may gain an advantage.

Responding to mitigation efforts in the Philippines' export markets

The Philippines can address the risks associated with tightening market access through several strategic approaches. Firstly, by enhancing the capacity of operators to comply with new regulations and buyer requirements. This can be achieved by investing in renewable energy, improving energy efficiency, and promoting sustainable agricultural practices to reduce emissions. For instance, the Department of Trade and Industry's Promotion of Green Economic Development (ProGED) program helps MSMEs adopt climate-smart and environmental-friendly strategies, enhancing their competitiveness through the green value chain approach[38]. As discussed above, responses to CBAM under discussion include developing carbon pricing schemes and investing in renewable energy capacity.

Secondly, the Philippines can actively further engage in discussions about new market regulations and requirements. Participation in the World Trade Organization (WTO) discussions can help advocate for fair trade practices and challenge measures that may disproportionately affect developing countries. The Philippines trade agreements increasingly incorporate environmental provisions, such as under PJEPA and AANZFTA. Calls for further updates have been made regarding PJEPA, amongst other things with environmental provisions[39]. The ASEAN Trade in Goods Agreement (ATIGA)[40], and the Regional Comprehensive Economic Partnership (RCEP)[41] do currently not include substantial language or disciplines on sustainability. The ASEAN – China FTA (ACFTA) upgrade negotiations have been launched in 2023 and are aiming to cover areas of mutual interest, such as digital economy, green economy, supply chain connectivity, Micro, Small and Medium Enterprises (MSMEs), among others.[42]

The Philippines is also a member of the Asia Pacific Economic Cooperation (APEC) that has adopted a decision mandating its member economies to reduce tariffs to no more than 5% on a list of 54 environmental goods[43]. The recent 2018 Philippines-EFTA Free Trade Agreement does include a dedicated chapter on trade and sustainable development that:

- Establishes the environment must not serve as an excuse for protectionism.
- Emphasize that the Parties shall uphold their levels of environmental protection to develop trade or attract investment.
- Commits the Parties to the effective implementation of multilateral environmental agreements.
- Facilitates trade in green goods and services.

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38. https://www.dti.gov.ph/faps/proged/promotion-of-green-economic-development-proged/

39 The Philippine Department of Trade and Industry (DTI) writes that the Philippines pushes for the resumption of the general review of the PJEPA, emphasizing that the rather aging 2006 agreement should be expanded to include, amongst other things, issues of sustainability, see https://www.dti.gov.ph/news/ph-japan-partnership-clean-energy-trade-investment.

40 The EU-ASEAN Business Council (2022) recommends that the current ATIGA is updated to include provisions on sustainable development and environmental protection.

41 See the discussion of the environmental NGO, the Center for Environmental Concerns at https://www.cecphils.org/read-the-regional-comprehensive-economic-partnership-rcep-and-its-impacts-on-the-environment.

42 https://asean.org/asean-china-announce-acfta-upgrade

43 See the Philippines' implementation plan for tariff reductions on environmental goods available at www.apec.org/groups/committee-on-trade-and-investment/apec-economies-implementation-plans. Only 6 tariff lines had tariffs above 5% prior to the adoption of the APEC list. These six were 8404.20.00 (condensers for steam) at 10%, and 8417.80.00A (waste incinerators) and 8421.21.11 to 23 (various machinery and apparatus for water filtering), which were at 7%.

- Promotes sustainability in the trade of forest-based products

The Philippines-EFTA FTA, however, does not contain specific penalties for noncompliance. New trade agreements may include more explicit and stringent environmental provisions. The increased use of environmental provisions is exemplified by the second Protocol amending AANZFTA, Regarding theresumption of the negotiations of a free trade agreement between the EU and the Philippines in March 2024, it has been announced that the new FTA must include robust and enforceable disciplines on trade and sustainable development in line with the June 2022 EU review of such disciplines in the EU's trade agreements[44]. The EU's first application of this new approach to trade agreements is the conclusion of the 2023 EU-Kenya Economic Partnership Agreement.

Thirdly, the Philippines can link trade agreements with building supply capacity. As importing markets introduce challenging environmental regulations, Philippine exports need increased capacity to comply. Trade agreements can include provisions that ensure trade continues by providing trade-related assistance to meet such regulations. This approach helps exporters adapt to new standards and maintain market access while enhancing their competitiveness and sustainability practices. The EU is already engaging in capacity building efforts within sustainable development in the Philippines. In September 2023, the EU announced a green economy initiative like the elaboration of the Philippines' circular economy strategy with a budget of €466 million financed by the EU and a series of individual EU countries[45].

Fourthly, participation in international standard-setting can contribute to ensuring the development of environmental standards and measurement methodologies are equitable and consider the unique circumstances of developing nations. The Philippines may participate through the Bureau of Philippine Standards, which is part of the Department of Trade and Industry, and which serves as the National Standards Body (NSB). It is a member of ISO and other international standardization bodies and participates in developing new sustainability standards, methodologies, and conformity assessment measures, although constrained by financial, technological, and human resources.

[44] https://policy.trade.ec.europa.eu/eu-trade-relationships-country-and-region/countries-and-regions/philippines/eu-philippines-agreement_en.
[45] https://ec.europa.eu/commission/presscorner/detail/en/IP_23_4023.

6. Mobilizing trade for climate resilience building

Building resilience against climate change in the Philippines is critical due to the country's high vulnerability to natural disasters and extreme weather events. Positioned in the Pacific typhoon belt and the "Ring of Fire," the Philippines experiences frequent typhoons, earthquakes, and volcanic activity, making it one of the most disaster-prone countries globally. Climate change exacerbates these risks by increasing the intensity and frequency of such events, threatening lives, properties, and economic stability. The World Bank estimates that climate change could reduce the Philippines' GDP by up to 7.6% by 2030 and 13.63% by 2040 based on extrapolations of the destruction caused by past typhoons[46].

The Philippines urgently needs to implement resilience strategies to safeguard its development and achieve its goal of reaching high-income country status by 2045. Capital-intensive sectors, with their expensive plants and equipment, are particularly vulnerable to climate change-induced events like typhoons. The production infrastructure responsible for the Philippines' largest export item, semiconductors, exemplifies this vulnerability. Semiconductor production facilities are highly costly, sensitive to destruction, and linked with complex global supply chains susceptible to disruptions caused by extreme weather events. The World Bank predicts that labour productivity will fall across all sectors. It also highlights the key role of adaptation, which it projects can reduce potential losses by two-thirds. Without proper adaptation, agricultural production might fall by 2% by 2030 and 6% by 2040, necessitating increased food imports.

Barriers to trade in climate-related goods and services that hinder technology transfer

Barriers to trade in climate-related goods and services, such as tariffs, restrictive regulations, and lack of harmonized standards, hinder technology transfer. These obstacles impede the global dissemination of innovative solutions essential for climate mitigation and adaptation, slowing progress toward achieving environmental sustainability and combating climate change effectively.

The trade in climate-related goods and services may be impacted by both tariffs and non-tariff measures (NTMs). Import tariffs are the most visible of all trade barriers. They have also been steadily declining and are also duty free for many goods including in the context of preferential trade agreements and free trade agreements. NTMs include all other measures beyond the application of ordinary customs duties such as local content requirements that require the use of domestically manufactured components including as a pre-condition for availing of subsidies and incentives; non-automatic import licensing procedures; standards, technical regulations, and conformity assessment procedures; labelling requirements; and subsidies, among others (see Table 3)[47]. Quite often NTMs such as regulations and standards are undertaken to meet legitimate objectives such as quality, safety, health, and environmental protection but can become non-tariff barriers (NTBs) if they are designed or implemented in an arbitrary manner, is discriminatory or unduly restricts trade.

[46] World Bank (2022).
[47] WTO (2022).

Table 3 Examples of non-tariff barriers to climate goods

Non-tariff barrier	Examples
Standards, technical regulations and labelling requirements	Grid-access restrictions (e.g. timely connection to the grid, reliable use of the grid under reasonable terms and conditions, enabling market and network arrangements for renewable energy sources – including balancing services, curtailment rules, etc.). Efficiency or energy labelling for LED lighting and other household items. Technical requirements for wind turbines, policies on alternative refrigerants and green hydrogen standards.
Conformity assessment procedures, product testing and certification	Conformity assessment for solar panels, electric vehicles and heat pump test procedures for market access.
Local content requirements	Requirement to use locally produced wind turbines to be eligible for feed-in tariffs.
Export-related measures (subsidies, licenses or quotas)	Dual pricing, export monopolies, export taxes, fiscal taxes on exports, minimum export prices, VAT tax rebate withdrawal, restrictions on customs clearance points, limited licensing of export facilities (e.g. under environmental rules), qualified exporters list etc. Export licenses for hydrogen to make sure it is not used in the arms industry. A government subsidy to a particular domestic industry makes those goods cheaper to produce than in foreign markets.
Government procurement procedures	Rules that call for special requirements to provide goods or services to state-controlled entities, particularly in the renewable energy sector.
Customs procedures, including licenses and other permits	Difficulty or slowness in obtaining import license for solar PV systems.
Infringement of intellectual property	New renewable energy technology is copied in importing country without a license leading a firm to limit sales in that market.

Source: WEF (2022).

Domestic policies can restrict trade in services to promote greater employment for nationals, restrict flows of migrant labour, or protect domestic firms. In addition, measures such as equity limitations in construction or engineering service sectors may restrict the access of foreign service providers to a country's market and can also restrict trade in climate mitigation and adaptation services under GATS Mode 3 (commercial presence) and also constitute an investment restriction. Immigration restrictions such as cumbersome visa requirements can also hamper the movement of skilled personnel to deliver climate services such as installation and maintenance of renewable energy plants in countries where such personnel may be lacking[48]. Fieldwork specific to the Philippines is required to determine if the potential problems listed here are indeed present in the country.

The Philippines can mobilize trade to contribute to resilience strategies. Trade policy discussions have been ongoing for years following APEC's successful attempt to liberalize green trade, defined as 54 goods on a list agreed by APEC in 2012, and an unsuccessful attempt by a group of WTO Members to create a plurilateral agreement entitled the Environmental Goods Agreement (EGA). The policy literature provides a foundation for these initiatives, exemplified by De Melo & Solleder (2020), who find that developing countries have a strong interest in green liberalization, especially if the list of goods to be liberalized is expanded beyond the original APEC list. Another avenue to mobilize trade is to examine how trade flows assist the necessary technology transfer to build resilience. Trade flows can enhance climate change resilience in the

[48] WEF (2022) and Bellmann (2022).

Philippines by facilitating access to advanced technologies and diversifying economic activities. Importing, for instance, climate-resilient crops and renewable energy equipment can help the country adapt to climate impacts, reduce vulnerabilities, and promote sustainable growth.

The Philippines plans a large-scale expansion of the production of renewable energy. The renewable energy sector in the Philippines comprises geothermal resources, solar, wind, hydropower, and biomass. The government encourages foreign investment and has revised its regulation under the Renewable Energy Act to allow 100% foreign ownership of renewable energy project, removing the previous 40% cap[49]. This policy aims to attract more foreign capital and expertise to accelerate the development of renewable energy infrastructure and achieve targets of 35% renewable energy by 2030 and 50% by 2040. The Philippine Department of Energy has implemented policies to encourage both domestic and foreign private investment, aiming to drive growth in the industry and reduce reliance on costly energy imports. These policies include renewable energy portfolio standards, net metering, green energy options/auction programs, and the renewable energy market trading system[50]. Additionally, partnerships and trade agreements with countries like Japan and other ASEAN members are being pursued to foster investment and collaboration in the renewable energy sector, as well as opening the sector to full foreign ownership.[51]

In fostering a strategy to enhance technology transfer for renewable energies, the Philippines could adopt a holistic approach that addresses both trade and non-trade barriers to the import and application of foreign technology. The Philippines has relatively low tariffs on renewable energy technologies and components.

Subsidy reform to help the climate

Trade-related rules can help advance climate action and technology transfer through reforming fossil fuel subsidies. There is a broad consensus on the need to remove or at least reduce fossil fuel subsidies as they distort markets, send the wrong price signals to users, widen fiscal deficits in developing economies, and discourage the adoption of renewable energies. The Philippines has a history of successful fossil fuel reform. In the late 1990s, the country phased out most consumer energy subsidies, particularly in the downstream oil and electricity sectors. This reform has been maintained despite occasional pressures to reintroduce subsidies. The Philippines continues to manage its energy market with higher prices and targeted support for vulnerable consumers. These efforts have involved transparent communication about price changes and continuous evaluation of the costs and benefits of reforms through independent panels[52].

A second area of action is to use subsidies to further climate change mitigation and adaptation goals. Many countries apply a 'green industrial policy' promoting the production and consumption of products like renewables. Many countries are also concerned that excessive use

[49] Investment Policy Monitor (2022).
[50] https://www.trade.gov/market-intelligence/philippine-renewable-energy-opportunities.
[51] https://www.philstar.com/headlines/2023/12/19/2319883/philippines-woos-japan-asean-investments-renewable-energy.
[52] Mendoza (2014).

of incentives like subsidies will undermine the international trade system[53]. [54] The Philippines has made semiconductors and renewables priority sectors with a desire to move into higher value segments for semiconductors and to boost the production of renewable technology aiming both at exports and at increasing domestic production of renewable energy [55]

A third area, particularly relevant to agriculture, could be to allow payments for activities related to mitigation and adaptation. Such activities could be changes in practices, services, or production methods as in climate-smart agricultural practices. These payments could act as a market driver for the uptake of these goods and services, with some funding coming from a shift away from carbon-intensive agriculture. It is essential to ensure that such "green" subsidies do not distort markets or impede fair trade in the long term.

Technical regulation, standards and labelling to promote technology transfer

Technical regulations and standards can promote technology transfer by ensuring compatibility and interoperability between imported and local technologies. They establish a common framework that facilitates the adoption of foreign innovations, reduces technical barriers to trade, and enhances product quality and safety. This paves the way for foreign technology providers to enter new markets and collaborate effectively with local firms. One of the outcomes of COP28, the Technology Implementation Programme (TIP), could support this approach going forward. This is an arena the Philippines could further engage on the multilateral level.

The International Renewable Energy Agency (IRENA) points out that building and utilizing quality infrastructure is essential for the effective deployment and integration of renewable energy technologies. The quality infrastructure encompasses the activities and facilities necessary to establish, implement, and maintain technical regulations and standards, such as metrology, testing, certification, and accreditation.

