



Asia-Pacific
Economic Cooperation

Advancing Free Trade
for Asia-Pacific Prosperity

APEC Economic Policy Report 2022

Structural Reform and a Green Recovery
from Economic Shocks

Annex A:

Individual Economy Reports



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AEPR 2022: Structural Reform and a Green Recovery from Economic Shocks

INDIVIDUAL ECONOMY REPORT (IER) QUESTIONNAIRE

The 2022 APEC Economic Policy Report (AEPR) aims to build capacity in APEC economies to identify and implement structural reforms through a green recovery lens. The AEPR will provide an opportunity for APEC economies to:

1. assess the impact of economic shocks on the region's economies, highlighting vulnerabilities and risks in the APEC region;
2. compare policy approaches in the response and recovery phases from the COVID-19 pandemic and their potential to deliver a green recovery and its contribution to sustainable and inclusive growth;
3. develop a general framework for implementing structural reforms to support a green recovery from economic shocks.

This IER Questionnaire seeks to gather information on the APEC region's structural reform policy environment as it relates to responses to economic shocks of all kinds, including financial crises, currency crises, natural disasters, extreme weather events, impacts of climate change, recessions and commodity shocks, while placing an emphasis on responses to COVID-19. It seeks to gather economy-level responses on: the durability and effectiveness of structural reforms implemented in response to crises; the nature of any green policy reforms implemented; whether other objectives, such as inclusivity and sustainability have been used to design structural reforms; the potential for taking a green lens to structural reforms to deliver both economic and environmental outcomes when responding to economic shocks; and the significance of the timing and sequencing of structural reforms.

For the purposes of this IER, economic shocks are understood to be unpredictable events that have large-scale impacts on economies – they unmask weaknesses in economies' existing policies, and challenge the regulatory and institutional frameworks under which economies operate. Structural reforms provide a way to respond by changing the institutional and regulatory frameworks under which businesses and people operate. Economic shocks can either be short and sharp (such as a natural disaster), or they may be long and rolling (such as climate change). Responses to the IER could address either type of shocks. This AEPR is focused specifically on structural reforms that enable a green recovery from economic shocks. The focus is on policies that are, in the long-term, inclusive, environmentally sustainable, innovation friendly, and accelerate the alignment of global capital flows towards a green recovery. It is noted that there is no agreed international definition of what green policies are or what a green recovery is. For the purpose of this AEPR, it will cover, but is not limited to, reforms relating to areas such as the expansion of renewable energies; energy-efficient transformation of buildings; sustainable mobility; the reduction of climate and environmental impact of industries and across sectors; pricing schemes; green financing; measures to adapt to a changing climate;

deployment of low emissions technologies; resource efficiency; sustainable materials flow and circular economy; measures that improve energy efficiency; nature-based solutions; creation of green jobs; and any others of relevance. Policies are in scope if their ultimate aim is to contribute to the development of, and promotion of, strong, balanced, secure, sustainable, and inclusive economic growth.

We encourage economies to include links to online material where referenced in their responses.

Questionnaire

1. Impact and challenges: Please answer the questions below with respect to two economic shocks that your economy has faced in the past.
 - a) Describe the economic shock.
 - b) What impacts did the economic shock have on your economy?
 - c) What sectors of your economy were most vulnerable to the economic shock?
 - d) Did your economy implement any green policy reforms in response to the economic shock? How did these reforms contribute to economic recovery?
 - e) What have been the long-term impacts of green reforms, and have they helped your economy become more resilient to future shocks?
 - f) How did existing structural policies, institutions and regulations allow you to adequately respond to the economic shocks?
 - g) Which demographics were hit hardest by the economic shock?
2. COVID-19 policies and initiatives: Describe some policy initiatives or programmes your economy has implemented in response to the economic shocks resulting from the onset of COVID-19 (please include at least one green policy initiative or programme). What were the impacts of the structural reforms or policies? Did these reforms support a green recovery? How much did your economy invest, monetary and non-monetary, in green recovery policies? Were there obstacles in implementing green policy reforms and how were these overcome? Does your economy foresee green policies or programmes being implemented beyond the pandemic?
3. Data, measurement, and monitoring: How does your economy measure the impacts of economic shocks? Please provide some examples. Does it measure the coverage, adequacy and impact of structural reforms implemented in response? How does it define and measure whether a policy is ‘green’? Please provide examples.
4. Best practices: Among your economy’s structural reforms implemented in response to economic shocks in the past, discuss some green policies you assess have been implemented effectively. Please identify the top reasons for the effectiveness of these reforms, outlining any long-term impacts they had. Has the reform increased resilience in your economy to future shocks? Does the reform have ongoing applicability to future shocks?
5. Action Plans: Considering the policy gaps, barriers and challenges your economy has in enabling a green response to economic shocks, what are your economy’s short and medium-term plans to overcome them? If your economy has developed metrics and benchmarks to identify the appropriate policy responses and track progress, please provide details.
6. Regional cooperation: What role can regional cooperation and regional bodies such as APEC (but also other international bodies) play in understanding how to implement a green recovery from economic shocks? What are the areas for collaboration, or areas your economy would like to learn more about, on this topic? Does your economy consider that more regional cooperation could be valuable to better understand areas of a green recovery?

AUSTRALIA

1. Impact and challenges: Please answer the questions below with respect to two economic shocks that your economy has faced in the past.
 - a) Describe the economic shock.
 - b) What impacts did the economic shock have on your economy?
 - c) What sectors of your economy were most vulnerable to the economic shock?
 - d) Did your economy implement any green policy reforms in response to the economic shock? How did these reforms contribute to economic recovery?
 - e) What have been the long-term impacts of green reforms, and have they helped your economy become more resilient to future shocks?
 - f) How did existing structural policies, institutions and regulations allow you to adequately respond to the economic shocks?
 - g) Which demographics were hit hardest by the economic shock?

The Australian Government's Powering Australia plan is focused on creating jobs, cutting power bills and reducing emissions by boosting renewable energy.

Reputex modelling indicates Powering Australia will generate an estimated \$76 billion in investment and create 604,000 jobs by 2030, with 5 out of 6 new jobs to be created in the regions.

Alongside the economic benefits, Powering Australia will reduce Australia's emissions to 43% below 2005 levels by 2030. The government has formally lodged this target as an enhanced Nationally Determined Contribution under the Paris Agreement, putting Australia firmly on track to reach net zero by 2050.

Australia's crediting mechanism was launched with the establishment of the Carbon Farming Initiative Act 2011. The Carbon Farming Initiative (CFI) was used to supply offsets to Australia's Carbon Pricing Mechanism. When the CFI was repealed in 2014, the CFI transitioned to the Emissions Reduction Fund.

The [Emissions Reduction Fund](#) is a voluntary scheme that aims to provide incentives for a range of organisations and individuals to adopt new practices and technologies to reduce their emissions. Participants in the ERF can earn Australian Carbon Credits Units (ACCUs) for every tonne of CO2 equivalent they store or avoid emitting. Businesses can sell ACCUs to generate income, to the Australian government through an auction, and/or to other businesses. The 1,000th project was registered under the scheme in August 2021. The total number of ACCUs issued surpassed 100 million in 2021. As at October 2021, through 13 auctions, the Emissions Reduction Fund has contracted 209 million tonnes of abatement through over 500 carbon abatement contracts, at an average price of \$12.47 per tonne. Project types involve:

- New technology introduction
- Upgrading equipment
- Changing business practices to improve productivity or energy use
- Changing the way vegetation is managed to store carbon.

The ERF covers projects in the field of vegetation management, agriculture, energy consumption, waste, transport, coal and gas production, and industrial processes.

2. COVID-19 policies and initiatives: Describe some policy initiatives or programmes your economy has implemented in response to the economic shocks resulting from the onset of COVID-19 (please include at least one green policy initiative or programme). What were the impacts of the structural reforms or policies? Did these reforms support a green recovery? How much did your economy invest, monetary and non-monetary, in green recovery policies? Were there obstacles in implementing green policy reforms and how were these overcome? Does your economy foresee green policies or programmes being implemented beyond the pandemic?

n/a

3. Data, measurement, and monitoring: How does your economy measure the impacts of economic shocks? Please provide some examples. Does it measure the coverage, adequacy and impact of structural reforms implemented in response? How does it define and measure whether a policy is 'green'? Please provide examples.

Participants in the Emissions Reduction Fund can earn Australian Carbon Credits Units (ACCUs) for every tonne of CO₂ equivalent they store or avoid emitting. ACCUs issued by the ERF can be used for compliance purposes by entities covered under [Australia's Safeguard Mechanism](#). The Safeguard Mechanism requires largest emitters to keep their net emissions below a baseline. The Safeguard Mechanism is underpinned by the [National Greenhouse and Energy Reporting Scheme](#) (NGERS). NGERS is a legislated, uniform domestic system for the reporting of energy and greenhouse emissions data by companies. Reporting is mandatory for companies that meet specified thresholds for emissions or energy production or consumption. Emissions estimation methods used by NGERS reporters are designed to be consistent with Intergovernmental Panel on Climate Change methods. NGERS is administered by the Clean Energy Regulator, and company reports are subject to verification by external auditors. The Safeguard Mechanism applies to NGERS facilities emitting more than 100,000 tons of CO₂-e per year. It is applied to around 200 of Australia's largest emitters through the Safeguard Mechanism. The responsible emitter who has operational control of the facility must ensure the facility's net emissions do not exceed the baseline determined by the Regulator.

If a facility's emissions exceed or are expected to exceed its baseline, the facility operator has a number of options available to them to manage the excess emissions, including:

- applying for a new baseline
- surrendering ACCUs to offset emissions
- applying for a multi-year monitoring period to allow additional time to reduce net emissions
- applying for an exemption where excess emissions are due to exceptional circumstances such as a natural disaster or criminal activity.

There is a range of enforcement options available to the Clean Energy Regulator where a responsible emitter fails to take one of the above actions. These options include entering into an enforceable undertaking, issuing an infringement notice, or initiating court proceedings to seek an injunction or civil penalties.