Philippines policy documents emphasize the role of quality infrastructure and links it with trade. The Philippine Development Plan (PDP) 2023-2028 emphasizes that the Philippines' quality infrastructure should create a dynamic industry ecosystem and the National Export Development Plan (NEPD) aligns with the PDP. The PDP specifically states that the Philippines should expand its quality infrastructure and adopt international standards and certifications. The PDP sees the current quality infrastructure as fragmented and difficult to use for local manufacturers seeking to comply with global standards. The PDP recommends the development of a Philippine quality infrastructure law that shall harmonize the country's standards, technical regulations, metrology, accreditation, and conformity assessment procedures, packaging, and labeling to be at par with international standards. Furthermore, the government shall launch information campaigns targeting MSMEs about quality infrastructure issues such as the benefits of accreditation and conformance to international standards

[53] See the overview provided by UNEP at https://www.unep.org/explore-topics/green-economy/what-we-do/economic-and-trade-policy/green-industrial-policy and the more discussion of when and how to use green industrial policy in Fay *et al.* (2013).

[55] https://www.bworldonline.com/top-stories/2024/05/29/597994/semiconductors-renewables-to-drive-phl-growth-go/#google_vignette.

The value for companies in technology transfer

The transfer of technology to enhance resilience offers substantial environmental benefits and is underpinned by a robust business case. Implementing energy-efficient technologies in semiconductor fabrication plants (fabs) can cut energy costs, with potential savings of 20 to 30%. This includes optimizing processes such as air-conditioning and process-cooling water systems requiring access to foreign technology and knowledge often transferred as packages of goods and services. Such efficiency improvements not only reduce operational costs but also align with increasing global regulatory pressures to lower energy consumption, thereby enhancing both economic and environmental sustainability. Adopting these advanced technologies can offer a competitive edge, improve profit margins, and ensure compliance with environmental standards, making it a prudent investment for long-term resilience[56].

[56] Chen, Gautam & Weig (2013).

7. Challenges and solutions at the sectoral level

Renewable energy

The Philippines stands at a critical juncture in its energy transition, with significant potential for renewable energy (RE) to drive sustainable development and offer new export opportunities. The Philippines' substantial untapped renewable energy resources, including significant geothermal potential, position it well to develop an export industry for renewable energy products and technologies, potentially boosting the economy through green energy exports[57].

Furthermore, the Philippines is poised to leverage solar energy due to its geographical advantages and declining solar technology costs, fostering a robust solar power industry[58]. As of 2020, renewable energy sources account for approximately 34% of the country's total energy generation capacity.

Geothermal energy and biomass are responsible for, respectively, 48% and 47%, while hydro, solar and wind only account for, respectively, 4%, 1%, and 1%[59]. Future increased green energy production would also lower the country's energy bill as renewable energy in the future is likely to be cheaper than fossil fuel and may help the Philippines attract foreign investments as many multinational firms locate production based on suppliers' ability to contribute to the firms' own commitments to reduce the carbon footprints of their operations[60].

The Philippines National Renewable Energy Programme (NREP) 2020-2040 sets ambitious targets for renewable energy development. The NREP has a target of a 35 percent share of renewable energy in the power generation mix by 2030 and a 50 percent share by 2040 while reducing the use of coal. These targets will enhance energy security and reduce greenhouse gas emissions thereby help meeting the Philippines' NDCs. Furthermore, the NREP aims at:

- Increasing geothermal capacity by 75%.
- Increasing hydropower capacity by 160%.
- Delivering an additional 277 MW of biomass power capacity.
- Commissioning 2,345 MW of additional wind power capacity.
- Increasing solar power capacity with 284 MW and working towards a more ambitious target of 1,528 MW.
- Developing the Philippines' first ocean energy facility.

In total, the NREP sets a target of nearly tripling the Philippines' renewable energy production by 2030[61]. This expansion necessitates both investments in green energy production and investments in supporting infrastructure like the upgrading grid infrastructure to handle the increasing share of renewable energy.

Trade has an important role in contributing to the Philippines' sustainable development as renewable energy technologies, components, and services are to a large extent imported. Transitioning to green energy not only addresses the dual challenges of growing

[57] World Bank (2023): Philippines Economic Update: Securing a Clean Energy Future. June 2023. Washington DC: World Bank.
[58] Bob Shead (2017): Solar Power Industry in the Philippines. Op-Ed posted in aseanbriefing.com on 27 June 2017. Retrieved on 11 June 2024 from https://www.aseanbriefing.com/news/solar-power-industry-philippines.
[59] IRENA (2023).
[60] World Bank (2023).
[61] NREB (2022).

energy demand and transforming the fossil-fuel-based infrastructure but also improves public health by reducing air pollution. The government recognizes the need to build a robust foundation for this energy transition, emphasizing the importance of overcoming implementation bottlenecks, enhancing grid capacity, and ensuring a reliable energy supply. Trade policy instruments like engagement in multilateral and regional trade fora may support the application of renewable energy as may institutional innovations and specific investments.

The Philippines has significant potential to develop an export industry for components of solar, wind, and geothermal energy technologies. However, the country lags behind regional leaders such as Viet Nam. While Viet Nam has recently expanded its production of solar PV components (partly established Chinese firms escaping US trade restrictions on Chinese-origin solar PV modules), the Philippine industry is small and largely specialized in one segment of the value chain, cell manufacturing where the company Maxeon Solar Technologies has a limited production in the Philippines. In an assessment of renewable energy manufacturing opportunities for Southeast Asia, the Asian Development Bank (ADB) identifies supporting measures for the development of a Philippine solar PV industry as illustrated in Figure 8.

Figure 8. Potential support for the development of a Philippine PV solar industry

Dimension	Priority Mechanisms	Public Stakeholders	Private Stakeholders
Increase the ease of doing business	Designate zones for solar PV manufacturing with conducive industrial and import/export policies	Philippine Economic Zone Authority (Agency of DTI)	**Existing Manufacturers:** Maxeon **Prospective Manufacturers:** Trinasolar, Longi, Jinko, Green Wing, JA Solar, Canadian Solar, BoViet Solar, Dehui
	Reduce complexity of the customs process	Department of Trade and Industry	**Solar PV Developers:** Acen, Aboitiz Power, Terra Renewables, Pavi Green, Citicore, San Miguel Corporation, Solar Philippines, First Gen, Meralco
Enhance production factors	Attract established solar manufacturing players to invest in local manufacturing facilities, facilitating on-the-ground transfer of operational excellence and technology	Philippine Council for Industry, Energy, and Emerging Technology Research and Development (DOST-PCIEERD)	**Existing Manufacturers:** Maxeon **Prospective Manufacturers:** Trinasolar, Longi, Jinko, Green Wing, JA Solar, Canadian Solar, BoViet Solar, Dehui
	Partner with industry leaders to establish training programs to upskill workers in designated solar PV manufacturing areas	Commission on Higher Education	**Local Academic and Research Institutions:** MREC, TIP, Philippine Energy Research and Policy Institute **Prospective Partner Academic and Research Institutions:** Shanghai Jiao Tong University, Southeast University, SERIS
	Reduce cost to OEMs through financial incentives (e.g., tax benefits, subsidies, grants) and/or provision of resources (e.g., land/building/other infrastructure)	Department of Finance	**Existing Manufacturers:** Maxeon **Prospective Manufacturers:** Trinasolar, Longi, Jinko, Green Wing, JA Solar, Canadian Solar, BoViet Solar, Dehui
Increase local market potential	Accelerate investment in expansion of grid capacity to enable higher renewables penetration	Department of Energy NREB	**Solar PV Developers:** Acen, Aboitiz Power, Terra Renewables, Pavi Green, Citicore, San Miguel Corporation, Solar Philippines, First Gen, Meralco

Source: ADB, Bloomberg Philanthropies, ClimateWorks Foundation & Sustainable Energy for All (2023): Renewable Energy Manufacturing – Opportunities for Southeast Asia. Manila: Asian Development Bank (ADB).

Annex 2 and 3 explores the trade profile of the Philippines in solar PV and wind and the market access barriers for importers and exporters. These findings are summarized as follows:

- The tariff structure indicates a clear preference for *importing solar PV modules* and associated components from China, Japan, and Korea. The zero preferential tariffs for these countries are likely a result of the ASEAN trade agreement. The tariff policy appears designed to promote renewable energy adoption while using trade agreements with regional partners to reduce costs and ensure a steady supply of critical components from key partners.
- *Philippine exporters of solar PV* have to navigate a complex regulatory environment, especially in stringent markets like China. Understanding and complying with these requirements is crucial for successful market entry and competitiveness. Regional trade agreements and international standards play a vital role in facilitating smoother trade and reducing regulatory burdens.
- With respect to wind components, zero-tariff agreements in ASEAN, RCEP, AANZFTA, and other trade agreements reduce the *cost of importing key wind system components*, thereby encouraging the adoption and development of wind energy projects within the country.
- The generally low to zero MFN duties faced by the Philippine *wind energy systems exports* in Japan, Mexico, Germany, and the United States (under certain conditions) provide a competitive advantage. These favourable tariff conditions help reduce export costs and enhance the price competitiveness of Philippine wind system components in these markets.
- The preferential tariffs, especially the 0% rates offered by China for ASEAN countries and the GSP benefits in the United States, show agreements play a vital role in lowering trade barriers and supporting the Philippines in accessing key markets at reduced costs, thereby enhancing export opportunities.
- The detailed *import requirements* reflect the Philippines' commitment to maintaining high standards for wind energy components. The rigorous licensing, labelling, and technical regulations ensure that only high-quality and safe products enter the market, supporting the country's renewable energy goals. However, the stringent requirements could pose challenges for exporters needing to comply with these complex regulations.
- The Philippines' exporters face relatively low barriers with minimal *NTMs* in Japan, whilst the United States, Germany, and China have stricter NTMs in place.

Mining and minerals exports

Trade and climate change interact in complex ways in the Philippine mining and mineral export sectors. The future demand trend is to favour mineral exports critical in the green transition like copper and nickel[62]. Fossil fuel exports like Philippine coal and oil face a long-term decline in demand. Another environmental aspect is that mining faces increasingly stringent environmental regulations and private buyer procurement codes due to the environmental concerns associated with extraction.

Figure 8 illustrates the markets for the Philippines' exports. China, South Korea, and Thailand are responsible for about three quarters of total exports.

Mineral exports like nickel and copper ore, and derived products like copper items on the other hand benefit from the general demand shift towards renewables. Copper in particular is indispensable for the electrification of green economies based on renewable electricity from

[62] IEA. 2021. The Role of Critical Minerals in Clean Energy Transitions. World Energy Outlook Special Report. International Energy Agency (IEA).

solar, wind, hydro and other green sources. The main ores exported are nickel, copper, and iron. China is the dominant buyer, followed by other Asian countries, Japan for ores, and Thailand, Viet Nam, Malaysia, and Indonesia for copper products. High income Western markets are absent, which may reflect that these products are used heavily in local construction in the main markets, but also that the Philippine products may be incorporated in intermediate products in the immediate markets in Asia to be included in final products for other export markets including high income ones at a later stage.

Mineral exports lack the branding found in manufactured goods like clothing and electronics or foods like bananas, making it difficult to trace environmental credentials through their complex supply chains. Yet, first initiatives are emerging in this market. For example, Indonesia, launched SIMBARA, an online tracking system in 2022, first only covering coal, and is currently expanding its coverage to nickel and tin shipments.[63]

Mining activities in general and in the Philippines too often have a negative impact on the environment. The Philippines is a mineral-rich country, yet mining is restricted due to previous negative environmental impact, illegal operations, and mismanagement according to an ongoing project by the UK Natural Environment Research Council (NERC) and the Philippine Council for Industry, Energy, and Emerging Technology Research and Development. This project seeks sustainable solutions that benefit the economy and local livelihoods and minimise negative impacts on the environment[64].

The global mining industry has stated that it is seeking to improve its environmental practices. Table 8 presents the pledges to reduce carbon emissions made by the twenty biggest mining companies regarding the three types of emissions defined by the Greenhouse Gas Protocol[65]. These three types are Scope 1 and 2 emissions (covering a company's own emissions and indirect emissions the generation of purchased electricity, steam, heating, and cooling consumed by the company) and Scope 3 emissions (covering other indirect greenhouse gas emissions that occur in the company's value chain). The table shows that most companies have sizeable commitments for Scope 1 and 2 in the short term with some aiming for carbon neutrality in the long term, but most struggle with making commitments for Scope 3 even in the short term.

Table 8. The top 20 global mining companies' CO2 emission reduction pledges

Company	Scope 1 and 2		Scope 3	
	2021-2030	Long term	2021-2030	Long term
Vale	33%	100%	-	15%
BHP	30%	100%	30-40%*	-
Rio Tinto	30%	100%	15%	-
Glencore	40%	100%	40%	100%
Freeport-McMoRan	15%	-	-	-
Codelco (Corporación Nacional del Cobre)	70%	-	-	-
Fortescue Metals Group	26%	100%	-	-

[63] https://www.reuters.com/markets/commodities/indonesia-launch-nickel-tin-online-tracking-system-next-week-2024-07-18/

[64] https://www.ukri.org/what-we-do/browse-our-areas-of-investment-and-support/sustainable-mineral-resources-in-the-philippines.

[65] The Greenhouse Gas Protocol (GHG Protocol) is a partnership between the World Resources Institute (WRI) and the World Business Council for Sustainable Development (WBCSD).

Norilsk Nickel	25%*	-	-	-
Barrick Gold	10%	-	-	-
Southern Copper	-	-	-	-
Newmont	30%	100%	15%	100%
Hancock Prospecting	-	-	-	-
KGHM Polska Miedź	-	-	-	-
Teck Resources	33%	100%	-	-
AngloGold Ashanti	-	-	-	-
First Quantum Minerals	-	-	-	-
Zijin Mining Group	-	-	-	-
Anglo American	30%	100%	-	-
Sibanye-Stillwater	27%	-	-	-
Mitsui	50%	100%	50%	100%

Note: * intensity target. Source: IEA (2021), page 203.

Gold mining is also a major activity in the Philippines. Philippine gold mining is dominated by artisanal and small-scale mining which employs an estimated 500,000 miners in more than 40 provinces (out of 81). 70% of gold extracted comes from artisanal and small-scale mining[66]. Gold mining is associated in considerable concern about poor environmental practices. In the Philippines, the Artisanal Gold Council implements a project to manage the use of mercury for gold extraction. The project was launched in 2019 at two pilot sites: Sagada, Mt. Province, and Paracale, Camarines Norte[67]. As illustrated in Figure 11, Philippine gold is mainly exported to Hong Kong that buys nearly half of total exports and Switzerland that imports about a third and a few other countries. International gold markets have been insensitive to environmental concerns and the origin of the gold is often unknown to end-buyers.

Agriculture and fisheries

The nexus between trade and climate change in the Philippine agriculture and fisheries sectors presents both constraints and opportunities. Exporters face stringent regulations and private buyer requirements in foreign markets due to climate change and environmental concerns, *e.g.*, compliance with sustainable practices and certifications, which can be challenging for small-scale producers. However, there are opportunities to enhance market access as through certifying sustainable products. Trade can be mobilized to increase climate change resilience exemplified by the import of crop varieties more resistant to climate stress.

The challenges and opportunities that climate change create in export markets vary by target market. Figures 12, 13 and 14 present the markets of, respectively, coconut products, fruits, and seafood. High income markets have the most demanding regulations and private requirements for climate change and other environmental attributes. About three quarters of coconut products exports target such markets. Fruit exports, like the dominant banana exports, are more diversified. China is responsible for about a quarter of total demand, high income

[66] https://www.planetgold.org/philippines.
[67] https://www.artisanalgold.org/philippines.

countries for about half, and a large variety of diverse countries for the rest. Seafood exports are again more concentrated in high income countries.

Coconut products are subject to debate about its environmental impact. Tropical products like palm oil are part of the coverage of the EU's Deforestation Regulation, but coconut oil is not included in this regulation. Yet, some observers including a 2020 study by the UK University of Exeter say that coconut oil may be more harmful than palm oil for biodiversity because it threatens more species per litre of oil produced than other vegetable oils including palm oil partly because of deforestation[68]. Such studies and doubts about a product's environmental merits may impact regulations and private buyers' sourcing behaviour. This study is based on a case study in Borneo. The Philippines may produce its own information and work towards ensuring the sustainability of its coconut products. Work in the Philippines has been ongoing through a GIZ implemented project on the certification of sustainable coconut oil production in collaboration with big buyers like Barry Callebaut, Cargill, Friesland Campina, JDE Peet's, Nestlé, Procter & Gamble, and Unilever[69]. UN Trade and Development has also studied the potential use of organic certification of Philippine coconut oil[70].

Fruit exports are dominated by large companies. The presence of large players may make the integration of climate change and other environmental concerns easier due to these companies' resources and expertise. Furthermore, large companies are more exposed to bad publicity if engaging in unsustainable production and trading practices. Banana exports face a diversified portfolio of markets, some of which can be expected to tighten environmental demands. The European Union's (EU) Green Deal and Farm to Fork strategy, for instance, require stricter environmental standards for agricultural imports, including reduced pesticide use and sustainable farming practices. This may in the future affect Philippine banana exporters, as the EU may formulate more stringent import regulations based on these stricter environmental demands. Philippine mango exporters targeting the Japanese market must already today obtain certifications such as Good Agricultural Practices (GAP) and Hazard Analysis Critical Control Point (HACCP) to meet stringent food safety and environmental standards.

The large share of Philippines seafood that is with the EU and the US responsible for about half makes exports sensitive to environmentally based market concerns. Such concerns include demand for low carbon seafood, attitudes towards sustainable fishery management, and consumer and buyer pressure, for instance, for tuna fishing practices that do not harm dolphins. The big US buyer Walmart, that uses Philippine canning facilities, has for instance established a seafood policy requiring all canned light and white tuna suppliers to be sourced from fisheries that are complying with sustainability conservation measures and either third-party certified as

[68] Meijaard E, Abrams JF, Juffe-Bignoli D & Voigt M, Sheil D. 2020. Coconut oil, conservation and the conscientious consumer. Current Biology 6;30(13):R757-R758. doi: 10.1016/j.cub.2020.05.059. Erratum in: Curr Biol. 2020 Aug 17;30(16):3274-3275. doi: 10.1016/j.cub.2020.07.053. PMID: 32634413.

[69] See GIZ's project describtion for its 2015-2018 project at https://www.giz.de/en/worldwide/54556.html. Cargill accounts for sustainability efforts in the Philippines at https://www.cargill.com/sustainability/strengthening-sustainable-coconut-production-in-the-philippines. Another market player, AKK, in 2023 held a workshop on sustainability in the Philippines coconut industry, see https://www.aak.com/news-and-media/news/Coconut sustainability workshop in the Philippines.

[70] Lilibeth Acosta, Elena Eugenio & Jemily Sales. 2019. Assessment of organic certification in the coconut oil value chain in the Philippine. UNCTAD Project (DA-1617AI): Fostering the development of green exports through Voluntary Sustainability Standards. Geneva: UNCTAD.

by the Marine Stewardship Council (MSC) or working toward certification or is included in a specific Fishery Improvement Project (FIP)[71].

The World Bank outlines how multiple activities may support climate change resilience in agriculture and fisheries[72]. Extending drip irrigation in rainfed areas can boost productivity and resilience. Expanding crop insurance and finance products for climate-smart agriculture is an option, as is improving the enabling environment for the private sector to adopt these practices. Reforesting degraded areas and preventing further deforestation are also key measures. For fisheries, adaptive management is essential for forecasting fish migrations and adjusting management measures, including restricting new sector entries. Strengthening law enforcement to combat illegal, unreported, and unregulated (IUU) fishing, protecting critical habitats, and regularly collecting scientific data are vital. Researching alternative gear and fishing methods, enhancing climate-smart design, and improving certification, hygiene, and biosecurity standards in aquaculture will further support climate resilience and food security.

Industrial, Manufacturing and Transport (IMT)

The industrials, manufacturing, and transportation sectors are leading the green transition. These sectors are vital in adopting smarter technologies, enhancing service capabilities, creating resilient business models, managing market volatility, and mitigating supply chain risks to stay competitive and profitable. The Philippine Department of Trade and Industry views IMT – encompassing aerospace (aircraft interiors; maintenance, repair, and overhaul), automotive (electric vehicles), and semiconductors – as a prioritized export cluster[73]. The electronics industry, primarily driven by semiconductor manufacturing, dominates IMT, both by exporting semiconductors and supplying them as essential components for the aerospace and automotive industries.

The Philippine electronics industry emerged in the 1970s when manufacturing in industrialized countries sought new production bases to cut labor costs. The Philippines offered a young, well-educated, and English-proficient population. Eventually, the new industry became the largest exporting industry surpassing traditional agricultural industries like sugar and coconut[74]. Today, the electronics industry contributes about two thirds of the Philippines' exports. Philippine electronics companies engage in both semiconductors manufacturing service (SMS) and electronics manufacturing service (EMS). SMS – taking up 73% of the market – refers to the production of electronic devices' semiconductors and components – from design to assembly. EMS involves the manufacture of electronics products for other companies on contract basis, including circuit boards, electronics assemblies, and complete systems. According to the Semiconductors and Electronics Industries in the Philippines Association (SEIDI), the country also has growing capabilities in design development and original design manufacturing (ODM)[75].

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[71] https://corporate.walmart.com/policies#seafood-policy.
[72] World Bank (2022).
[73] Export Development Council (2022): DTI reconfigures export sectors into Industry Clusters. News story published on 'http://www.edc.net.ph' on 8 August 2022. Retrieved on 12 June 2024 from http://www.edc.net.ph/dti-reconfigures-export-sectors-into-industry-clusters.
[74] Dan Lachica (2017): R&D driven Philippine electronics industry. Presentation by the Semiconductors and Electronics Industries in the Philippines Association (SEIDI) 18 September 2017.
[75] Angelica Mapua Cayas, Carla Grepo & Dan Lachica (2022): The Philippines: Your Ally in the Global Chip Race. The Semiconductors and Electronics Industries in the Philippines Association (SEIDI). Available at: https://semi.org/sites/semi.org/files/2021-10/The-Philippines-Your-Ally-in-the-Global-Chip-Race.pdf.

Around 500 establishments operate within the Philippines including seven out of the world's top 20 makers of semiconductors. Semiconductors, widely used in devices such as smartphones and televisions, represent the largest export share, mainly sent to China, Hong Kong, and Singapore while hard drives are the number two product. The Philippines produced about a tenth of the global semiconductor supply. The sector also imports essential electronic materials, like wafers, from countries including China, Korea, and Taiwan, and produces consumer electronics, medical devices, office equipment, and automotive electronics[76]. Figure 15 depicts the main markets of the electronics industry based on two-digit HS codes. Two thirds of HS 85 exports are the HS 4-digit Electronic integrated circuits, and parts thereof. HS 84 and 90 spreads over many 4-digit categories. Markets are very diverse, and end-markets even more so as much of the output is in the form of intermediate products later incorporated in final electronics products elsewhere in Asia.

The global semiconductor industry is in rapid development as new technology like Artificial Intelligence demand high performing semiconductors. Climate change-relevant technologies like smart technologies, wind turbines, and solar PV facilities also require advanced semiconductors. Industrial policy is becoming a major influence on trade patterns. Recent US-China trade tensions contribute to global efforts to strike strategic alliances for strengthening supply chains, and the US and the Philippines have recently established a partnership to explore supply chain opportunities. According to the US Department of State, the new partnership will see the US and the Philippines collaborating to explore opportunities to grow and diversify the global semiconductor ecosystem under the International Technology Security and Innovation (ITSI) Fund, created by the US CHIPS Act of 2022[77]. This piece of legislation aims to strengthen US semiconductor manufacturing, design and research and reinforce the supply chains for American semiconductors[78].

Manufacturing semiconductors consumes large quantities of energy and water, and often depends on fossil fuels, leading to worries about its environmental repercussions. To address these worries, the global semiconductor industry is taking steps towards sustainability with some (but not all) major companies like the Taiwan Semiconductor Manufacturing Company (TSMC), Infineon, and Intel committing to zero emissions and greater use of renewable energy.

Intel – which produces in the Philippines – has committed to net-zero GHG emissions in its global operations by 2040 and has targeted achieving 100 percent use of renewable electricity as an interim milestone in 2030[79]. Major industry players within the global industry association SEMI

[76] https://www.statista.com/topics/9317/electronics-manufacturing-in-the-philippines/#topicOverview

[77] The Creating Helpful Incentives to Produce Semiconductors (CHIPS) and Science Act was signed in law in 2022. The CHIPS Act allocated $53 billion in federal incentives for domestic semiconductor manufacturing and research and development. According to the Council of Foreign Relations, this act is intended to relocate semiconductor production back to the United States after decades of offshoring. The US produced 40% of the global supply in 1990 yet only 12% today. Taiwan is the biggest producer with 60% of the market and 90% of the market of the most advanced semiconductors, which the US does not produce at all (Michella Kurilla (2024): What is the CHIPS Act? Brief on cfr.org published on 29 April 2024. Retrieved on 12 June 2024 from https://www.cfr.org/in-brief/what-chips-act).

[78] US Department of State (2023): New Partnership with the Philippines to Explore Semiconductor Supply Chain Opportunities. Press release of 16 November 2023. Available at https://www.state.gov/new-partnership-with-the-philippines-to-explore-semiconductor-supply-chain-opportunities.

[79] Sebastian Göke, Mena Issler, Demi Liu, Mark Patel & Peter Spiller (2022): Keeping the semiconductor industry on the path to net zero. Article published on 'mckinsey.com' on 4 November 2022. Retrieved on 12 June 2024 from https://www.mckinsey.com/industries/semiconductors/our-insights/keeping-the-semiconductor-industry-on-the-path-to-net-zero.

have also joined forces and created the Semiconductor Climate Consortium that helps the industry collaborate, report emissions, and set targets for emissions reduction[80].

Emissions from semiconductor producers may be either Scope 1, 2, or 3 emissions. According to a study by McKinsey[81], 35% of emissions are scope 1, which are the direct emissions of semiconductor manufacturing plants (called a 'fab') primarily arising from process gases like PFCs, HFCs, NF3, and N20 that all have much higher global-warming potential than CO_2. 45% of emissions are scope 2 coming from purchased electricity, steam, heating, and cooling equipment. Semiconductor manufacturing is highly complex and requires sterile, temperature-controlled spaced with hundreds of specialized energy-demanding tools. The last 20% of emissions are beyond the direct control of the producers and are the indirect emissions, Scope 3, primarily from raw material and transport. Naturally, the figures are estimates and may vary between producers, for instance, influenced by the degree to which Scope 2 emissions are reduced by using renewable energy.

According to McKinsey, to achieve emission reductions manufacturers should collaborate between themselves and with suppliers and introduce new technologies and innovation. Another aspect is the degree of support through appropriate policies and support measures from the local government. Countries like the Philippines may develop and offer an energy supply based on renewable energy.

The Philippines has a series of initiatives targeting semiconductor production. In a summary of Philippine initiatives, Cayas, Grepo & Lachica (2022) argue that the Philippines works to move up the value chain building capacity to undertake design and development work for use within healthcare, automotive, and aerospace. The government has elaborated the 'Inclusive Innovation Industrial Strategy' or I3S, led by the Department of Trade and Industry (DTI). The I3S aims to develop new products working with domestic and global supply chain participants in areas like e-gaming, smart assistants, digital health, smart buildings & smart home technology, connected and resilient technology, with the use of technology building blocks such as voice recognition, AI, AR, robotics, 5G Connectivity and IoT. The government also works with UNIDO to draft Industry 4.0 roadmaps for the electronics, automotive, aerospace and agribusiness and is developing Regional Inclusive Innovation Centres (RIICs)[82].

The Philippine government has initiated several programs to support innovation in the semiconductor industry, yet there is a noticeable gap in explicitly integrating sustainability into these efforts. The I3S primarily focuses on enhancing competitiveness and innovation without a strong emphasis on sustainability measures specifically tailored for the semiconductor sector. The government, however, has made broader efforts like the Philippine Action Plan for Sustainable Consumption and Production (PAP4SCP), which aims to steer sustainable practices across various sectors, including industrial production. This plan promotes sustainable practices such as resource-efficient technologies and circular economy principles,

[80] https://www.semi.org/en/industry-groups/semiconductor-climate-consortium.