As representatives of the International Organization for Standardization (ISO) and International Electrotechnical Commission (IEC), [Standards Australia](#) are specialists in the development and adoption of internationally-aligned standards in Australia. A key domestic stakeholder in Australia's whole-of-society approach to advance sustainability, Standards Australia has recently established a mirror committee to the ISO committee (TC 323) to

develop circular economy principles, guidance on business models, frameworks on measuring circularity and implementation case studies.

The Australian Government funds the [National Environmental Science Program](#) (NESP) which is a long-term commitment to environment and climate research. The program recognises and values the experience and perspectives of stakeholders and provides an evidence base for environmental and climate policy makers. The first phase invested \$145 million (2014-15 to 2020-21) into 6 research hubs. The second phase will invest \$149 million (2020-21 to 2026-27) into 4 new research hubs. Australian research institutions host the multi-disciplinary research hubs. This includes:

- Under the first phase of the program \$8.88 Million invested into [The Clean Air and Urban Landscapes Hub](#) which undertook a comprehensive view of the sustainability and liveability of urban environments.
- Under the second phase of the program \$17 million will be invested into the [Sustainable Communities and Waste Hub](#) will provide research to reduce the impact of plastics, support sustainable people-environment interactions, and offer management options for hazardous substances and pollutants to minimise environmental and human-health impacts.

Australia's National Measurement Institute (NMI) represents Australia in two of the four APEC Specialist Regional Bodies (SRBs), the Asia Pacific Metrology Programme (APMP) for scientific measurement and the Asia Pacific Legal Metrology Forum (APLMF) for legal metrology. APEC identifies the SRBs as contributing to the work programs of the APEC Sub-Committee on Standards and Conformance (SCSC). APMP has established multi-disciplinary "Focus Groups" to bring together measurement expertise to address regional sectoral challenges. A linkage with APMP's Focus Groups on Climate Change and Clean Air, Energy Efficiency and Food Safety could support/complement APEC's work on BCG models.

4. Best practices: Among your economy's structural reforms implemented in response to economic shocks in the past, discuss some green policies you assess have been implemented effectively. Please identify the top reasons for the effectiveness of these reforms, outlining any long-term impacts they had. Has the reform increased resilience in your economy to future shocks? Does the reform have ongoing applicability to future shocks?

Australia regularly engages with its private sector trade industry organisations and businesses to inform and receive feedback on government priorities, challenges, opportunities and initiatives. Such stakeholders play a vital in working with government to advance sustainability and to ensure growth and inclusivity more broadly. This can be undertaken in the form of public consultation and submission stakeholder engagement processes, or in targeted and specific discussions on particular issues. For example, business and industry feedback on the Singapore-Australia [Green Economy Agreement](#) (GEA) has proved invaluable to inform focus areas for the government to prioritise in joint discussions between Australia and Singapore.

Through partnerships with industry, universities and government, CSIRO works on solutions to Australia's domestic waste challenge. CSIRO technology and innovation is behind [ASPIRE](#), an online marketplace which intelligently matches businesses with potential remanufacturer, purchasers or recyclers of waste resources. ASPIRE is an Australian example of industrial symbiosis where a digital tool supports a social business network, deployed across a region. In 2020, CSIRO and the Future Battery Industries CRC published the most up-to-date, comprehensive review of the status of lithium-ion battery recycling industry in Australia. The

'[Australian Landscape for Lithium-Ion Battery Recycling and Reuse in 2020](#)' report was informed by CSIRO research and stakeholder surveys. The report identifies 18 opportunities for industry, government, and research institutions to strengthen and grow Australia's domestic recycling capability and generate new industries and employment opportunities.

Actions to be undertaken to reduce food waste in Australia include \$4 million investment to establish Stop Food Waste Australia, which will implement the Australian Food Pact, sector actions plans, and other initiatives to reduce food waste across the supply chain. A voluntary agreement with industry, the [Australian Food Pact](#) brings together organisations from all parts of the food chain to identify solutions to reduce food waste and increase productivity. The Australian Government also helped to establish the Fight Food Waste Cooperative Research Centre (CRC) with \$30 million in funding. This CRC aims to improve the competitiveness, productivity and sustainability of the Australian food industry.

The [Global Compact Network Australia](#) is a key sustainability initiative in Australia, bringing together participants of the UN Global Compact, including a number of Australia's leading companies, civil society organisations and universities, to advance responsible business and the private sector's contribution to sustainable development. The GCNA with the support of government funding has developed a web platform with the aim of centralizing and showcasing actions taken to advance the Sustainable Development Goals (SDGs) in Australia.

5. [Action Plans](#): Considering the policy gaps, barriers and challenges your economy has in enabling a green response to economic shocks, what are your economy's short and medium-term plans to overcome them? If your economy has developed metrics and benchmarks to identify the appropriate policy responses and track progress, please provide details.

Australia invests in low emissions technologies in partnership with the private sector through Australian Government agencies including:

- Australian Renewable Energy Agency (ARENA)
- Clean Energy Finance Corporation (CEFC)
- Clean Energy Regulator (CER), which administers the Emissions Reduction Fund (ERF) and the Renewable Energy Target.

The [Renewable Energy Target](#) is an Australian Government scheme designed to reduce emissions of greenhouse gases in the electricity sector and encourage the additional generation of electricity from sustainable and renewable sources. The Renewable Energy Target works by allowing both large-scale power stations and the owners of small-scale systems to create large-scale generation certificates and small-scale technology certificates for every megawatt hour of power they generate. Certificates are then purchased by electricity retailers (who supply electricity to householders and businesses) and submitted to the Clean Energy Regulator to meet the retailers' legal obligations under the Renewable Energy Target. This creates a market which provides financial incentives to both large-scale renewable energy power stations and the owners of small-scale renewable energy systems.

On 7 April 2021, the Federal Government released the [Recycling and Clean Energy National Manufacturing Priority Road Map](#) (Road Map). The Road Map will inform both government and industry investment decisions over the next decade. To encourage private sector engagement with the Road Map, the Australian Government is providing grant funding to transform manufacturing businesses and help them to scale-up, translate ideas into commercial successes, and integrate into local and international value chains. Funding also aims to

transform the manufacturing sector by increasing collaboration, and building economies of scale to enhance growth and competitiveness. Further information is [here](#).

The Australian Renewable Energy Agency (ARENA) and the Clean Energy Finance Corporation (CEFC) provide grants and loans in support of investment and innovation in renewables and clean energy. The Government, through ARENA and CEFC, has supported waste-to-energy and bioenergy projects that boost local jobs, divert waste from landfill, reduce greenhouse gas emissions and produce useful energy products.

Released in November 2021 by ARENA, the Bioenergy Roadmap Report presented a framework for a sustainable bioenergy industry that delivers lower emissions (including in hard to abate industrial and transport sectors), regional growth, energy resilience and waste management benefits for Australia. The Roadmap Report outlined that this sector could boost the Australian annual GDP by around \$10 billion, create over 26,000 jobs, reduce emissions by about nine per cent and divert an extra six per cent of waste from landfill and enhance energy security. The Roadmap Report showcased where bioenergy has a comparative advantage and where it can complement other low emissions alternative technologies, identify current barriers to the development of the bioenergy sector, provide findings for industry and government to drive commercial outcomes and highlight opportunities to inform and empower the broader community.

Australia's [National Circular Economy Roadmap](#) was released in January 2021. The roadmap aligns with a number of circular economy missions being developed by CSIRO and partners in industry, universities and government, including a mission to end plastic waste, a mission to transform Australian mineral commodities into higher-value products, and a mission to transition to net zero emissions.

Australia's [National Waste Policy Action Plan](#) puts emphasis on circular economy principles and targets, such as phasing out problematic and unnecessary plastics by 2025, increasing the use of recycled content by governments and industry, and 80% average resource recovery rate from all waste streams, by 2030.

Australia has set a goal to halve its food waste by 2030, aligning with the UN's Sustainable Development Goal 12.3. Key actions to be undertaken to reduce food waste are laid out in the [National Food Waste Strategy Roadmap](#) and the [National Waste Policy Action Plan](#).

The [Australian Government's Sustainable Procurement Guide](#) was updated in December 2020 to prioritise the purchase of products with recycled content. This is to help create a market for the materials which are being covered under the waste export ban (plastic, paper, glass and tyres).

The [National Plastics Plan](#) outlines actions to reduce plastic waste and increase recycling rates, find alternatives to the plastics we don't need, and to reduce the amount of plastics impacting our environment.

6. [Regional cooperation](#): What role can regional cooperation and regional bodies such as APEC (but also other international bodies) play in understanding how to implement a green recovery from economic shocks? What are the areas for collaboration, or areas your economy would like to learn more about, on this topic? Does your economy

consider that more regional cooperation could be valuable to better understand areas of a green recovery?

APEC economies can leverage elements of the BCG Economy Model to drive domestic structural reform, to implement the Enhanced APEC Agenda for Structural Reform (EAASR) and advance APEC's sustainability agenda. Australia's Power Australia Plan aligns with EAASR and the APEC Aotearoa Plan of Action (adopted in 2021), including to "pursue structural reforms and sound economic policies to promote innovation as well as improve productivity and dynamism" and "promote economic policies, cooperation and growth, which will support global efforts to comprehensively address all environmental challenges, including climate change, extreme weather and natural disasters, for a sustainable planet".

In commencing negotiations of a bilateral [Green Economy Agreement](#) (GEA), Australia and Singapore are embarking on a world-first agreement that combines trade, economic and environmental objectives. The vision behind the GEA is to enhance the livelihood of our communities whilst transitioning to greener economies and addressing the challenges of climate change. The GEA will deliver on this vision by reducing barriers to the trade in environmental goods and services; fostering convergence on regulations and standards and conformance; exploring new opportunities in green growth sectors; adopting environmental measures that facilitate trade and investment in a manner consistent with existing international trade and investment obligations; and ensuring our smooth and inclusive transition into a green economy that creates good jobs for our people. Australia will be looking to build upon the work already undertaken by APEC particularly relating to the Reference List of Environmental and Environmentally Related Services, and the agreement to progress work on environmental goods potentially producing a reference list of new and emerging environmental goods, agreed by APEC Trade Ministers in November 2021.