[81] Ondrej Burkacky, Sebastian Göke, Mark Nikolka, Mark Patel & Peter Spiller (2022): Sustainability in semiconductor operations: Toward net-zero production. Article published on 'mckinsey.com' on 17 May 2022. Retrieved on 12 June 2024 from https://www.mckinsey.com/industries/semiconductors/our-insights/sustainability-in-semiconductor-operations-toward-net-zero-production.

[82] Angelica Mapua Cayas, Carla Grepo & Dan Lachica (2022): The Philippines: Your Ally in the Global Chip Race. The Semiconductors and Electronics Industries in the Philippines Association (SEIDI). Available at: https://semi.org/sites/semi.org/files/2021-10/The-Philippines-Your-Ally-in-the-Global-Chip-Race.pdf.

which could indirectly benefit the semiconductor industry by encouraging environmentally friendly practices. Additionally, industry organizations like SEIPI have started to acknowledge the need for sustainability, discussing topics like digital trust and environmental impacts at major industry events[83]. Overall, while sustainability is recognized as a critical issue, dedicated initiatives focusing on sustainability within the semiconductor industry appears to remain underdeveloped in the Philippines.

[83] One example is an event held with the British Standards Institute (BSI) in November 2022 entitled ' Harnessing digital transformation and sustainability efforts for the semiconductor and electronics industry in the Philippines', see https://www.bsigroup.com/en-PH/about-bsi/media-centre/press-releases/Harnessing-digital-transformation-and-sustainability-efforts-for-the-semiconductor-and-electronics-industry-in-the-Philippines.

8. Conclusions and follow up question to stakeholders

This paper has conducted a literature review and consultation at a one day workshop in July 2024 in Manila. The paper will be shared with government departments through the Interagency Mechanism during August 2024. Follow up questions for these departments are set out below. The answers to these (and case studies provided by the respondents) will enable further development of the paper.

The paper seeks to answer three research questions

- How do climate change mitigation plans of importing countries and private buyers challenge the market access of the Philippines?
- How can green trade offer export opportunities to the Philippines?
- How can the Philippines mobilize trade to increase its resilience against climate change?

Mitigation efforts in major export markets present significant challenges for the Philippines. Government environmental measures can have an impact on exports. These instruments pose compliance challenges that could restrict market access if Philippine exporters fail to meet requirements. However, products currently covered by the EU's CBAM and deforestation regulations are not major Philippine exports. Nevertheless, private companies are introducing mitigation measures which will create an administrative burden for suppliers. The electronics industry must align with international environmental standards, and agricultural products, such as tropical fruits, are subject to multinational sustainability requirements. For example, Dole, which farms bananas in Mindanao, plans to join the Science-Based Targets initiative (SBTi) to reduce its corporate carbon footprint.

Follow up questions (and potential case studies):

- What are the priority areas for building capacity of private sector stakeholders with respect to reduction in emissions e.g. the measurement and reporting of greenhouse gas emissions
- What kind of strategic responses should government and private sector take to carbon related regulations that affect trade for example EU CBAM, including administrative requirements and possible domestic carbon pricing
- Which green technologies would be helpful to promote climate change mitigation or adaptation in Philippines?
- What financing is required for the private sector to enable compliance with mitigation requirements in export?

The global shift towards sustainability offers the Philippines new export opportunities. These include environmental goods and services (EGS) and an increased demand for export products like semiconductors, an essential component in renewables technology, and minerals critical for the green transition like copper, nickel, and cobalt. Driven by rising demand for products that support climate mitigation, adaptation, and other environmental concerns like biodiversity and plastic pollution, this expanding market requires significant investment in technology and infrastructure. With abundant geothermal, solar, and wind resources, the country can further develop its renewable energy sector. Investments in solar PV equipment, as noted by the Asian Development Bank (ADB), could boost the economy and create jobs. By focusing on

green competitiveness and aligning export strategies with global sustainability trends, the Philippines can strengthen its position in the growing green market.

Follow up questions

- What are the products and markets with promising export potential in the Environmental Goods and Services sector in the Philippines?
- Are there promising green export products in the agricultural and fisheries sector? E.g. certified product markets
- Which investments are necessary to build its competitiveness (e.g., certification capacity, agricultural extension services)?

Trade policies can enhance the Philippines' resilience to climate change by facilitating technology transfer and fostering international cooperation. Keeping tariffs low, addressing restrictive regulations and the lack of harmonized standards is important for accessing and deploying climate-related goods and services. In the Philippines, renewable energy policies aim to achieve 35% renewable energy by 2030 and 50% by 2040. Trade agreements with countries like Japan and ASEAN members foster investment and collaboration in the renewable energy sector. By integrating trade policies with climate adaptation strategies, the Philippines can improve resilience and promote sustainable economic growth.

The Philippines can promote the mutual supportiveness of environmental policies and trade policies and practices. By aligning these policies, governments can promote sustainable development while enhancing economic growth. The Philippines has focused on continuing export-led growth, as evidenced in its development plans, including the Philippine Development Plan (PDP) and the Philippine Export Development Plan (PEDP). Simultaneously, the country has developed a series of climate change and environmental policies, ranging from the Climate Change Act and the Nationally Determined Contribution to the soon-to-be-published National Adaptation Plan. Specific industry initiatives include plans to expand renewable energy production and advance in the semiconductor industry value chain.

How can trade rules and trade capacity building facilitate improved access to green technologies? Can trade policies (e.g., tariff reduction) support improved access and affordability?

What are the main non-tariff barriers of concern to exporters of environmental goods and services?

What NTMs exist to constrain the import of technology?

Are there barriers to the services needed to deploy the technology, like for research & development? For installation, maintenance, and monitoring?

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Annex 1: GSP+ Philippines

The EU GSP+ incentivises sustainable development and good governance through preferential market access. The Philippines, as other eligible countries, have to implement 27 international conventions on human rights, labour rights, environment and good governance.[84]

Seven of the 27 international conventions relate to environment, including the following:

- Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES)
- Waste Conventions: Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal and Stockholm Convention on Persistent Organic Pollutants (POPs)
- Convention on Biological Diversity (CBD) and Cartagena Protocol on Biosafety
- Conventions on Climate Change and Protection of the Ozone Layer: United Nations Framework Convention on Climate Change, Kyoto Protocol to the United Nations Framework Convention on Climate Change, and Montreal Protocol on Substances that Deplete the Ozone Layer

According to the latest GSP+ report, covering 2020 to 2022, the Philippines has 'made good progress on the implementation of all relevant environmental and climate conventions, has ratified the Kigali Amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer and is preparing for the ratification of the Basel Ban Amendment to the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes. The Philippines has taken steps towards the implementation of the Convention on International Trade in Endangered Species of Fauna and Flora (CITES), but there have been no notable developments in the implementation of the Cartagena Protocol on Biosafety since 2020. The Philippines has applied to receive technical support towards the implementation of the Stockholm Convention on Persistent Organic Pollutants. In 2021, the Government submitted its first Nationally Determined Contribution (NDC) under the Paris Agreement, but it needs operationalisation and monitoring tools for its implementation.[85]

GSP+ utilization reached an all-time high of 75% in 2020, with the top exports including crude coconut oil, vacuum cleaners, prepared or preserved tunas, electro-thermic hairdressing apparatus, spectacle lenses, new pneumatic tires, prepared or preserved pineapples, fatty alcohols (industrial), parts suitable for use solely or principally with transmission and reception apparatus for radiobroadcasting or television, and activated carbon.[86]

[84] Generalised Scheme of Preferences Plus (GSP+) | Access2Markets (europa.eu)

[85] The EU Special Incentive Arrangement for Sustainable Development and Good Governance (GSP+) assessment of the Republic of the Philippines covering the period 2020-2022, eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52023SC0359&qid=1720796427527

[86] Generalized System of Preferences | Department of Trade and Industry Philippines (dti.gov.ph)

Annex 2. Philippines trading profile

Goods exports

The Philippines is a dynamic export economy dominated by the exports of electronics and electronic equipment. The electronics industry exports a diverse array of products like includes semiconductors, electronic data processing equipment, and office equipment. Table 1 shows the top 10 export industries at the HS 2-digit level. The top 10 exports cover more than four-fifths of total goods exports and include all HS 2-digit industries with more than 1% share of exports, which accidentally coincides with industries with an export value in 2022 of more than USD 1 billion.

Table 1 Top 10 exports of goods from the Philippines in 2022

#	HS	Industry	Value (USD mio)	Share (%)	Cumulated (%)
		Total exports of goods	**78,930**	**100%**	**100%**
		of which			
1	HS 85	Electrical machinery and equipment and parts thereof; sound recorders and reproducers, television ...	43,557	55.2%	55.2%
2	HS 84	Nuclear reactors, boilers, machinery and mechanical appliances; parts thereof	7,275	9.2%	64.4%
3	HS 90	Optical, photographic, cinematographic, measuring, checking, precision, medical or surgical ...	2,414	3.1%	67.5%
4	HS 74	Copper and articles thereof	2,270	2.9%	70.3%
5	HS 15	Animal, vegetable or microbial fats and oils and their cleavage products; prepared edible fats; ...	2,200	2.8%	73.1%
6	HS 26	Ores, slag and ash	2,048	2.6%	75.7%
7	HS 08	Edible fruit and nuts; peel of citrus fruit or melons	1,917	2.4%	78.1%
8	HS 71	Natural or cultured pearls, precious or semi-precious stones, precious metals, metals clad ...	1,324	1.7%	79.8%
9	HS 27	Mineral fuels, mineral oils and products of their distillation; bituminous substances; mineral ...	1,238	1.6%	81.4%
10	HS 39	Plastics and articles thereof	1,110	1.4%	82.8%

Source: Trade Map

The electronics industry dominates exports, yet, the Philippines trade profile also includes several other key industries. The electronics industry spreads across three HS 2-digit categories, namely HS 84, 85, and HS 90. These three categories together are responsible for two-thirds of goods exports. The Philippines is a crucial player in the global supply chain for electronic components, serving major multinational companies[87].

The Philippines also exports an array of goods derived from primary activities like mining, agriculture, and fisheries, either in raw or processed form. Such goods are associated with the top 9 HS 2-digit industries represented in table 1. Minerals exports like gold, copper, coal, and oil are together responsible for USD 6.9 billion or 8.7% of total goods exports[88]. Copper and copper ore are worth USD 2.7 billion (3.4% of total exports). The most important ore export is

[87] World Bank (2023).
[88] HS 74+26+27+71.

nickel, followed by copper and iron.. Total ore exports are valued at USD 2 billion (2.6% of total). The Philippines exports gold valued at USD 1 billion (1.3% of total). Coal and oil constitute the final category of mineral exports jointly valued at USD 1,2 billion or 1.6% of the total with coal responsible for nearly three quarters of that number and oil for the rest.

Agricultural exports either primary or processed amount to nearly the same as mineral exports at USD 6.7 billion representing 8.4% of the total. While the Philippines naturally exports multitude of agricultural products, two products stand out. The Philippines is one of the world's largest producers and exporters of coconut products, including coconut oil, desiccated coconut, and copra and fresh coconuts. Coconut oil, in particular, is a significant export commodity, driven by demand from the food and cosmetics industries.[89] The country's coconut exports are valued for their quality and are a staple in markets across Europe, North America, and Asia. The total value of coconut oil exports is USD 2.1 billion (2.7% of the total). Fruits are the other dominating agricultural export product. The Philippines is renowned for its abundant tropical fruits, especially bananas, pineapples, and mangoes. Bananas are the top fruit export, and in 2022 the Philippines was the world's second-largest banana exporter with a global market share of 8.1%, second only to Ecuador. Banana exports are worth USD 1.1 billion accounting for 1.4% of total exports. Pineapples and mangoes also contribute significantly, with strong demand from markets in Japan, China, and the Middle East.

Fish and seafood products are another significant export category. The Philippines' rich marine resources support a robust fishing industry that exports tuna, prawns, crabs, and other seafood. Tuna is a major export item, with fresh, canned, and processed tuna being shipped to markets in the United States, Japan, and Europe. The total value of fishery products in 2022 was USD 850 million representing 1.1% of the total goods exports.

The Philippine economy also has a significant manufacturing export industry beyond the all-important electronics industry. Machinery, including electrical machinery and parts, and transport equipment like motor vehicles and parts, also contribute to the export economy. This sector has seen growth due to increasing investments and the presence of foreign manufacturing firms in the country. The garments and textiles industry, although smaller compared to electronics, remains a traditional export sector. The industry exports a range of products, including apparel, accessories, and textiles, primarily to the United States, Japan, and Europe.

As shown in Table 2, the top destination markets (67% of the total) are the United States, China, Japan, Hong Kong, China and the EU.

Table 2 Destination markets of Philippines exports of goods in 2022

Destination	Value (USD billion)	Share (%)	Cumulated (%)
Total	72,9	100,0%	100,0%
United States	11.4	15,7%	15,7%
China	10,6	14,6%	30,3%
Japan	10,4	14,3%	43,6%
Hong Kong, China	8,8	12%	55,6%
EU	8,8	12,1%	67,7%

[89] Cargill (n.d.).

Singapore	3,5	4,8%	52,5%
Korea, Republic of	3,5	4,8%	57,3%
Thailand	2,9	4%	61,3%
Taipei, Chinese	2,6	3,6%	64,9%
Malaysia	2,1	3%	67%

Source: ITC Trade Map

Services exports

The Philippines is a notable exporter of services, with significant contributions from various sectors. The total value of services exports in 2022 was USD 41.1 million or about half the value of goods exports. According to ITC Trade Map, the four largest service export categories[90] were 'Other business services', 'Telecommunications, computer, and information services', 'Travel', and 'Transport'. These four industries are responsible for more than four-fifths of total goods exports and include all BPM6 services industries with more than 1% share of exports, which also happens to be the only four industries with an export value in 2022 of more than USD 1 billion. Table 3 gives the export data for the four industries.

Table 3 Export of services from the Philippines in 2022

#	BPM6	Industry	Value (USD mio)	Share (%)	Cumulated (%)
	S	**Total export of services**	41,070	**100%**	**100%**
		of which			
1	10	Other business services	21,456	52.2%	52.2%
2	9	Telecommunications, computer, and information services	6,673	16.2%	68.5%
3	4	Travel	4,174	10.2%	78.7%
4	3	Transport	2,694	6.6%	85.2%

Source: ITC Trade Map.

The category of 'Other business services' encompasses a wide range of professional and technical services. Together, these services account for about half of the Philippines' services exports. The services included are diverse and include legal, accounting, management consulting, and public relations services. It also includes advertising, market research, architectural, engineering, and other technical services. The growth in this sector is driven by the increasing demand for outsourcing services, particularly in business process outsourcing (BPO) and knowledge process outsourcing (KPO).

'Telecommunications, computer, and information services' is another broad category, yet the sub-category named 'Computer services' are responsible for nearly all exports within it. Computer services exports in 2022 were worth USD 6.3 billion or 6.3% of the total services exports. The Philippines has become a global hub for IT and business process management (IT-BPM) services due to its skilled English-speaking workforce and competitive labour costs. Major services exported under this category include call centres, software development, and IT support

[90] Classified using the conventional IMF Balance of Payments and International Investment Position Manual, sixth edition (abbreviated BPM6).

services. Other services here include data processing services, web hosting and design, and cloud computing services.

The tourism industry in 2022 generated exports worth USD 3.9 billion (3.9% of the total) and was responsible for the good performance of the 'travel' category. The services include expenditures by foreign visitors on accommodations, food, entertainment, and other services during their stay in the Philippines. The country's rich cultural heritage, natural attractions, and competitive travel packages make it a popular destination for tourists. According to the Department of Tourism[91], the Philippines has a total of 5.5 million arrivals in 2023 of which 447.082 were overseas Filipinos. Almost half of the arrivals were from South Korea (26.6%) and the US (16.6%). After these two major markets a string of countries were responsible for a few percent each. Thus, the third to tenth most important markets were Japan (5.6%), the EU (6.2%), Australia (4.9%), China (4.8%), Canada (4.1%), Taiwan (3.6%), the UK (2.8%), and Singapore (2.7%) while a very diverse residual group of countries were responsible for the remaining 22.1% of arrivals.

The final major services export category 'Transport' earned USD 2.9 billion for the Philippines or 2.7% of total services exports. The services of transport services were largely divided between air transport (USD 1.7 billion) and sea transport (USD 1.0 billion). The Philippines, with its strategic location and archipelagic nature, has a large air transport industry and a robust shipping and logistics sector that facilitates international trade.

Goods and services imports

The diversified imports of the Philippines reflects its position within electronics supply chains and its dependency of fossil fuels for its energy supply. Table 4 shows the major imports by two-digit HS code. Nearly a quarter of imports are electronics, while fossil fuels are close to the same size. The Philippines also imports a substantial about of food illustrated by the imports of cereals. The Philippines' imports mainly origin from within Asia with China supplying nearly a quarter of the total import value as illustrated in table 5. The major non-Asian suppliers are the US (6.8%) and the EU (6.2%).

The Philippines imports of services are concentrated within a few categories. The total import value in 2022 was USD 25.4 billion as shown in table 6. The five largest import categories were 'Other business services', 'Transport', 'Travel', Telecommunications, computer, and information services', and 'Insurance and pension services', which together constituted about 90% of the value of all services imports.

Table 4 Import of goods to the Philippines in 2022

#	HS	Industry	Value (USD mio)	Share (%)	Cumulated (%)
		Total import of goods	**145,890**	**100%**	**100%**
		of which			
1	HS 85	Electrical machinery and equipment and parts thereof; sound recorders and reproducers, television ...	32,542	22.3%	22.3%
2	HS 27	Mineral fuels, mineral oils and products of their distillation; bituminous substances; mineral ...	25,753	17.7%	40.0%

[91] Tourism statistics can be found at http://www.tourism.gov.ph/tourism_dem_sup_pub.aspx.

3	HS 84	Nuclear reactors, boilers, machinery and mechanical appliances; parts thereof	11,840	8.1%	48.1%
4	HS 87	Vehicles other than railway or tramway rolling stock, and parts and accessories thereof	8,781	6.0%	54.1%
5	HS 72	Iron and steel	5,230	3.6%	57.7%
6	HS 39	Plastics and articles thereof	4,576	3.1%	60.8%
7	HS 10	Cereals	4,329	3.0%	63.8%
8	HS 26	Ores, slag and ash	1,932	1.3%	65.1%
9	HS 90	Optical, photographic, cinematographic, measuring, checking, precision, medical or surgical ...	3,042	2.1%	67.2%
10	HS 73	Articles of iron or steel	2,594	1.8%	69.0%

Source: Trade Map.

Table 5 Origins of the Philippines' imports of goods in 2022

Origin	Value (USD billion)	Share (%)	Cumulated (%)
Total	133,8	100,0%	100,0%
China	30,9	23,1%	23,1%
Indonesia	12,3	9,2%	32,3%
Japan	10,9	8,2%	40,5%
United States	9,1	6,8%	47,3%
Korea	8,9	6,6%	53,9%
EU	8,3	6,2%	60,1%
Thailand	8,2	6,1%	66,2%
Singapore	7,4	5,5%	71,8%
Malaysia	6,2	4,7%	76,4%
Viet Nam	5,0	3,7%	80,1%
Taiwan	4,9	3,7%	83,8%

Source: Trade Map.

Table 6 Import of services to the Philippines in 2022

#	BPM6	Industry	Value (USD mio)	Share (%)	Cumulated (%)
	S	**Total import of services**	**25,439**	**100%**	**100%**
		of which			
1	10	Other business services	7,268	28.6%	28.6%
2	3	Transport	6,682	26.3%	54.8%
3	4	Travel	4,918	19.3%	74.2%
4	9	Telecommunications, computer, and information services	2,082	8.2%	82.4%
5	6	Insurance and pension services	1,994	7.8%	90.2%

Source: Trade Map.

Annex 3: Case study: Philippine trade of solar PV and wind components

SOLAR PV Components

1. *Imports of solar PV components*

Figure 2 Philippine's imports of solar PV components (in US thousands dollar)

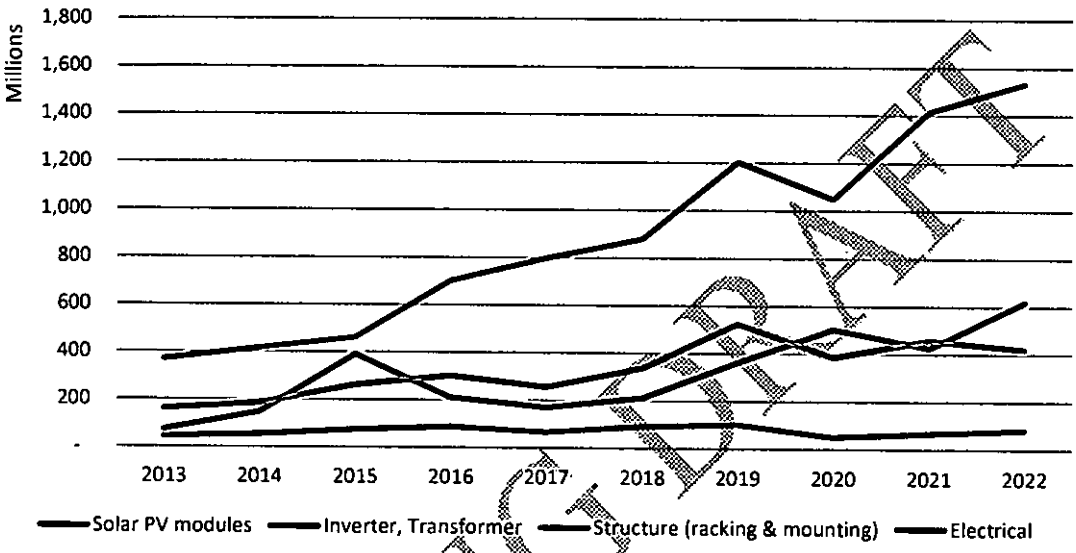
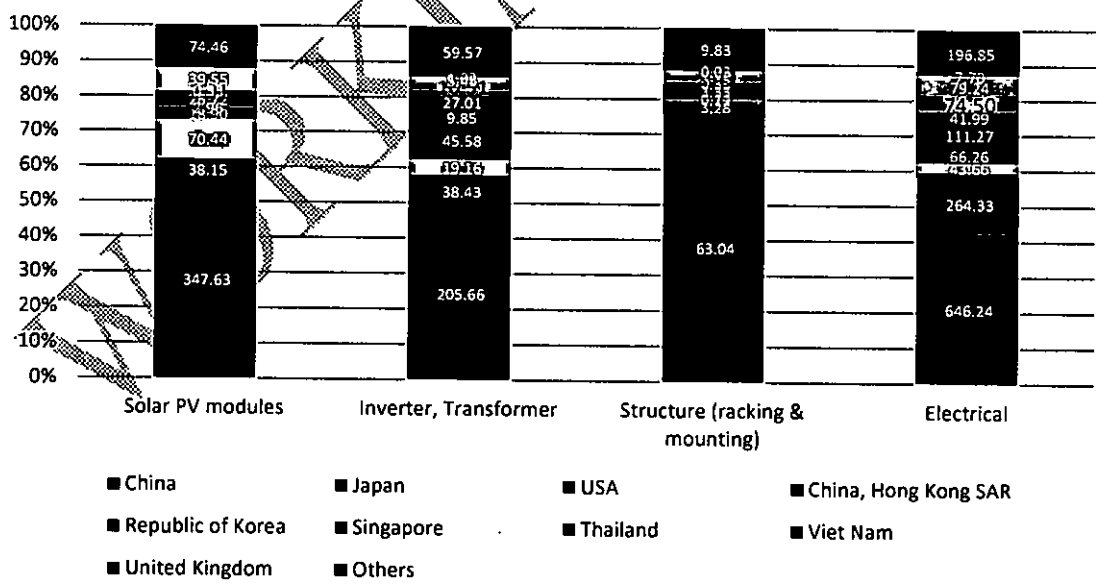


Figure 3 Philippine's main supplying countries for imports of solar PV components (in US thousands dollar)



2. *Exports of solar PV components*

Japan and the USA emerge as the most critical markets, underscoring their importance in the Philippines' export strategy. China imports a substantial amount of solar PV modules ($88.7 million) and inverters and transformers ($99.4 million) from the Philippines. The total export value to China is about $288.3 million, indicating China's reliance on the Philippines for critical solar PV components. Other notable markets include Canada, the Republic of Korea, Hong Kong SAR, Mexico, and the Netherlands. Each of these countries imports a mix of solar PV components, contributing to the diversified export portfolio of the Philippines

Figure 4 Philippine's exports of solar PV components (in US thousands dollar)

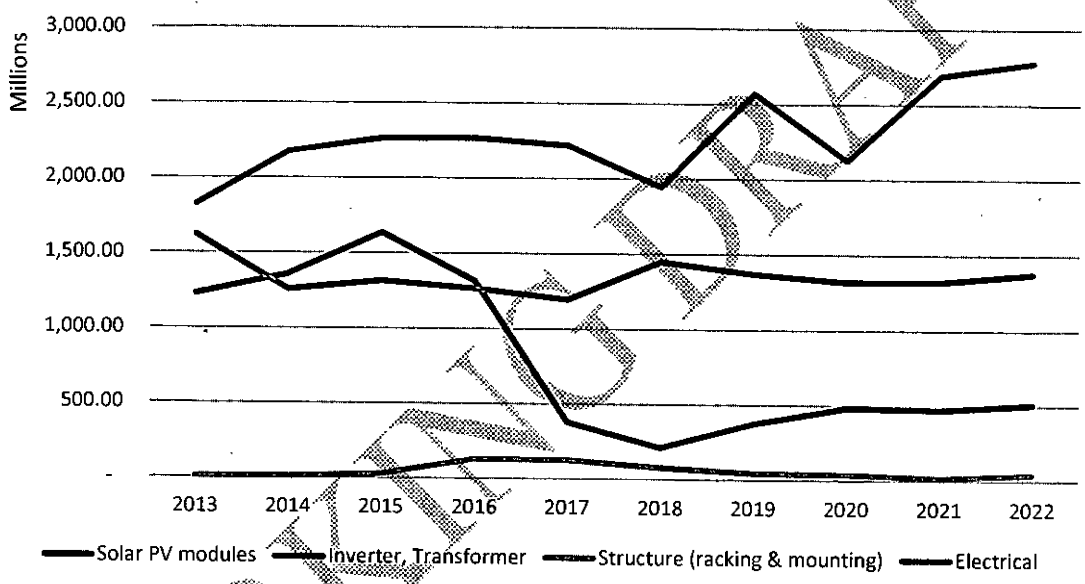
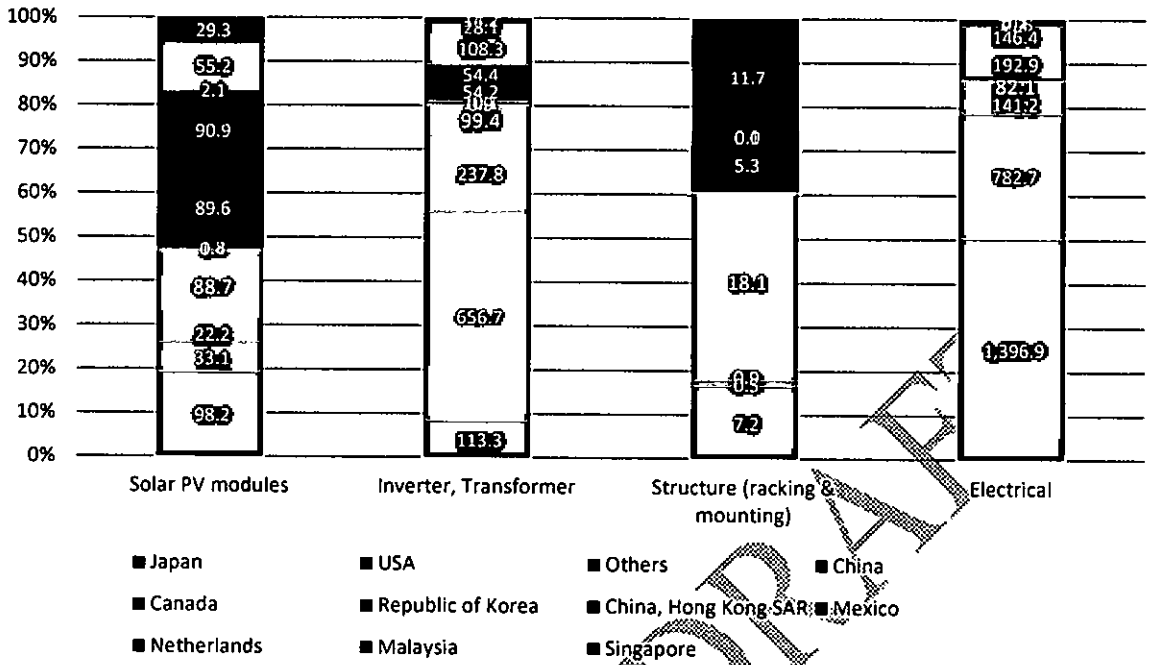