Having produced results in the form of the APEC List of Environmental Goods and in November 2021 on the Reference List of Environmental and Environmentally Related Services, APEC is in a good position to continue to promote the liberalization of environmental goods and services. The interaction between environmental challenges and services is not well understood, despite work on this topic having been done in APEC, the OECD and the WTO. The OECD and WTO can continue to play a role to complement APEC's efforts in this endeavour.

Internationally, the Australian Government has committed \$104 million to promote climate action through the [Indo-Pacific Carbon Offsets Scheme](#). The scheme will run for 10 years to 2031 operating under Article 6 of the Paris Agreement from 1 July 2021. The scheme aims to boost public and private investment in climate action and practical investment in high integrity carbon offsetting projects in our region. It will ensure carbon offsets generated and traded in the region meet high standards of transparency and environmental integrity, and offer real benefits to communities.

BRUNEI DARUSSALAM

1. Impact and challenges: Please answer the questions below with respect to two economic shocks that your economy has faced in the past.
 - a) Describe the economic shock.
 - b) What impacts did the economic shock have on your economy?
 - c) What sectors of your economy were most vulnerable to the economic shock?
 - d) Did your economy implement any green policy reforms in response to the economic shock? How did these reforms contribute to economic recovery?
 - e) What have been the long-term impacts of green reforms, and have they helped your economy become more resilient to future shocks?
 - f) How did existing structural policies, institutions and regulations allow you to adequately respond to the economic shocks?
 - g) Which demographics were hit hardest by the economic shock?

Brunei Darussalam's economy has been reliant on the oil and gas sector for over 90 years. The energy sector contributed to 55 percent of its GDP in 2020; the sector encompasses the upstream, downstream (manufacturing of petroleum and petrochemical products), retail and power sector. Income from hydrocarbons makes up about 60 percent of GDP and more than 90 percent of government revenue.

When the global financial crisis hit in 2008-2009 and once more in 2016, the fall in international oil prices heavily impacted Brunei Darussalam's economy. Oil and gas sectors were most hit and the government introduced austerity measures that both limited government projects and lowered investment, thus affecting sectors that depended on government spending. Brunei Darussalam's GDP growth in 2008 was -1.94 percent; it was the first economic contraction in the economy since 2000. In 2016, Brunei Darussalam's GDP growth was recorded at -2.48 percent.

Notwithstanding the crises, Brunei Darussalam continued to undertake various reforms that ensures conducive environment, amongst others, to boost domestic business activities and increase its competitiveness as an FDI destination, which supported its economic diversification agenda. In tandem with the pursuit of economic development, Brunei Darussalam will maintain its commitment to environmental preservation.

Green-growth initiatives have included looking into alternative energy sources and since 2016, Brunei Darussalam has targeted to increase its share of the power generation mix from renewable energy to at least 30 percent by 2035. Brunei Darussalam began to develop renewable energy sources, particularly solar photovoltaic (PV) and floating solar PV, and began plans to introduce renewable energy policies and regulatory frameworks that would stimulate investment both by the government and the private sector in developing and deploying renewable energy.

By 2035, Brunei Darussalam also aims to reduce energy intensity by 45 percent (baseline 2005). The introduction of financial and fiscal policy measures that promote energy efficiency and low-energy intensive industries saw several initiatives being implemented. Among which were the electricity tariff reform, where the main objective was to move from a regressive to a progressive tariff structure, and improvement of power plant efficiency. The electricity tariff reform introduced on 1 January 2012 aimed to prevent over-consumption of electricity.

In line with Brunei Darussalam's diversification efforts, investment in renewable energy is in the plans for the longer term. Currently, an ongoing project under the 11th National Development Plan (RKN 11) involves the construction of the 66kv network line project from the 66/11kv Mentiri Main System to the New 66/11kv Perdayan Station, Temburong District. The project, which is targetted to be completed in 2023 will replace the previously relied upon diesel generator in order to supply more reliable and sufficient electric energy to the Temburong District. Brunei Darussalam also has plans to build a number of new land-based solar power plants within the next five years as part of its effort of transitioning from fossil fuels to clean energy. The first of these solar farms will start this year in what was formerly the Kg. Sungai Akar landfill, with the installed capacity of 30MW. Overall, Brunei Darussalam has set a target of generating 300MW of solar energy by 2035 as part of our initiative to reduce greenhouse gas emissions by 20 percent in the next decade. Apart from land-based solar power plant, water-based solar is also on a look out. Floating solar photovoltaic (FSPV) has high potential for implementation in renewable energy development in Brunei Darussalam in achieving the 30% of its share in the power generation mix by 2035.

To further promote more resilient, inclusive and sustainable economic growth, Brunei Darussalam launched the Economic Blueprint for Brunei Darussalam in early 2021. Pursuing green-growth initiatives is highlighted in two strategic priorities under one of the 6 Aspirations in the Blueprint. These include:

- i. Promoting economic growth through green growth initiatives and sustainable Blue Economy. This entails economic development that is based on clean technologies, renewable energy, and circular material flows to secure economic and social stability over time.
- ii. Investing and promoting sustainable businesses and technology not only to increase productivity but also conserve the environment. This involves promoting green-friendly industries, which play a key role in bringing about recovery and sustainable growth, increasing competitiveness, creating jobs, improving the quality and decency of jobs, while tackling acute environmental problems.

Other than that, also paramount is promoting Research and Development (R&D) and innovation among institutions and industries to develop and adopt resource-efficient technologies that can contribute to higher productivity and growth in the long term.

2. COVID-19 policies and initiatives: Describe some policy initiatives or programmes your economy has implemented in response to the economic shocks resulting from the onset of COVID-19 (please include at least one green policy initiative or programme). What were the impacts of the structural reforms or policies? Did these reforms support a green recovery? How much did your economy invest, monetary and non-monetary, in green recovery policies? Were there obstacles in implementing green policy reforms and how were these overcome? Does your economy foresee green policies or programmes being implemented beyond the pandemic?

Like many other economies, Brunei Darussalam has implemented fiscal and monetary support to assist individuals and businesses, especially MSMEs, to mitigate the COVID-19 impacts. The authorities also promoted life-long learning, as well as upskilling and reskilling programmes to ensure quality talent pool in catering to the industries.

Despite not setting specific green recovery policies in response to the pandemic, Brunei Darussalam has undertaken measures that promote more sustainable economic growth.

Social distancing measures that were put in place due to COVID-19 accelerated the need for digitalization. Digital transformation allows us to realize a green economy in the longer term. The digitalization of services also ensured that services continued to run amidst the pandemic. The pandemic has highlighted the positive role played by technology in connecting people to new ways of working, some of which included the introduction of the Digital Driving License and Digital Vehicle License. To improve delivery of services, the Ministry of Transport and Infocommunications (MTIC) intends to enhance the e-Darussalam government portal by offering services that facilitates online payment. As part of the green protocol measures, MTIC also aims to fully adopt e-office in its internal operations to eliminate paperwork. The e-office project has also been extended to other Ministries. Meanwhile, the use of the Brunei Darussalam National Single Window (BDNSW) continued to be crucial in processing trade documentation electronically including in the application and approval of port clearance processes.

3. Data, measurement, and monitoring: How does your economy measure the impacts of economic shocks? Please provide some examples. Does it measure the coverage, adequacy and impact of structural reforms implemented in response? How does it define and measure whether a policy is ‘green’? Please provide examples.

The primary source of economic data is the Department of Economic Planning and Statistics, which compiles GDP statistics, International Merchandise Trade Statistics (IMTS), Consumer Price Index (CPI), Labour Force Statistics (LFS), Foreign Direct Investment (FDI) statistics, Balance of Payment (BOP) statistics, population and demographics statistics, as well as business performance statistics. Some of these indicators are being utilized as the conventional methodologies to calculate the impacts of economic shocks. Meanwhile, BDCB compiles Monetary and Financial Statistics (MFS), Residential Property Price Index (RPPI), as well as Business Sentiment Index (BSI). None of these indicators specifically define nor measure whether a policy is “green”.

Nevertheless, there are several indicators under the Brunei Darussalam National Climate Change Policy (BNCCP) that can be referred to measure the performance of green-growth initiatives including the (i) amount of FDIs on renewable energy projects and (ii) number of local SMEs in renewable energy sector¹.

4. Best practices: Among your economy’s structural reforms implemented in response to economic shocks in the past, discuss some green policies you assess have been implemented effectively. Please identify the top reasons for the effectiveness of these reforms, outlining any long-term impacts they had. Has the reform increased resilience in your economy to future shocks? Does the reform have ongoing applicability to future shocks?

5. Action Plans: Considering the policy gaps, barriers and challenges your economy has in enabling a green response to economic shocks, what are your economy’s short and medium-term plans to overcome them? If your economy has developed metrics and benchmarks to identify the appropriate policy responses and track progress, please provide details.

Brunei Darussalam launched its first Brunei Darussalam National Climate Change Policy (BNCCP) on 25 July 2020 to pave the ways for low carbon and climate-resilient pathways for

¹ Brunei Darussalam National Climate Change Policy (July 25 2020). *Brunei Darussalam Council On Climate Change*. Retrieved from <http://mod.gov.bn/Shared%20Documents/BCCS/Brunei%20National%20Climate%20Change%20Policy.pdf>

a sustainable economy. The BNCCP outlines 10 key strategies to reduce greenhouse gas emissions and strengthen climate resilience economy-wide, in line with the *Wawasan Brunei 2035* (Brunei Vision 2035) – industrial emissions; forest cover; electric vehicles; renewable energy; power management; carbon pricing; waste management; climate resilience and adaptation; carbon inventory; and awareness and education.

This has led to the acceleration of policy change in the economy such as the development of Operational Document for the operationalisation of the core strategies in the BNCCP; and the launching of Green Protocol Guidelines for the Government sector that aims at reducing carbon footprint at the Government premises. It covers areas with green practice opportunities in energy and water consumption, waste management and paper use, including the incorporation of green practices in organising domestic events. The Green Protocol also aims at turning the Government premises into a “plastic bottle free zone” and the “26,000 Trees Campaign”.

Brunei Darussalam has seen significant progress since the launching of BNCCP as follows:

- Establishment of the Industrial Emissions Committee
- 22,584 saplings have been planted as of the third quarter of 2021
- A two-year pilot project on Electric Vehicles was launched
- 255 solar panels installed and a 3.3 MW solar plant
- Launched a Net-metering pilot project;
- Introduced a Standard Labelling Order; and
- Plans are expected to be executed up to 2025 with targets to achieve 100MW Renewable Energy (10% of the Economy’s Energy Mix) by 2025

In the transport sector, the Ministry of Transport and Infocommunications Strategic Plan (MTIC2025) and Digital Economy Masterplan (DEM) have spelled out strategies and action plans for the next 5 years with a vision to utilize technology and connectivity to spur innovation and improve the lives and needs of citizens and businesses for continued economy-wide development through digital economy, digital government and digital society initiatives. Time and resources can be utilized at its optimum to produce positive strategic result for 2025 and beyond including embracing the challenges of evolving of digitalization trends towards a sustainable transport. One of the key strategies to Brunei Darussalam’s sustainable transport aspirations is to ensure and identify services that can be digitalized for a reliable end-to-end services and robust operations thus promoting smart use of technology, constantly updating the digital platform in order to facilitate the public requirement for effective and efficient services delivered by the authorities as well as to be up to date with the current trend of evolving technology.

As in many other economies in the region, the economic shock of the pandemic also adversely affected the tourism industry in Brunei Darussalam. Since restrictions on travels were imposed, the total number of tourist arrivals continued to decline by 86% in Jan-Sept 2021 from the same period in Jan-Sept 2020. Thus, as part of the strategies to assist and help revive the tourism industry and its related businesses, domestic tourism campaigns have been launched through local product offerings and activities. The Department of Tourism Development (TDD) has also taken the initiative to improve the quality of customer services in the tourism industry and enhance the capacity and skills of tourism stakeholders such as tour guides and tourism service providers towards sustainable and inclusive capacity building.

Greater effort is also being made to apply sustainable practices across all sectors of the economy, to further support sustainable tourism. Close collaboration with related stakeholders

has been vital to properly manage biodiversity and conservation efforts; to safeguard resources and rich biodiversity to enable tourists to experience tours in a more responsible and sustainable manner.

Furthermore, TDD also supports green practices in the area of investment and infrastructure for a more conducive environment and framework to increase the attractiveness of destinations for investment opportunities. In this area, it has been important to ensure that Request for Proposals (RFPs) under the purview of TDD aligns with the Environmental Impact Assessment (EIA) to minimize the adverse impact of tourism activities to the environment, directly or indirectly.

6. Regional cooperation: What role can regional cooperation and regional bodies such as APEC (but also other international bodies) play in understanding how to implement a green recovery from economic shocks? What are the areas for collaboration, or areas your economy would like to learn more about, on this topic? Does your economy consider that more regional cooperation could be valuable to better understand areas of a green recovery?

Regional organisations provide the platforms for more policy engagements, and sharing of best practices. These discussions may subsequently, where appropriate, produce regional guidelines that may lead to collective and sustainable approaches to recovery and growth. Renewed collaboration and opportunities with international organisations and consultations with the private sector are useful to deliver better policy and strategy recommendations to be more inclusive and sustainable in recovery and green policies.

As the ASEAN Chair in 2021, under the overarching theme of “We Care, We Prepare, We Prosper” Brunei Darussalam has advocated economic cooperation that was aimed at ensuring sustainable, inclusive and resilient economic recovery and growth in the region. Some of its priority areas that are aimed at supporting the sustainable recovery agenda include the establishment of the ASEAN Taxonomy on Sustainable Finance, and adoption of the Framework of the Circular Economy for the ASEAN Economic Community.

In the transport sector, the ASEAN Transport Ministers (ATM) is the key transport organ for regional cooperation. During the 26th ATM Meeting held virtually on 24 November 2020, the ASEAN Transport Ministers adopted the Mid-Term Review of the Kuala Lumpur Transport Strategic Plan (KLTSP) 2016-2025, including the Revised Schedule of Actions of KLTSP. It considered emerging global issues, including among others on climate change and the need for digitalisation. In view of the COVID-19 pandemic, it also included digital initiatives under the key area of Sustainable Transport (ST), and included the following new Specific Goal i.e. “Enhance regional cooperation in application of smart technology in transport sector”. In their discussions at the 27th ATM Meeting held on 11 November 2021, the Meeting acknowledged the key role of digital transformation towards a more resilient freight transport and logistics in the region, which in turn promotes a more sustainable transport sector. For ASEAN, regular meetings are conducted at the ATM, ASEAN Senior Transport Officials Meeting (STOM) and working group levels. The Ministry of Transport and Infocommunications would be further interested in how to frame green recovery reform through a lens that further adds value to the deployment of sustainable transport and mobility, such as by using emerging technologies.

Regional cooperation has been useful and valuable in order to learn best practices on how to implement policies in response to the various existing and emerging issues, taking into

consideration the best practices and lessons learned within and beyond the region. It allows for the adaptation of known practices in accordance with domestic circumstances.

CANADA

1. Impact and challenges: Please answer the questions below with respect to two economic shocks that your economy has faced in the past.
 - a) Describe the economic shock.
 - b) What impacts did the economic shock have on your economy?
 - c) What sectors of your economy were most vulnerable to the economic shock?
 - d) Did your economy implement any green policy reforms in response to the economic shock? How did these reforms contribute to economic recovery?
 - e) What have been the long-term impacts of green reforms, and have they helped your economy become more resilient to future shocks?
 - f) How did existing structural policies, institutions and regulations allow you to adequately respond to the economic shocks?
 - g) Which demographics were hit hardest by the economic shock?

For this section, two different policy responses to the economic shock of climate change are examined. The policy responses are listed below.

1. Pan-Canadian carbon pricing in Canada.
2. Economy-wide phase-out of traditional coal power plants.

Unless otherwise indicated the response for each sub-question is for both policy responses.

a) Describe the economic shock.

Climate change is caused by the accumulation of human-produced greenhouse gases (GHGs) in the atmosphere beyond the capacity of the earth's climate systems to regulate.² While the main source of these emissions is the combustion of fossil fuels, other human activities, including industrial agriculture and land use change, also contribute to the proliferation of GHGs.³ Given the current accrual of GHGs in the atmosphere, climate change can be considered as a rolling economic shock, presenting both present economic stressors and anticipated high future costs.

b) What impacts did the economic shock have on your economy?

In Canada, both observed and projected warming is about double the global average and climate change is causing deep and lasting impacts on our society, environment, and all sectors of the economy.⁴ Recent weather and climate extremes – in the form of heat waves, wildfires, heavy precipitation, and floods – underscore how the environmental and economic risks of climate change are inherently connected, and affirm the need for climate action.

c) What sectors of your economy were most vulnerable to the economic shock?

Climate change poses both transition and physical risks to the Canadian economy. The fossil fuel sector of the Canadian economy is the most vulnerable to transition risks, while physical risks pose a threat to critical infrastructure, which can have wide ranging impacts across economic sectors.

² IPCC, [Sixth Assessment Report: The Physical Science Basis](#), 2021.

³ IPCC, [Global Warming of 1.5 °C: Summary for Policy Makers](#), 2018.

⁴ Environment and Climate Change Canada, [Canada's Changing Climate Report](#), 2019.

- d) *Did your economy implement any green policy reforms in response to the economic shock? How did these reforms contribute to economic recovery?*

Pan-Canadian carbon pricing:

Since 2019, every jurisdiction in Canada has had a price on carbon pollution. Canada's approach is flexible: any province or territory can design its own pricing system tailored to local needs, or can choose the federal pricing system. The federal government sets minimum domestic stringency standards (the federal 'benchmark'), that all systems must meet to ensure they are comparable and effective in reducing greenhouse gas emissions.

All direct proceeds from the federal system are returned to the province or territory of origin. The Government of Canada has made affordability a priority, in particular for low income and vulnerable households. Proceeds can be used very successfully to address affordability concerns. The current approach used for the federal pricing system results in the majority of households being better off.

Economy-wide coal phase-out:

Canada's progress on coal phase out started in the early 2010s among some provinces. To advance momentum, Canada in 2018 announced plans to phase-out traditional coal fired power plants by 2030.⁵ This was done with the expressed goal of reducing greenhouse gas emissions, but was also expected to provide significant health benefits in the form of localized improvements in air quality due to reductions in criteria air contaminants. Evidence from jurisdictions that have already succeeded in phasing out coal power suggests both of these outcomes can be achieved.⁶

- e) *What have been the long-term impacts of green reforms, and have they helped your economy become more resilient to future shocks?*

Pan-Canadian carbon pricing:

Carbon pricing has been in place across all Canadian jurisdictions only since 2019, making long-term assessments premature. Modelling of carbon pricing together with a range of other climate policies, most recently as part of Canada's 2030 *Emissions Reduction Plan*, project significant GHG reductions as a result of this suite of climate policies, allowing Canada to reach its 2030 NDC target.

Economy-wide coal phase-out:

Phasing out coal power in Canada has gone more rapidly than anticipated and significantly reduced transition risks for the Canadian economy. Canada has one of the cleanest electricity grids in the world, and as coal power and other fossil fuels are phased out of the electricity supply it only stands to get cleaner. There have also been positive health benefits due to increases in air quality, which are likely at least in part due to the reduction in coal usage.⁷

⁵ Government of Canada, [Coal phase-out: the Powering Past Coal Alliance](#), 2021.

⁶ IISD, [The End of Coal: Ontario's coal phase-out](#), 2015.

⁷ IISD, [The End of Coal: Ontario's coal phase-out](#), 2015.

- f) *How did existing structural policies, institutions and regulations allow you to adequately respond to the economic shocks?*

Pan-Canadian carbon pricing:

Carbon pricing has been in place in several sub-central provinces for a number of years. The federal approach on carbon pricing built on these existing mechanisms by giving provinces and territories the flexibility to implement their own systems as long as they meet minimum domestic standards. Carbon pricing continues to be implemented under provincial systems in a number of jurisdictions. The federal government also established a federal carbon pricing system through the introduction of new legislation and new regulations. This federal system applies in any jurisdiction that requests it, or that does not implement its own system that meets the minimum requirements.

Economy-wide coal phase-out:

The Canadian province of Ontario had already proactively phased-out coal power by 2014; this provided an excellent case study on how Canada as a whole could phase it out.