Figure 5 Philippine's main destination markets for exports of solar PV components (in US thousands dollar)



Wind system components

1. *Imports of solar PV components*

Figure 6 Philippine's imports of wind system components (in US thousands dollar)

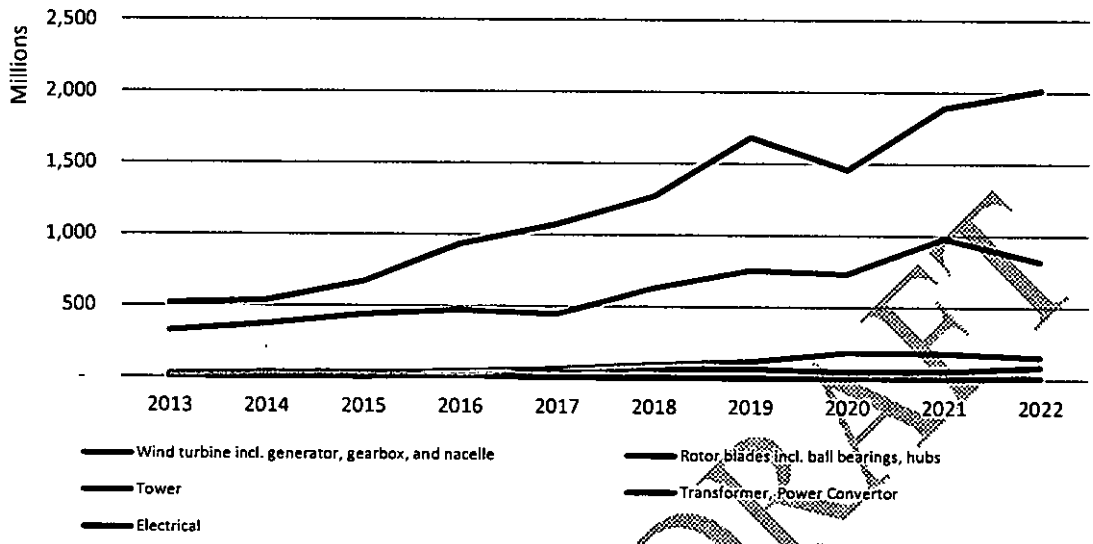
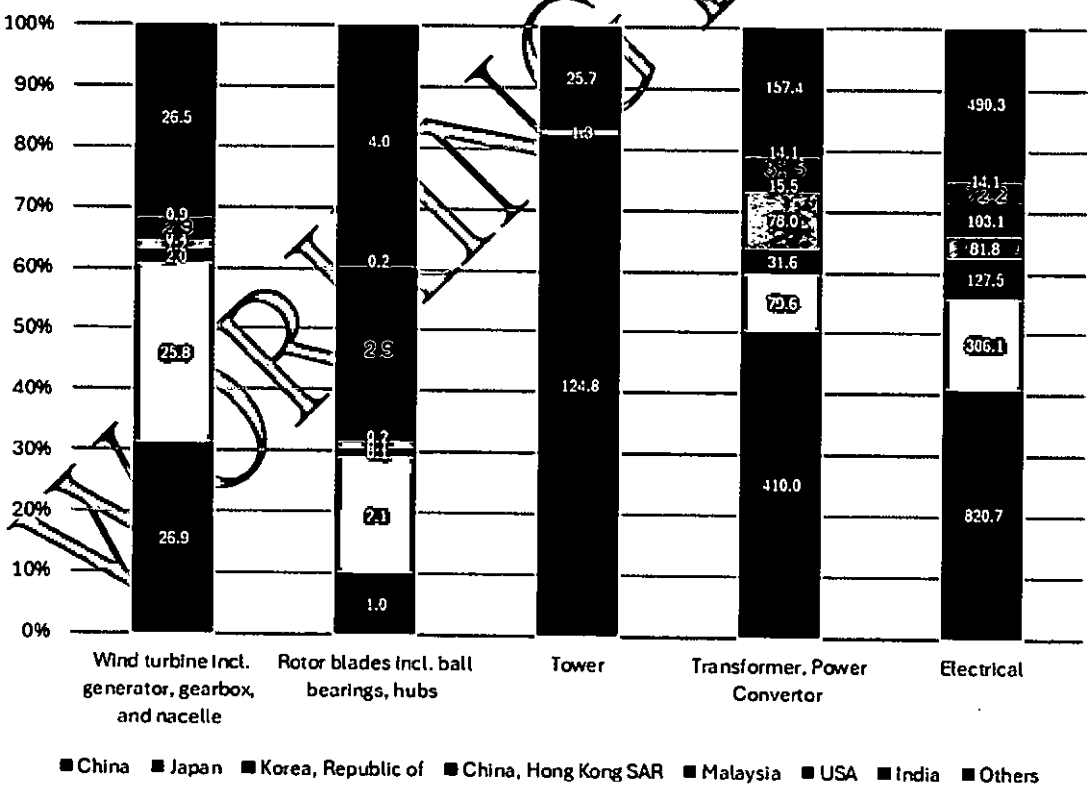


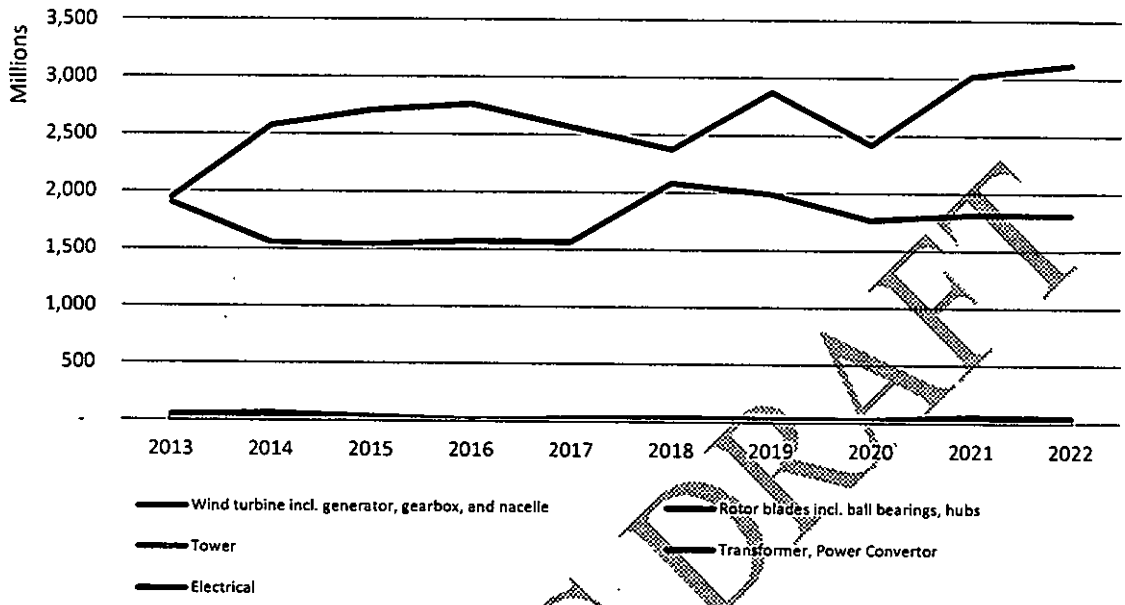
Figure 2 Philippine's main supplying countries for imports of solar PV components (in US thousands dollar)



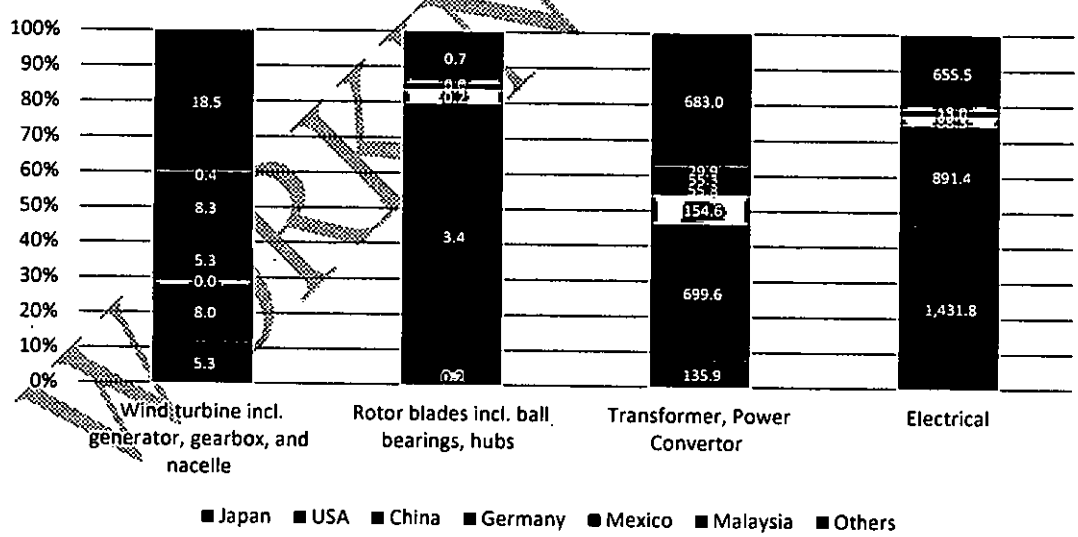
2. *Exports of wind system components*

The Philippines has demonstrated significant growth (60%) in exports of electrical components over the past decade. The USA and Japan emerge as prominent trading partners for both for wind system components exported by the Philippines.

Philippine's exports of wind system components (in US thousands dollar)



Philippine's main destination markets for exports of wind system components (in US thousands dollar)



Annex 4: Market Access conditions for renewable energy components

This section focuses on solar PV and wind system key components imported and exported by the Philippines. All data displayed come from the ITC market analysis tool on market access requirements, Market Access Map (https://www.macmap.org).

SOLAR PV components

Market access conditions for Philippines's importers

1. Tariffs applied to main suppliers

The tariff structure indicates a clear preference for importing solar PV modules and associated components from China, Japan, and Korea. The zero preferential tariffs for these countries are likely a result of ASEAN trade agreement, which aims to enhance economic cooperation and trade efficiency. By maintaining higher MFN tariffs for other countries, the Philippines ensures that imports from its preferred partners remain more competitive, thereby fostering closer economic ties and potentially securing better trade terms or reciprocal benefits.

The Philippines' tariff policy on solar PV modules and their structures seems designed to promote renewable energy adoption while strategically leveraging trade agreement with regional partners to reduce costs and ensure a steady supply of critical components from key partners.

Components	HS code	Applies duties
Solar PV modules	854142	MFN duties (Applied): 0%
854143		
854140		
Structure (racking & mounting)	700510	MFN duties (Applied): 3% Preferential tariff of 0% for: China, Japan, Korea, republic of
700719	MFN duties (Applied): 10% Preferential tariff of 0% for: China, Japan, Korea, republic of	
700991	MFN duties (Applied): 15% Preferential tariff of 0% for: China, Japan, Korea, republic of	
761090	MFN duties (Applied): 10% Preferential tariff of 0% for: China, Japan, Korea, republic of	

2. Non-tariffs measures applied by the Philippines

The regulatory environment for importing solar PV modules and their structure components into the Philippines demonstrates a comprehensive framework aimed at ensuring product quality, safety, and compliance with international standards. The distinction between the two categories indicates a more stringent regulatory approach for structural components compared to the PV modules themselves.

For **Solar PV modules**, the main regulatory focus is on marking, administrative formalities, advance payment of customs duties, and measures affecting competition. These requirements might be aimed at ensuring proper documentation and reducing unfair competitive practices while streamlining customs processes through advance payments.

For **Structure (racking & mounting)**, a broader range of requirements, including labelling, packaging, production process regulations, testing, certification, inspection, and traceability, is applied. This rigorous regulatory approach ensures that these components meet high safety and performance standards, critical for the structural integrity and efficiency of solar installations.

Licensing and advance payment requirements further add to the regulatory oversight, ensuring controlled and secure importation of these critical components.

The differing levels of regulatory stringency reflect the varying criticalities of the components. While solar PV modules are crucial for energy generation, the structural components' integrity directly impacts the safety and durability of the entire installation. Hence, a more detailed and stringent regulatory approach is justified for the latter.

These import requirements could affect market dynamics by influencing the supply chain and cost structures for businesses involved in importing and installing solar energy systems. Export support measures for both categories indicate a governmental push to enhance the global competitiveness of the Philippines' solar industry, potentially leading to increased export activities and market expansion.

The Philippines' import and export regulations for solar PV modules and their structural components reflect a balanced approach to ensuring product quality and safety while promoting international trade and competitiveness in the renewable energy sector.

Import requirement (applied by the Philippines)	Solar PV modules	Structure (racking & mounting)
B310 Labelling requirements	X	3
B320 Marking requirements *	1	X
B330 Packaging requirements	X	1
B41 TBT regulations on production processes	X	1
B820 Testing requirement	X	3
B830 Certification requirement	X	2
B840 Inspection requirement	X	2
B859 Traceability requirements, n.e.s.	X	1
C900 Other formalities, n.e.s. *	1	X
E100 Non-automatic import licensing procedures other than authorizations covered under SPS and TBT chapter	X	3
E112 Licensing for specified use	X	1
G130 Advance payment of customs duties *	1	X
G190 Advance payment requirements	X	1
H000 Measures affecting competition *	1	X

Export requirement (applied by the Philippines)	Solar PV modules	Structure (racking & mounting)
P600 Export support measures *	2	2

Market access conditions for Philippines's exporters

1. Tariffs applied by main destination markets

The tariffs faced by the Philippines with its main export partner highlight the benefits of regional trade agreements, particularly the ASEAN Free Trade Area (AFTA), which significantly reduces or eliminates tariffs between member countries. The zero preferential tariffs for ASEAN countries such as Malaysia and China underscore the advantages of these agreements for Philippine exporters.