- g) *Which demographics were hit hardest by the economic shock?*

Populations that may be at higher risk of being harmed by the impacts of climate change include: seniors, youth and children, Indigenous Peoples, racialized populations, people with disabilities, people who are pregnant, frontline emergency responders, residents of northern and remote communities, individuals who are socially and economically disadvantaged, people who are immunocompromised and those living with pre-existing illness. Understanding who is most at risk and why allows public health officials and community organizations to help those who need it most.⁸

2. COVID-19 policies and initiatives: Describe some policy initiatives or programmes your economy has implemented in response to the economic shocks resulting from the onset of COVID-19 (please include at least one green policy initiative or programme). What were the impacts of the structural reforms or policies? Did these reforms support a green recovery? How much did your economy invest, monetary and non-monetary, in green recovery policies? Were there obstacles in implementing green policy reforms and how were these overcome? Does your economy foresee green policies or programmes being implemented beyond the pandemic?

The COVID-19 pandemic has created a renewed interest in the use of active transportation and can provide multiple benefits for mobility. The Active Transportation Fund was announced in March 2021 and provides CAD\$ 400 million over five years to help build new and expanded networks of pathways, bike lanes, trails and pedestrian bridges. This is the first federal fund dedicated to building active transportation through Canada and is part of an eight-year, \$14.9-billion public transit investment and helps to ensure good jobs today while charting a path to achieve net-zero emissions by 2050. Those investments provide an environmentally-friendly way to stay healthy, enjoy nature, and connect to public transit.

3. Data, measurement, and monitoring: How does your economy measure the impacts of economic shocks? Please provide some examples. Does it measure the coverage, adequacy and impact of structural reforms implemented in response? How does it define and measure whether a policy is 'green'? Please provide examples.

⁸ Government of Canada, [Who is most impacted by climate change](#), 2022.

Statistics Canada collects economic data and releases regular updates on developments in the Canadian economy. In addition to monitoring and analysing economy-wide, regional, and industry changes to indicators such as gross domestic product and employment, Statistics Canada also collects data and conducts analysis on changes to levels of household disposable income and savings, Canada's trade balances, and our wealth, and other key economic indicators. This helps Canada to monitor the impact of economic shocks, as well as the coverage, adequacy, and impact of policy responses and structural reforms.

In terms of defining whether a policy is 'green,' the Government of Canada has recently begun assessing the environmental and climate impacts of policies. In October 2020, Finance Canada piloted new Budget templates,⁹ which required proposals to include an assessment of the expected environmental impacts on people, ecological integrity, and stewardship. The templates further included an assessment of the expected GHG impacts of proposals to determine whether they aligned with Canada's 2030 and 2050 emissions targets. Furthermore, in Budget 2021, the Government of Canada committed to implementing a Climate Lens through which the climate impacts of future developments would be considered in policy and planning across government.

4. Best practices: Among your economy's structural reforms implemented in response to economic shocks in the past, discuss some green policies you assess have been implemented effectively. Please identify the top reasons for the effectiveness of these reforms, outlining any long-term impacts they had. Has the reform increased resilience in your economy to future shocks? Does the reform have ongoing applicability to future shocks?

Past economic shocks affecting the fossil fuel energy sector and anticipated future challenges posed by climate change highlight some of the reasons Canada is transitioning to an economy based on low-carbon energy. Plans and pathways for rapid decarbonisation in Canada rely in part on a major shift towards electricity powered by non-emitting sources. For Canada, this shift builds on an existing strength, as more than 80% of our electricity comes from non-emitting sources. However, energy-end use sectors, such as transportation, also need to transition and government policy has been effective in helping to achieve this aim.

5. Action Plans: Considering the policy gaps, barriers and challenges your economy has in enabling a green response to economic shocks, what are your economy's short and medium-term plans to overcome them? If your economy has developed metrics and benchmarks to identify the appropriate policy responses and track progress, please provide details.

The Government of Canada is working to deliver on the measures outlined in the *2030 Emissions Reduction Plan*. This plan describes actions that are already driving significant reductions as well as new measures to reduce emissions across the entire economy to reach the target of 40 to 45 percent below 2005 levels by 2030 and put Canada on a path to achieve net-zero emissions by 2050.

Canada's Strengthened Climate Plan for *A Healthy Environment and a Healthy Economy* also outlined many of Canada's short- and medium term plans to overcome the policy gaps, barriers and challenges our economy has faced in enabling a green response to recent economic shocks. The Plan builds off the *Pan-Canadian Framework on Clean Growth and Climate Change* (2016).

⁹ Finance Canada, [Budget/Off-Cycle Proposals](#), 2021.

6. Regional cooperation: What role can regional cooperation and regional bodies such as APEC (but also other international bodies) play in understanding how to implement a green recovery from economic shocks? What are the areas for collaboration, or areas your economy would like to learn more about, on this topic? Does your economy consider that more regional cooperation could be valuable to better understand areas of a green recovery?

All APEC members have different economies and heterogeneous pathways to reach climate goals. Given these differences, it is important to have proactive environmental policies and policy congruence across membership. At the same time, there must also be recognition that these differences allow flexibility among members to tailor their own policies in a local context while aligning broader regional goals. Regional cooperation can help to align these goals.

CHILE

1. Impact and challenges: Please answer the questions below with respect to two economic shocks that your economy has faced in the past.
- a) Describe the economic shock.
 - b) What impacts did the economic shock have on your economy?
 - c) What sectors of your economy were most vulnerable to the economic shock?
 - d) Did your economy implement any green policy reforms in response to the economic shock? How did these reforms contribute to economic recovery?
 - e) What have been the long-term impacts of green reforms, and have they helped your economy become more resilient to future shocks?
 - f) How did existing structural policies, institutions and regulations allow you to adequately respond to the economic shocks?
 - g) Which demographics were hit hardest by the economic shock?

a) Describe the economic shock.

1. February 2010's earthquake of magnitude 8.8° in Richter scale and subsequent Tsunami.
2. 2008 Sub-prime financial crisis

b) What impacts did the economic shock have on your economy?

1. The Government estimated the economic losses of the 2010 earthquake and tsunami at US\$30 billion.
2. The adverse effects of the international crisis had major impacts on Chile's external accounts. In 2008, the current account of the balance of payments suffered a reversal of more than 6 points of the product compared to 2007, reaching a deficit of 2.4% of GDP, after 4 years of surplus.

The financial turmoil in the second half of 2008 directly impacted local economic activity, especially on demand. Both the product and domestic demand came to a standstill in the fourth quarter of 2008, and fell sharply in the first quarter of 2009. After growing, on average, at rates above 8% in 2004-2008/III, domestic demand collapsed 8% in the first three quarters of 2009 compared to the same period in 2008; similarly, the GDP went from growing slightly more than 5% to a contraction of 2.9% per year.

Between 2008 and 2009, the economy-wide unemployment rate increased from 7.8% (8.3%, considering workers in emergency employment programs as employed) to 9.7% (10.7%). About poverty, the CASEN 2009 survey stopped a sustained process of poverty reduction from 45% in 1987 to 13.7% in 2006, registering an increase to 15.1% of the population.¹⁰

¹⁰ Taken from <https://repositorio.uchile.cl/bitstream/handle/2250/122759/Ffrench-Davis-Economiachilena.pdf?sequence=1&isAllowed=y>

- c) *What sectors of your economy were most vulnerable to the economic shock?*
1. The most affected sectors being industry, fishing and tourism, housing and education. Of these losses, 71% corresponds to destroyed infrastructure, and the remaining amount to the expected loss in GDP over the next four years (US\$ 7,606 million), as well as emergency expenses (US\$ 1,117 million).¹¹
 2. The labour market and the financial sector.
- d) *Did your economy implement any green policy reforms in response to the economic shock? How did these reforms contribute to economic recovery?*
1. Nothing explicitly green
 2. Nothing explicitly green
- e) *What have been the long-term impacts of green reforms, and have they helped your economy become more resilient to future shocks?*
1. NA
 2. NA
- f) *How did existing structural policies, institutions and regulations allow you to adequately respond to the economic shocks?*
1. The specific policies in response to this shock were relatively transitory in nature, such as the increase in housing subsidies and public infrastructure projects. However, the fiscal responsibility law materialized in conservative management of public finances, allowing this type of temporary expansionary fiscal policy financing.
 2. The specific policies in response to this shock were rather transitory in nature, such as the increase in fiscal expenditure. However, the fiscal responsibility law, materialized in a conservative management of public finances, allowed the financing of this type of temporary expansionary fiscal policy.
- g) *Which demographics were hit hardest by the economic shock?*
1. Between the Valparaíso and the Araucanía region, particularly in coastal areas that were affected by the tsunami.
 2. NA
2. **COVID-19 policies and initiatives:** Describe some policy initiatives or programmes your economy has implemented in response to the economic shocks resulting from the onset of COVID-19 (please include at least one green policy initiative or programme). What were the impacts of the structural reforms or policies? Did these reforms support a green recovery? How much did your economy invest, monetary and non-monetary, in green recovery policies? Were there obstacles in implementing green policy reforms and how

¹¹ For more information please visit: https://www.cmfchile.cl/portal/estadisticas/617/articles-15031_doc_pdf.pdf

were these overcome? Does your economy foresee green policies or programmes being implemented beyond the pandemic?

On August 16, 2020, the Step-by-Step Plan for Chile to Recover was announced, a set of urgent measures to reactivate and boost the economy in a decentralized, inclusive and sustainable manner after the economic and social crisis caused by the COVID-19 pandemic. Covid-19. The plan focused mainly on supporting workers and SMEs.

In addition to the government's rapid response, the recovery of economic activity was possible thanks to the combination of various factors, including a strong external drive, strongly expansionary domestic policies, and the development of the economy-wide mass vaccination program that made it possible to deliver greater freedoms for people.

In addition to this Subsidy and Incentive Plan, the Step-by-Step Plan Chile recovers will favor the creation and recovery of jobs through a robust Plan for Public Investment and Incentives for Private investment.

The Public Investment Plan for the 2020-2021 period contemplates resources for US\$34 billion, of which US\$4.5 billion are thanks to this Recovery Plan.

The Investment Plan contemplates 2,544 projects, with a capacity to create 250 thousand additional jobs. This Plan is aimed at strengthen investment in infrastructure, social needs, productive requirements and quality of life.

This Public Investment Plan aims to create a more sustainable, more inclusive, with greater equality of opportunities for all regions and with a better quality of life, both in cities and in the rural world. All the investment projects of this Plan have environmental approval and 30% of them contribute directly to a more sustainable and nature-friendly Chile.

For more information please visit: <https://www.gob.cl/chileserecupera/>

3. Data, measurement, and monitoring: How does your economy measure the impacts of economic shocks? Please provide some examples. Does it measure the coverage, adequacy and impact of structural reforms implemented in response? How does it define and measure whether a policy is 'green'? Please provide examples.

For information regarding the sustainability of the green projects funded by the Plan "Chile se Recupera" please visit: <https://www.gob.cl/chileserecupera/sustentabilidad/>

4. Best practices: Among your economy's structural reforms implemented in response to economic shocks in the past, discuss some green policies you assess have been implemented effectively. Please identify the top reasons for the effectiveness of these reforms, outlining any long-term impacts they had. Has the reform increased resilience in your economy to future shocks? Does the reform have ongoing applicability to future shocks?

- Recycling and Extended Producer Responsibility Law (REP): In 2016, this law was enacted, marking a milestone in waste management and recycling. This REP Law forces manufacturers and importers of six priority products to recover a percentage of them once they end their useful life (when they become waste). The six priority products are (i) oils and lubricants, (ii) electrical and electronic equipment, (iii) batteries, (iv) cells, (v) tires, and (vi) containers and packaging. Due to their volume and massiveness, containers and

packaging are the ones that generate the most significant positive impact on the daily life of the population.

This percentage will be set annually by the Environment Ministry. In addition, with this Law, Chile reaffirms its commitment to the OECD and becomes one of the first Latin American economies to implement this recycling system.

The REP Law is an economic instrument for managing waste that requires the manufacturers of specific products to organize and finance the management of the waste generated by these products. How this Law works? This Law establishes that a Decree of Goals must be established for each priority product. The publication of the decree will determine the moment in which the obligation to organize and finance the collection and treatment of each of these residues will begin to govern. In addition, they detail the operating rules of the respective management systems, the obligations of the parties, and the valid recovery options.

The success of this law is due to the role played by people, municipalities, regional governments, Base Recyclers, and other organizations as contributors to achieving the recovery goals established by the authority. Joint work with other actors will be required. In addition, in the long term, this reform established incentives so that the economic cycle of the activity can rotate and move from voluntary to mandatory.

Please find more information here: <https://economiacircular.mma.gob.cl/ley-rep/>

- **Financial Strategy on Climate Change:** Chile is aware of the need for a transition to a low carbon economy, which is resilient to the impacts of climate change, as part of Chile's efforts to achieve sustainable development with greater efficiency, competitiveness, equity and economic growth. In this sense, this first Financial Strategy on Climate Change, one of Chile's commitments after the Paris Agreement, defines the axes and measures that shall lead the efforts as regards climate financing to achieve the transition towards a low carbon economy, resilient to the effects of climate change.

Please find more information here: <https://cambioclimatico.mma.gob.cl/wp-content/uploads/2020/12/Financial-Strategy-on-Climate-Change-Chile-EN.pdf>

- **Green taxes:** Our economy has significant environmental problems: Atmospheric pollution, Climate Change, Congestion and motor vehicle pollution, among others.

In September 2014, Chile passed a green tax law, being a pioneer in the Latinamerica region in establishing a green tax on local and global emissions. In this regard, three new taxes were introduced: 1) a tax on CO2 emissions from stationary sources with boilers and turbines, 2) a tax on local contaminants also on stationary sources with boilers and turbines (PM, SO2 and NOx), and 3) a tax on the first sale of new cars considering the expected NOx emissions over their lifetime. These taxes went into force in 2017 and required detailed regulation which was developed mainly during 2016.

As part of the Green Tax, a CO2 tax applies to CO2 emissions at a uniform rate of USD 5 per tonne of CO2. The Law ratifies Chile's commitment in combating climate change. It reveals the social cost of local pollution, establishing the "polluter pays" principle as an incentive to reduce it.

5. Action Plans: Considering the policy gaps, barriers and challenges your economy has in enabling a green response to economic shocks, what are your economy's short and medium-term plans to overcome them? If your economy has developed metrics and benchmarks to identify the appropriate policy responses and track progress, please provide details.

Regarding the pandemic shock, the plan "paso a paso" is mentioned above.

The government is "greening" its economy through a Long-term strategy on climate change, impacting the real economy, as well as a financial strategy on climate change, impacting the financial sector. These strategies aim to face natural disaster shocks as well as financial and any other type of shock, from a sustainable perspective, considering carbon neutrality goals. In other words, the activities, projects and investments underlying these responses must be aligned with climate commitments.

6. Regional cooperation: What role can regional cooperation and regional bodies such as APEC (but also other international bodies) play in understanding how to implement a green recovery from economic shocks? What are the areas for collaboration, or areas your economy would like to learn more about, on this topic? Does your economy consider that more regional cooperation could be valuable to better understand areas of a green recovery?

Regional cooperation and the collaboration of regional organizations, such as APEC, play a fundamental role in the analysis, development, and implementation of initiatives such as a Taxonomy of economic activities sustainable and carbon markets, which require global alignment for efficient and effective operation. These initiatives help align financial flows towards climate action, promoting a sustainable recovery. Knowing the experience of other economies and learning from them is essential.

CHINA

1. Impact and challenges: Please answer the questions below with respect to two economic shocks that your economy has faced in the past.
 - a) Describe the economic shock.
 - b) What impacts did the economic shock have on your economy?
 - c) What sectors of your economy were most vulnerable to the economic shock?
 - d) Did your economy implement any green policy reforms in response to the economic shock? How did these reforms contribute to economic recovery?
 - e) What have been the long-term impacts of green reforms, and have they helped your economy become more resilient to future shocks?
 - f) How did existing structural policies, institutions and regulations allow you to adequately respond to the economic shocks?
 - g) Which demographics were hit hardest by the economic shock?

Climate change and the SARS epidemic can be used as examples to illustrate the impact and challenges of long-term and short-term economic shocks on China.

Climate change is identified as a long-term shock. (a) Climate change not only affects agricultural production stability and income raise, but also gives rise to a myriad of natural disasters that threaten normal production and life. (c) Climate change shocks mainly take their toll on China's agriculture and animal husbandry, forests and natural ecosystems, water resources and coastal zones, infrastructure, urban and human settlements, etc. (d) China has launched a series of measures in four areas: controlling greenhouse gas emissions, enhancing the ability to adapt to climate change, strengthening scientific research and technology development, and improving public awareness and management. These measures have stepped up energy conservation and efficiency, and driven a large number of green investments and consumption. (e) The decline in energy intensity reflects an increase in input-output efficiency and the economic restructuring toward an innovation-driven economy. (f) China has already established relevant working mechanisms at the economy-wide and provincial levels, integrated climate policy into its domestic economic and social development plans, and is developing a "1+N" policy framework for carbon peak and carbon neutrality, laying a solid foundation for capacity building in coping with the impacts of climate change. (g) Practitioners in relevant sectors such as agriculture and animal husbandry, forests and natural ecosystems, water resources and coastal zones are more severely affected.

The SARS epidemic is identified as a short-term shock. (a) From the end of 2002 to September 2003, SARS spread in 29 economies, infecting more than 8,000 people worldwide. (b) In the first half of 2003, SARS swept across 24 provinces, autonomous regions and municipalities in mainland China, affecting a total of 266 counties and cities (districts), with a total of 5,327 SARS cases and 349 deaths reported. Especially in April to May 2003, the epidemic dealt a heavy blow to Guangdong, Beijing and North China in particular, exerting substantial impact on economic operation. (c) The service industry suffered severe losses, as exports of textiles, agricultural products, etc. had decreased, and foreign investment had been delayed. (d) The government formulated *Regulations on Responses to Public Health Emergencies* to control the source of infection and cutting off transmission routes, and For industries hit hard by SARS, phased support policies such as tax relief, administrative charges reduction, and preferential loans were implemented. (e) According to statistics, the fatality rate of clinically confirmed cases in mainland China registered 6.5%, which was far lower than the 10-15% estimated by the World Health Organization. In addition, despite the SARS epidemic, China's economic

fundamentals remained intact, as the annual GDP growth in 2003 was higher than the previous year. (f) Relevant reform measures have greatly enhanced China's ability to respond to public health emergencies, and have also led China to step up investment in the construction of public health systems and rural infrastructure, adding to the policy toolkit aimed at boosting economic development during special times.

2. COVID-19 policies and initiatives: Describe some policy initiatives or programmes your economy has implemented in response to the economic shocks resulting from the onset of COVID-19 (please include at least one green policy initiative or programme). What were the impacts of the structural reforms or policies? Did these reforms support a green recovery? How much did your economy invest, monetary and non-monetary, in green recovery policies? Were there obstacles in implementing green policy reforms and how were these overcome? Does your economy foresee green policies or programmes being implemented beyond the pandemic?

In order to alleviate the impact of the pandemic on the economy, the Chinese government has introduced a package of policy initiatives and reform measures, which include implementing large-scale tax and fee reductions in a phased manner, innovatively establishing direct allocation systems for payment of transfer; comprehensively employing tools such as credit expansion, interest rate and RRR cuts to support the real economy, particularly the small, medium and micro enterprises, to recover from the shock; ensuring the smooth operation of the key industrial and supply chains, keeping supply and prices of key products stable, and building a modern infrastructure system; further incentivizing businesses to stabilize and expand employment, and supporting entrepreneurship and innovation to drive larger-scale employment; accelerating digital development, employing digital technology to speed up the resumption of business, school and production and implementing pandemic prevention and control in a scientific and targeted manner; accelerating green transformation by expanding green investment and developing carbon market trading; intensifying efforts to help enterprises ease their difficulties, and introducing fiscal, taxation, financial and other measures for industry and service industries. Relevant measures have enabled China to achieve stable economic growth, increase market entities, maintain stable employment, and meet energy conservation and emission reduction targets on the basis of science-based and targeted measures in epidemic prevention and control.