Japan, Mexico, and China, Hong Kong SAR impose no tariffs on Philippine solar PV modules, providing straightforward access for exporters. This zero-tariff environment enhances the competitiveness of Philippine products in these markets. For China, despite the general MFN tariff of 8%, the preferential tariff for ASEAN countries (0%) significantly enhances market access for Philippine exporters, the same situation is faced with Malaysia

The tariff data indicates that Philippine exporters of solar PV modules can take advantage of significant tariff reductions and eliminations in several key markets. This favourable tariff environment supports the growth of the Philippines' solar industry by facilitating easier and more cost-effective access to important export destinations. The preferential tariffs under ASEAN agreements particularly benefit trade with China and Malaysia, ensuring competitive pricing and better market penetration.

For less specialized components such as structures, the Philippines modules can take advantage of significant tariff reductions with ASEAN trade agreement in several of its key destination markets.

By leveraging these trade agreements, the Philippines can enhance its export performance, increase its share in these international markets, and strengthen its overall trade relationships.

Solar PV modules					
HS code	**Japan**	**Mexico**	**China, Hong Kong SAR**	**China**	**Malaysia**
850231	MFN duties (Applied): 0%	MFN duties (Applied): 0%	MFN duties (Applied): 0%	MFN duties (Applied): 8% Preferential tariff for ASEAN countries: 0%	MFN duties (Applied): 0%
848340	MFN duties (Applied): 0%	MFN duties (Applied): 0%	MFN duties (Applied): 0%	MFN duties (Applied): 8% Preferential tariff for ASEAN countries: 0%	MFN duties (Applied): 5% Preferential tariff for ASEAN countries: 0%

Structure (racking & mounting)			
HS code	**Japan**	**China**	**Singapore**
700510	MFN duties (Applied): 0%	MFN duties (Applied): 15% Preferential tariff for ASEAN countries: 0%	MFN duties (Applied): 0%

700719	MFN duties (Applied): 3.5% Preferential tariff for ASEAN countries: 0%	MFN duties (Applied): 14% Preferential tariff for ASEAN countries: 0%	MFN duties (Applied): 0%
700991	MFN duties (Applied): 0%	MFN duties (Applied): 14% Preferential tariff for ASEAN countries: 0%	MFN duties (Applied): 0%
761090	MFN duties (Applied): 3.5% Preferential tariff for ASEAN countries: 0%	MFN duties (Applied): 6% Preferential tariff for ASEAN countries: 0%	MFN duties (Applied): 0%

2. Non-tariffs measures applied by main destination markets

For Solar PV Modules

Japan and Mexico have a few specific requirements, including labelling, testing, and non-automatic import-licensing procedures, indicating a moderate level of regulatory oversight.

China imposes extensive import requirements (total of 38), including hygiene, certification, origin verification, testing, inspection, and traceability, reflecting a stringent regulatory environment to ensure product quality and safety.

For structure (Racking & Mounting)

Similar to solar PV modules, China imposes several requirements, including restricted substance use, labelling, marking, packaging, certification, inspection, and import licensing, ensuring strict compliance with safety and quality standards.

In Japan and Singapore, no specific requirements listed, suggesting an open market with minimal regulatory barriers for these products.

Overall, the regulatory landscape varies significantly across different markets:

- Japan and Mexico: These markets have moderate regulatory requirements, making them relatively accessible while ensuring basic standards for product safety and quality.

- China: Both for solar PV modules and structure components, China imposes extensive regulatory requirements, indicating a rigorous approach to ensuring compliance with safety, quality, and traceability standards. This necessitates thorough preparation and documentation from exporters.

- Malaysia and Singapore: Minimal to no specific requirements listed for these markets, suggesting fewer regulatory barriers and easier market access for exporters.

The import requirements highlight the need for Philippine exporters to navigate a complex regulatory environment, especially in stringent markets like China. Understanding and complying with these requirements is crucial for successful market entry and competitiveness. Regional trade agreements and international standards play a vital role in facilitating smoother trade and reducing regulatory burdens.

Import requirement (Applied by destination market)	Solar PV modules					Structure (racking & mounting)		
	Japan	Mexico	China, Hong Kong SAR	China	Malaysia	China	Japan	Singapore
A49 Hygienic requirements, n.e.s	X	X	X	1	X	X	X	X
A83 Certification requirement	X	X	X	1	X	X	X	X
A851 Origin of materials and parts	X	X	X	1	X	X	X	X
B22 Restricted use of certain substances	X	X	X	X	X	1	X	X
B31 Labelling requirements	X	3	X	X	X	3	X	X
B32 Marking requirements	X	X	X	X	X	2	X	X
B33 Packaging requirements	X	X	X	X	X	3	X	X
B42 TBT regulations on transport and storage	1	X	X	1	X	3	X	X
B49 Production or post-production requirements, n.e.s.	1	X	X	X	X	X	X	X
B8 Conformity assessment related to TBT	X	1	X	X	X	X	X	X
B82 Testing requirements	X	1	X	X	X	X	X	X
B83 Certification requirement	X	X	X	4	X	1	X	X
B84 Inspection requirement	X	X	X	6	X	1	X	X
B851 Origin of materials and parts	X	X	X	1	X	X	X	X
B852 Processing history	X	X	X	1	X	X	X	X
B853 Distribution and location of products after delivery	X	X	X	1	X	X	X	X
B859 Traceability requirements, n.e.s.	X	X	X	1	X	X	X	X
C1 Pre-shipment inspection	X	X	X	2	X	X	X	X
C4 Import-monitoring, surveillance and automatic licensing measures	1	X	X	2	X	X	X	X
C9 Other formalities, n.e.s.	X	X	X	1	X	X	X	X
E1 Non-automatic import-licensing procedures other than authorizations covered under SPS and TBT chapter	1	X	2	6	X	1	X	X
E211 Global allocation	X	X	X	1	X	1	X	X
E320 Prohibition for non-economic reasons	X	X	X	8	X	1	X	X
Total requirements	4	5	2	38	0	17	0	0

Wind system components

Market access conditions for Philippines's importers

1. Tariffs applied to main suppliers

The Philippines' use of preferential tariffs for countries involved in ASEAN, RCEP, AANZFTA, and other trade agreements highlights a strategic approach to leveraging international partnerships to bolster the renewable energy sector. These zero-tariff agreements reduce the cost of importing key wind system components, thereby encouraging the adoption and development of wind energy projects within the country.

By maintaining low or zero tariffs on essential wind system components, the Philippines is creating an economically favourable environment for renewable energy investments. This tariff structure reduces the financial burden on developers and encourages the rapid deployment of wind energy technologies. It also aligns with the country's environmental goals of increasing the share of renewable energy in the energy mix, thus reducing reliance on fossil fuels and lowering greenhouse gas emissions.

The tariff framework positions the Philippines as an attractive market for international suppliers of wind energy components. The low to zero tariffs facilitate easier market entry for global companies, potentially leading to increased competition, innovation, and better pricing for wind energy projects. This competitive market environment can drive advancements in technology and efficiency in the renewable energy sector.

The Philippines' tariff policy on wind system components reflects a strategic emphasis on promoting renewable energy through favourable trade practices. The combination of low MFN duties and extensive preferential tariffs under various trade agreements fosters an environment conducive to the growth of the wind energy sector.

Components	HS code	Applies duties
Wind turbine incl. generator, gearbox, and nacelle	850231	MFN duties (Applied): 1% Preferential tariff of 0% for: Member states of ASEAN, RCEP, AANZFTA, China, EFTA, Hong Kong, India, Japan, Democratic Republic of Korea
Rotor blades incl. ball bearings, hubs	848340	MFN duties (Applied): 0%
	841280	MFN duties (Applied): 0%
	841290	
Tower	730820	MFN duties (Applied): 3% Preferential tariff of 0% for: Member states of ASEAN, RCEP, AANZFTA, China, EFTA, Hong Kong, India, Japan, Korea, republic of

2. Non-tariff measures applied by the Philippines

The detailed import requirements reflect the Philippines' commitment to maintaining high standards for wind energy components. The rigorous licensing, labelling, and technical regulations ensure that only high-quality and safe products enter the market, supporting the country's renewable energy goals. However, the stringent requirements could pose challenges for exporters needing to comply with these complex regulations.

The export requirements, while less extensive than import controls, still emphasize the importance of meeting international standards through labelling, marking, and packaging

requirements. The presence of export quotas and support measures indicates a balanced approach to regulating exports while promoting the domestic wind energy industry.

The Philippines' NTMs for wind system components shows a robust regulatory framework aimed at ensuring product safety, quality, and compliance with international standards. This regulatory environment supports the growth and reliability of the renewable energy sector, while also posing compliance challenges for international suppliers. The balanced approach to import and export regulations highlights the country's strategic focus on fostering a sustainable and competitive wind energy market.

Import requirement (applied by the Philippines)	Wind turbine incl. generator, gearbox, and nacelle	Rotor blades incl. ball bearings, hubs	Tower
B310 Labelling requirements	2	1	X
B320 Marking requirements *	2	2	2
B420 TBT regulations on transport and storage	1	1	X
B820 Testing requirement	1	1	X
B859 Traceability requirements, n.e.s.	1	1	X
C900 Other formalities, n.e.s. *	2	2	2
E100 Non-automatic import-licensing procedures other than authorizations covered under SPS and TBT chapter	3	3	1
E110 Licensing for economic reasons	1	X	X
E112 Licensing for specified use	1	1	1
E320 Prohibition for non-economic reasons	1	X	X
E320 Prohibition for non-economic reasons	X	1	X
G130 Advance payment of customs duties *	1	1	1
H000 Measures affecting competition *	1	1	1
Total requirements	**17**	**15**	**8**

Export requirement (applied by the Philippines)	Wind turbine incl. generator, gearbox, and nacelle	Rotor blades incl. ball bearings, hubs	Tower
P110 Authorization or permit requirements to export, for technical reasons	1	1	X
P150 Labelling, marking, or packaging requirements	1	1	X
P320 Export quotas	1	1	X
P600 Export support measures *	2	2	2

Market access conditions for Philippines's exporters

1. Tariffs applied by main destination markets

The generally low to zero MFN duties faced by Philippine wind energy exports in Japan, Mexico, Germany, and the United States (under certain conditions) provide a competitive advantage. These favourable tariff conditions help reduce export costs and enhance the price competitiveness of Philippine wind system components in these markets.

The preferential tariffs, especially the 0% rates offered by China for ASEAN countries and the GSP benefits in the United States, shows the importance of trade agreements. These agreements play a vital role in lowering trade barriers and supporting the Philippines in accessing key markets at reduced costs, thereby enhancing export opportunities.

With zero tariffs in major markets, Philippine exporters of wind turbines, gearboxes, nacelles, rotor blades, and related components can better penetrate these markets. The low tariff barriers help streamline the supply chain and reduce overall costs, making Philippine products more attractive to international buyers.

The Philippines enjoys a favourable tariff landscape in its primary destination markets for wind system components. The low to zero tariffs across key markets such as Japan, the United States, Mexico, and Germany enhance the competitiveness of Philippine exports. Leveraging trade agreements and preferential tariffs further supports the Philippines in expanding its market presence and promoting its wind energy sector. These strategic advantages contribute to the growth and sustainability of the renewable energy industry in the Philippines.

Wind turbine incl. generator, gearbox, and nacelle				
HS code	**Japan**	**The United States**	**Mexico**	**Germany**
850231	MFN duties (Applied): 0%	MFN duties (Applied): 2.5% Preferential tariff for GSP countries: 0%	MFN duties (Applied): 0%	MFN duties (Applied): 0%
848340	MFN duties (Applied): 0%	MFN duties (Applied): 0%	MFN duties (Applied): 0%	MFN duties (Applied): 0%

Rotor blades incl. ball bearings, hubs			
HS code	**The United States**	**Japan**	**China**
841280	MFN duties (Applied): 0%	MFN duties (Applied): 0%	MFN duties (Applied): 0% Preferential tariff for ASEAN countries: 0%
841290	MFN duties (Applied): 0%	MFN duties (Applied): 0%	MFN duties (Applied): 2% Preferential tariff for ASEAN countries: 0%

Tower	
HS code	**Guam**
730820	Data not available.

2. Non-tariffs measures applied by main destination markets

The analysis of non-tariff measures (NTMs) applied by key destination markets—Japan, the United States, Germany, and China—on wind system components exported from the Philippines reveals varying regulatory landscapes with significant strategic implications for exporters:

- Japan offers relatively low barriers with minimal NTMs, presenting an opportunity for Philippine exporters to focus on efficient logistics and competitive pricing strategies to penetrate the market effectively.
- The United States imposes rigorous NTMs including labelling, marking, and stringent product-quality standards. Strategic implications involve prioritizing compliance through robust quality control measures and certification, enhancing market acceptance and competitiveness.
- Germany emphasizes stringent product-quality and safety standards, particularly for rotor blades. Strategic recommendations include adopting advanced manufacturing practices and quality assurance measures, potentially forming local partnerships to navigate regulatory complexities.

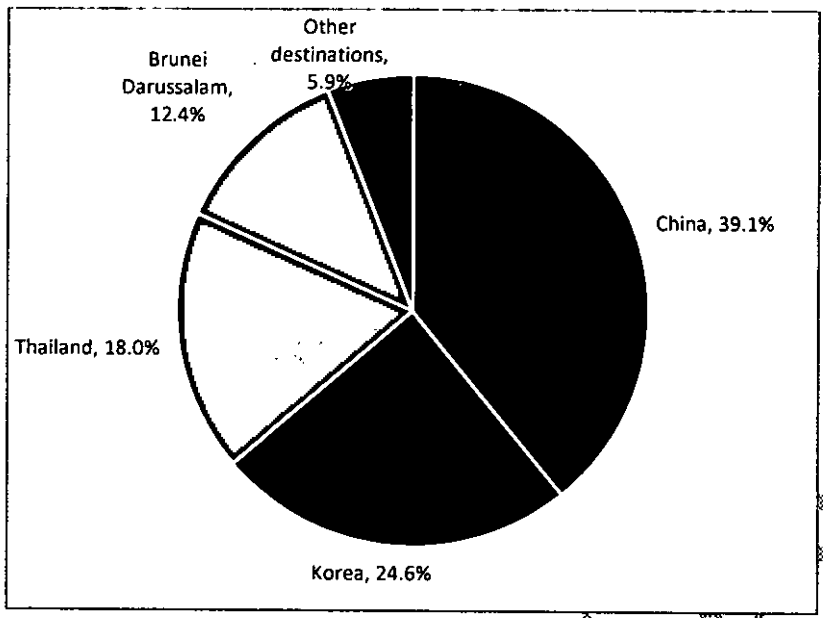
China presents a complex regulatory environment with extensive NTMs covering labelling, marking, and technical barriers to trade. Strategic implications include investing in comprehensive compliance strategies, leveraging digital solutions for traceability, and adapting production processes to meet Chinese market requirements.