In 2020, the Chinese government issued one trillion-yuan worth of anti-pandemic special treasury bonds, and cut the tax and levy burden on enterprises by more than 2.6 trillion yuan throughout the year. In 2021, instead of continuing to issue special bonds, the government established a regular mechanism of direct transfer of fiscal funds to local government, through which 2.8 trillion yuan was transferred, basically fully coverage of the central government's livelihood subsidies to local government. In 2022, the domestic general public budget expenditure is expected to increase by more than 2 trillion yuan compared with 2021, and the transfer payment from the central to local governments will expand by roughly 1.5 trillion yuan.

In the process of implementing the above-mentioned policies, we have confronted two major difficulties: **first, the domestic pandemic prevention and control circumstances remain complicated and challenging.** To this end, the government sticks to a "dynamic zero-COVID strategy with scientific and targeted measures", and meanwhile smoothed logistics and guaranteed the operation of key industrial chains and industries closely related to people's livelihood. **Second, external risks bring uncertainty to the domestic economic recovery.** In response, on the one hand, the government ensured that the prudent monetary policy is both

flexible and appropriate, increased financial support in key areas, further improved the macro-prudential policy framework and governance mechanism, and promoted the prevention and resolution of financial risks. On the other hand, it intensified price monitoring of key commodities and stepped up efforts to ensure supply and price stability.

3. Data, measurement, and monitoring: How does your economy measure the impacts of economic shocks? Please provide some examples. Does it measure the coverage, adequacy and impact of structural reforms implemented in response? How does it define and measure whether a policy is ‘green’? Please provide examples.

China mainly evaluate the impact of shocks on the economy by measuring the changes of GDP and its components, employment, household income, sale and profit of business, etc. At present, China’s definition and measurement of whether a policy is “green” mainly depends on whether it contributes to pollution reduction, GHG emission cut, biodiversity, ecosystem sustainability and energy and other natural resources conservation, recycling, and utilization efficiency improvement. For example, China’s promotion of digital infrastructure construction, as a way to boost investment and economy, places a special emphasis on green electricity-powered facility and PUE indicators of Data Center, to achieve both goals of rapid recovery and green and low carbon development.

4. Best practices: Among your economy’s structural reforms implemented in response to economic shocks in the past, discuss some green policies you assess have been implemented effectively. Please identify the top reasons for the effectiveness of these reforms, outlining any long-term impacts they had. Has the reform increased resilience in your economy to future shocks? Does the reform have ongoing applicability to future shocks?

First, digital transformation is implemented in a comprehensive manner to ensure the reopen of business, production and school. In order to resume the normal production and life as soon as possible, the Chinese government vigorously promoted the digital transformation of all fields of the society. For example, “health codes” and “travel codes” are used to achieve scientific and targeted pandemic prevention and control, and industrial Internet platform solutions are released to underpin COVID response and resumption of business and production. The government also supported new business forms and models such as telemedicine, online education, and remote working. Online and offline measures are developed to guarantee the operation of small, medium and micro enterprises and the distribution of materials in lockdown zones, and the development of the “contactless economy” is strongly supported.

Second, the green and sustainable development of digital infrastructure is greatly promoted. The government has increased infrastructural investment to better stabilize China’s economic fundamentals. Green development of digital infrastructure is also vigorously promoted.

The success of the above-mentioned reforms and measures can be attributed to a high public trust in the government, the enabling role of digital technology, and the outstanding advantages of a large-scale market. These measures have indeed accelerated the all-round digital transformation process of China’s economy and society, and have also improved the society’s resilience to other potential shocks, which is of great significance.

5. Action Plans: Considering the policy gaps, barriers and challenges your economy has in enabling a green response to economic shocks, what are your economy’s short and medium-term plans to overcome them? If your economy has developed metrics and

benchmarks to identify the appropriate policy responses and track progress, please provide details.

In order to better promote green recovery under the impact of COVID-19, in the short term, China prioritizes the coordination of pandemic control and stable economic growth, and at the same time takes well-ordered steps to achieve peak carbon emissions. According to the *2022 Report on the Work of the Government*, relevant measures include: expanding fiscal expenditures by more than two trillion yuan over last year, increasing transfer payments to local governments, and propping up financial support for the real economy. Efforts will be made to achieve stable macroeconomic performance, and keep CPI increase at around 3 percent. The government will also strengthen its support for enterprises to stabilize and expand employment, utilizing a total of 100 billion yuan from the unemployment insurance fund to support enterprises in maintaining stable payrolls. It will strive to create more than 11 million urban jobs, and control the urban surveyed unemployment rate within 5.5% throughout the year. Efforts will also be made to ensure food security, and secure over 650 million metric tons of grain output. Environment goals will be set annually in accordance with the 14th Five-Year Plan.

In the medium to long term, we will focus on promoting high-quality development, achieving modernization in an all-round way, and realizing the goal of green and low-carbon transformation as quickly as possible. Combined with the implementation of the APEC Putrajaya Vision 2040, China will steadily promote high-quality development, accelerate modernization, and strive to achieve peak carbon emissions by 2030 and carbon neutrality by 2060.

6. Regional cooperation: What role can regional cooperation and regional bodies such as APEC (but also other international bodies) play in understanding how to implement a green recovery from economic shocks? What are the areas for collaboration, or areas your economy would like to learn more about, on this topic? Does your economy consider that more regional cooperation could be valuable to better understand areas of a green recovery?

APEC and other regional multilateral organizations play an increasingly essential role in strengthening macroeconomic policy communication, maintaining the stability of industrial and supply chains, deepening structural reforms in various economies, discussing new multilateral economic and trade rules, coordinating positions on global digital governance, and promoting international regulatory cooperation. They are crucial to promoting a global green recovery under pandemic prevention and control measures. Under the APEC framework, China hopes to carry out in-depth exchanges and collaborations with other economies on macroeconomic coordination, deepening structural reforms, improving the business environment, maintaining the stability of industrial and supply chains, and formulating global digital governance solutions, in an effort to promote regional green recovery through facilitating regional cooperation.

HONG KONG, CHINA

1. Impact and challenges: Please answer the questions below with respect to two economic shocks that your economy has faced in the past.
 - a) Describe the economic shock.
 - b) What impacts did the economic shock have on your economy?
 - c) What sectors of your economy were most vulnerable to the economic shock?
 - d) Did your economy implement any green policy reforms in response to the economic shock? How did these reforms contribute to economic recovery?
 - e) What have been the long-term impacts of green reforms, and have they helped your economy become more resilient to future shocks?
 - f) How did existing structural policies, institutions and regulations allow you to adequately respond to the economic shocks?
 - g) Which demographics were hit hardest by the economic shock?

The COVID-19 pandemic has plagued the entire world for some two years, taking a heavy toll on economic activities and people's way of life. Hong Kong, China (HKC) is no exception. The pandemic has made profound impact on many people, disrupting both their life and work, and seriously affected the operations of small and medium-sized enterprises (SMEs), thus undermining confidence in the future. Taking prompt action to stabilise the epidemic situation is crucial for safeguarding the health and lives of our people. It is also the key to maintaining people's confidence and stabilising our economy. In February 2022, the Financial Secretary of HKC announced the Budget for the year 2022-2023, allocating resources involving more than HK\$54 billion for this cause. The Budget adopts an expansionary fiscal policy with initiatives mainly focusing on (a) supporting an all-out effort to win the fight against the epidemic; (b) relieving the hardship of people and SMEs; (c) rendering support to the struggling economy and fostering post-epidemic economic revival; and (d) investing for the future by planning ahead for the medium- and long-term development of the economy.

More specifically, HKC Government has adopted the following measures which has helped a green recovery:

- To promote the adoption of cleaner energy, the HKC Government has been urging the power companies to reduce use of coal by increasing gas and develop an offshore liquefied natural gas terminal. The HKC Government grapples with Hong Kong's geographical and environmental constraints by actively developing larger-scale renewable energy projects in suitable reservoirs and restored landfills, and launching the Feed-in Tariff Scheme to provide financial incentives for the private sector in developing renewable energy and assisted schools and welfare organisations to install solar energy generation systems.
- The HKC Government has earmarked a total of HK\$3 billion to install small-scale renewable energy systems at government premises, rolled out "Green Schools 2.0 – Energy Smart" to install more energy-efficient equipment free of charge for schools, and "Green Welfare NGOs" to assist NGO to conduct energy audits and install energy-saving devices. Additional district cooling system are being pursued at the Kai Tak Development, and new district cooling systems in Tung Chung New Town Extension (East) and Kwu Tung North New Development Area respectively.

- A HK\$2 billion programme has been implemented to help private residential buildings to establish of charging enabling infrastructure for electric vehicle (EV) and supporting facilities.
- To capitalise on the enormous green finance opportunities, the HKC Government plans to expand the scale of the Government Green Bond Programme and arrange for the regular issuance of green bonds totalling HK\$175.5 billion within the next five years from 2021-22, having regard to the market situation. The Green and Sustainable Finance Grant Scheme has been launched in May 2021 to provide subsidy for eligible entities to cover their expenses on bond issuance and external review services, which will enhance Hong Kong's position as a green finance hub in the region. To support enterprises in obtaining green financing, we will lower the minimum loan size from HK\$200 million to HK\$100 million in respect of applications for subsidies for covering external review costs under the scheme.
- The HKC Government set up in 2020 a HK\$200 million Green Tech Fund (GTF) to provide better and more focused funding support to research and development projects which can help Hong Kong decarbonise and enhance environmental protection. An additional funding of HK\$200 million will be injected to the GTF to enhance support green innovation and create job opportunities in the information and technology (I&T) industry.

The above-mentioned resources devoted by the HKC Government can create more than 5 000 employment opportunities in the next few years and another 5 000 employment opportunities in the private sector. In total, more than 10 000 job opportunities will be created to support a green recovery.

Also, facing the challenges of a downturn in the global recycling market, the current high level of waste disposal, and the scarcity of our land resources, the HKC Government is promoting transformation of waste into resources and establishing a circular economy. To this end, the HKC Government announced the new *Waste Blueprint for Hong Kong 2035* on 8 February 2021¹². Setting out the vision of "Waste Reduction·Resources Circulation·Zero Landfill", the blueprint outlines the strategies, goals and measures to tackle the challenge of waste management up to 2035.