Import requirement (Applied by destination market)	Wind turbine incl. generator, gearbox, and nacelle (850231, 848340)				Rotor blades incl. ball bearings, hubs (841280, 841290)			Tower (730820)
	Japan	The United States	Mexico	Germany	The United States	Japan	China	Guam
A490 Hygienic requirements, n.e.s.	X	X	X	X	X	X	1	No data available
A830 Certification requirement	X	X	X	X	X	X	1	
A851 Origin of materials and parts	X	X	X	X	X	X	1	
B31 Labelling requirements	X	1	3	X	1	X	X	
B32 Marking requirements	X	1	X	X	1	X	X	
B33 Packaging requirements	X	1	X	X	1	X	X	
B41 TBT regulations on production processes	X	1	X	X	X	X	X	
B42 TBT regulations on transport and storage	2	1	X	X	1	1	1	
B49 Production or post-production requirements, n.e.s.	1	X	X	X	X	1	X	
B7 Product-quality, safety or - performance requirement	1	1	1	3	X	1	X	
B8 Conformity assessment related to TBT	X	X	X	1	X	X	X	
B82 Testing requirements	X	X	1	2	X	X	X	

B83 Certification requirement	X	1	X	3	1	X	4
B84 Inspection requirement	X	1	X	1	X	X	6
B851 Origin of materials and parts	X	X	X	X	X	X	1
B852 Processing history	X	X	X	X	X	X	1
B853 Distribution and location of products after delivery	X	X	X	X	X	X	1
B859 Traceability requirements, n.e.s.	1	X	X	X	X	1	1
B89 Conformity assessment related to TBT, n.e.s.	X	1	X	X	X	X	X
B89 Conformity assessment related to TBT, n.e.s.							
C1 Pre-shipment inspection	X	X	X	X	X	X	2
C4 Import-monitoring, surveillance and automatic licensing measures	1	X	X	X	X	1	2
C9 Other formalities, n.e.s.	X	1	X	X	1	X	1
E1 Non-automatic import-licensing procedures other than authorizations covered under SPS and TBT chapter	3	1	X	X	1	2	6
E211 Global allocation	X	X	X	X	X	X	1
E320 Prohibition for non-economic reasons	X	X	X	X	X	X	6

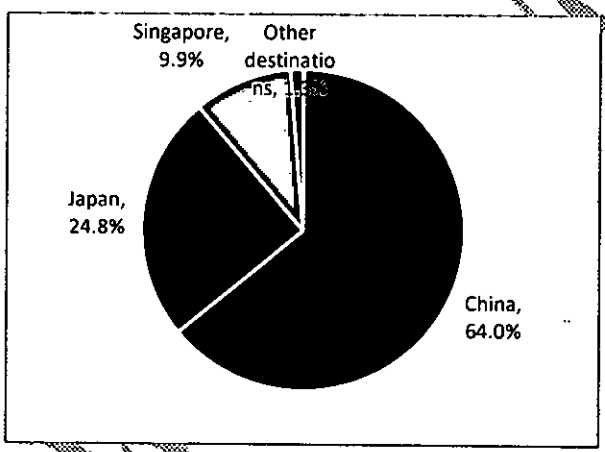
Annex 4 Exports by destination from Philippines in selected products

Figure 9 The Philippines' exports of coal and oil in 2022 by destination



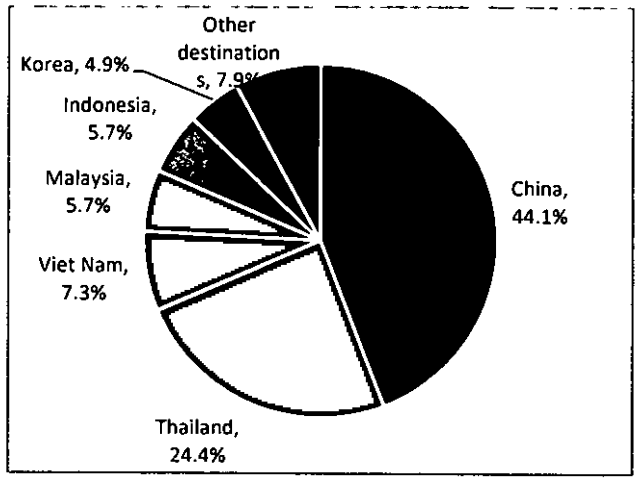
Source: Trade Map.

Figure 9 The Philippines' exports of ore in 2022 by destination



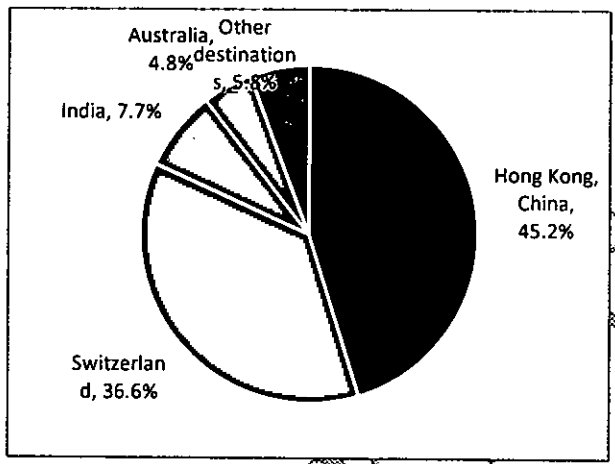
Source: Trade Map.

Figure 10 The Philippines' exports of copper in 2022 by destination



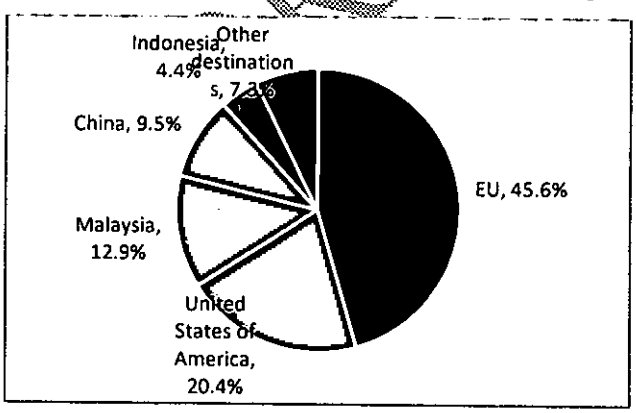
Note: Copper ore is not included.
Source: Trade Map.

Figure 11 The Philippines' exports of gold in 2022 by destination



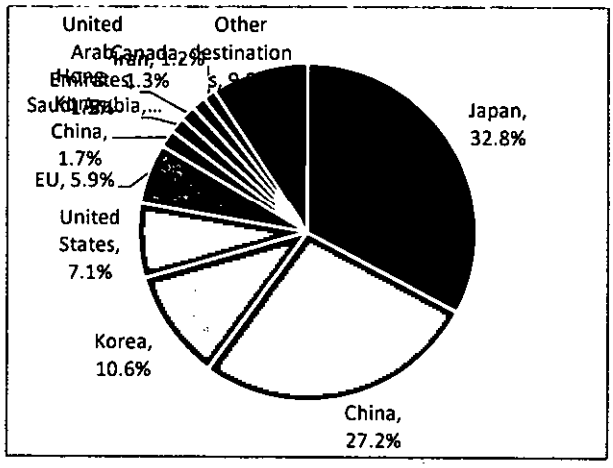
Source: Trade Map.

Figure 12 The Philippines' exports of coconut products in 2022 by destination



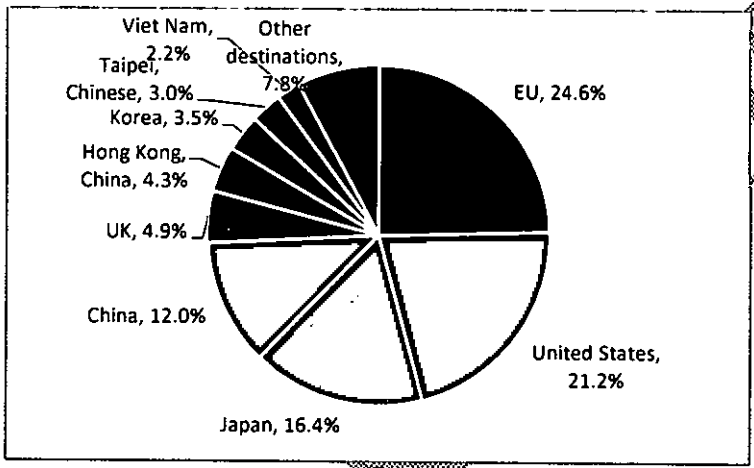
Source: Trade Map.

Figure 13 The Philippines' exports of fruits in 2022 by destination



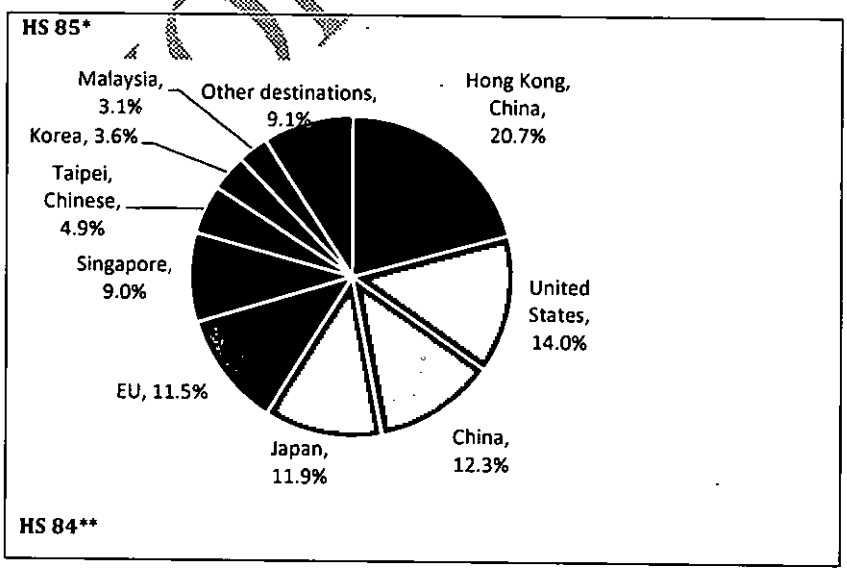
Source: Trade Map.

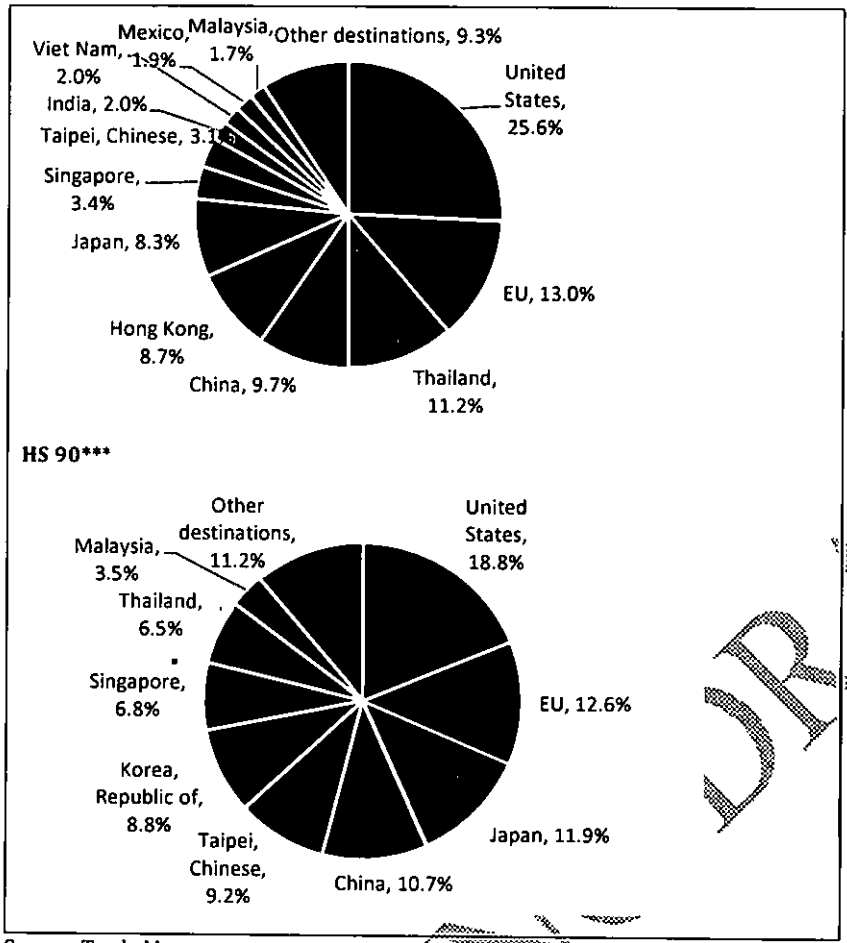
Figure 14 The Philippines' exports of seafood and seafood products in 2022 by destination



Source: Trade Map.

Figure 15 The Philippines' exports of electronics in 2022 by destination





Source: Trade Map.

Note: * HS 85 covers 'Electrical machinery and equipment and parts thereof; sound recorders and reproducers, television image and sound recorders and reproducers, and parts and accessories of such articles.'
** HS 84 covers 'Nuclear reactors, boilers, machinery and mechanical appliances; parts thereof.'
*** HS 90 covers 'Optical, photographic, cinematographic, measuring, checking, precision, medical or surgical instruments and apparatus; parts and accessories thereof.'