2. COVID-19 policies and initiatives: Describe some policy initiatives or programmes your economy has implemented in response to the economic shocks resulting from the onset of COVID-19 (please include at least one green policy initiative or programme). What were the impacts of the structural reforms or policies? Did these reforms support a green recovery? How much did your economy invest, monetary and non-monetary, in green recovery policies? Were there obstacles in implementing green policy reforms and how were these overcome? Does your economy foresee green policies or programmes being implemented beyond the pandemic?

To stabilise the economy under the impact of COVID-19 epidemic, the Environment Bureau of the HKC Government has launched the Green Employment Scheme under which about 800 green jobs have been created, offering more employment opportunities to promote green recovery. For green transport, HK\$12 billion have been invested from 2019.

¹² https://www.epd.gov.hk/epd/english/resources_pub/policy_documents/index.html

On green mobility, for instance, HKC Government announced Hong Kong Roadmap on popularisation of Electric Vehicles and Clean Air Plan for Hong Kong 2035 in 2021.

Key measures include phasing out the older Euro IV emission standard diesel commercial vehicles, EV-charging at Home Subsidy Scheme subsidising the installation of EV charging-enabling infrastructure in existing private residential buildings, installing public electric vehicle (EV) chargers in government car parks, injecting new monies to the New Energy Transport Fund to subsidise trial and application of green transport technologies in the transport sector, trials of electric ferries and public light buses, etc.

While green transport technologies are evolving rapidly, HKC will continue to adopt an innovative approach to cope with the latest development and advance our efforts beyond the pandemic.

3. Data, measurement, and monitoring: How does your economy measure the impacts of economic shocks? Please provide some examples. Does it measure the coverage, adequacy and impact of structural reforms implemented in response? How does it define and measure whether a policy is ‘green’? Please provide examples.

Take the economic situation in HKC in 2021 as an example to see how it fared as compared to previous years. Given the sharp rebound in demand from major economies, production and trading activities in Asia were vibrant. HKC’s total exports of goods continued to register strong growth, with a notable increase of 19% in real terms for the year as a whole and surpassing the high in 2018 by 10.9%. Also, HKC’s total exports of services registered a mild growth of 1.1% for the year, though it was still far below the pre-recession level with inbound tourism virtually at a standstill.

HKC’s overall economy saw a visible recovery in 2021 with a growth of 6.4%, reversing the declining trend in the past two consecutive years. The seasonally adjusted unemployment rate dropped substantially from a high of 7.2% early last year to 3.9% in the latest period (November 2021 to January 2022).

On “green” policy, it promotes measures that will create green economic and employment opportunities and promote a green recovery, and continuously improve the environment and help Hong Kong move towards the goal of achieving carbon neutrality before 2050. For example, adoption of green transport will help reduce carbon and vehicular emissions.

4. Best practices: Among your economy’s structural reforms implemented in response to economic shocks in the past, discuss some green policies you assess have been implemented effectively. Please identify the top reasons for the effectiveness of these reforms, outlining any long-term impacts they had. Has the reform increased resilience in your economy to future shocks? Does the reform have ongoing applicability to future shocks?

Over the past decade, the HKC Government has allocated over HK\$47 billion to implement various carbon reduction measures. The two power companies have also allocated about HK\$39 billion to decarbonisation projects. HKC’s total carbon emissions have shown a downward trend after reaching its peak in 2014, with the per capita carbon emissions reduced from 6.2 tonnes in 2014 to 5.3 tonnes in 2019. As the power companies continue to replace coal with natural gas in electricity generation, the per capita carbon emissions in 2020 would be reduced to around 4.5 tonnes. HKC Government’s capability in mitigating the adverse impact change has been enhanced as we move steadily towards our decarbonisation targets.

We have been providing first registration tax concessions to EVs and implemented since 2018 an “One-for-One” Replacement Scheme, which provides a higher tax concession to new EV owners who also scrapped their old cars. First registration tax for electric commercial vehicles will also be fully waived. Such concessions were very effective in providing financial incentives for individuals and businesses to adopt EV while controlling private car growth, and may contribute to a green recovery during economic downturn. In particular, HKC has registered 9 583 new electric private cars in 2021 (i.e. one in every four new private cars sold), and 97% among which have opted for the “One-for-One” Replacement Scheme.

5. Action Plans: Considering the policy gaps, barriers and challenges your economy has in enabling a green response to economic shocks, what are your economy’s short and medium-term plans to overcome them? If your economy has developed metrics and benchmarks to identify the appropriate policy responses and track progress, please provide details.

HKC Government published the Hong Kong's Climate Action Plan 2050 in late 2021 to set out more proactive strategies and measures to achieve carbon neutrality before 2050, and the interim decarbonisation target to reduce HKC Government's carbon emissions by 50% before 2035 as compared to the 2005 level. The plan outlines four major decarbonisation strategies as follows:

- Net-zero electricity generation: Cease using coal for daily electricity generation; increase the share of renewable energy in the fuel mix for electricity generation to 7.5 per cent to 10 per cent by 2035, and to 15 per cent subsequently; and try out the use of new energy and strengthen co-operation with neighbouring regions to achieve the long-term target of net-zero electricity generation before 2050.
- Energy saving and green buildings: to reduce the electricity consumption of commercial buildings by 30% to 40% and that of residential buildings by 20% to 30% from the 2015 level by 2050, and to achieve half of the above targets by 2035.
- Green transport: The Government will cease the new registration of fuel-propelled and hybrid private cars in 2035 or earlier, and achieve the long-term target of attaining zero vehicular emissions and zero carbon emissions in the transport sector before 2050.
- Waste reduction: The medium-term target is to gradually reduce the per capita municipal solid waste (MSW) disposal rate by 40-45% and raise the recovery rate to about 55% by implementing MSW charging and various other waste reduction measures. To achieve “zero landfill”, develop adequate waste-to-energy facilities by 2035 to move away from the reliance on landfills for disposal of MSW.

With the above, in the next 15 to 20 years, the HKC Government will devote about HK\$240 billion to take forward various measures on climate change mitigation and adaptation. These initiatives will create business prospects, nurture local talents and provide employment opportunities. The HKC Government’s drive to reduce carbon emissions will also boost investment by the private sector, creating more business and more jobs. They will help HKC recover in a green way from the economic impact of the COVID-19 pandemic.

6. Regional cooperation: What role can regional cooperation and regional bodies such as APEC (but also other international bodies) play in understanding how to implement a green recovery from economic shocks? What are the areas for collaboration, or areas your economy would like to learn more about, on this topic? Does your economy consider that more regional cooperation could be valuable to better understand areas of a green recovery?

As technological development plays a pivotal role in achieving carbon neutrality, HKC Government has been cooperating with neighbouring regions, including cities in Guangdong-Hong Kong-Macao Greater Bay Area (GBA) in improving the environment especially the regional air quality, building low-carbon communities, developing decarbonisation technologies, promoting low-carbon products and nurturing talent. Regional cooperation is also considered the key to achieving “net-zero electricity generation”, and HKC Government will explore ways to enhance regional cooperation to increase the supply of zero-carbon electricity. Carbon markets are also expected to grow significantly as Mainland China and other key overseas markets pursue the transition to a green and low-carbon economy. Based on the existing pilot emission trading systems in Guangdong, the development of a unified carbon market in GBA will also be explored, having regard to the opportunities presented by the compliance and the voluntary carbon markets in China and overseas.

Regional collaboration could also be beneficial for the introduction and application of various new green transport technologies, such as new EV models and charging technologies, adoption of other types of new energy vehicles, sharing of experiences in the electrification of commercial vehicles, etc.

The Central People’s Government announced in late 2018 the work plan on the pilot program on “zero waste city”. “Zero waste city” refers to an urban development model that aims at reducing solid waste generation at source, promoting transformation of waste into resources, reducing landfilling as far as possible, and minimising the environmental impact of solid waste by advocating the principles of innovation, collaboration, green, openness and share use. The Environment Bureau of HKC Government will strengthen exchanges and training with cities in the GBA which are implementing pilot projects for “zero waste city”, and jointly promote management models of advanced green city.

INDONESIA

1. Impact and challenges: Please answer the questions below with respect to two economic shocks that your economy has faced in the past.
 - a) Describe the economic shock.
 - b) What impacts did the economic shock have on your economy?
 - c) What sectors of your economy were most vulnerable to the economic shock?
 - d) Did your economy implement any green policy reforms in response to the economic shock? How did these reforms contribute to economic recovery?
 - e) What have been the long-term impacts of green reforms, and have they helped your economy become more resilient to future shocks?
 - f) How did existing structural policies, institutions and regulations allow you to adequately respond to the economic shocks?
 - g) Which demographics were hit hardest by the economic shock?

a). Describe the economic shock

- The 2008 global recession caused the US subprime mortgage and skyrocketing world oil prices. Indonesia's GDP growth in that period declined to 6.1% from 6.3% in 2007
- The Covid-19 pandemic. A health crisis that impacts social and economic aspects. Indonesia's GDP growth on that period contracted to 2.1% from 5.0% in 2019.

b). Impacts to the economy and sectors most vulnerable to the economic shock

- The Central Bureau of Statistics (BPS) in the National Labor Force Survey shows an increase in the unemployment rate. The Pandemic has also impacting macroeconomics indicator. The welfare contracted -4,36, consumption contracted -5,33, investment contracted -5,49, and inflation contracted -0,96
- Meanwhile, the Covid-19 pandemic, which started as a health problem, impacted the economy due to restrictions on mobility, which affected both the supply and demand sides. The Covid-19 pandemic impacts public demand, government spending, investment performance, and the supply/production of various business fields in the economy, especially sectors related to the movement of people and goods.
- Amid global financial market turbulence, capital flight caused the Jakarta Composite Index (JCI) fell sharply. The sovereign bond market was also under pressure. The banking sector became the most vulnerable when the crisis hit, mostly because of the liquidity crisis. Further The global recession significantly impacted capital markets, financial markets, and government spending policies. The lesson to be learned from the crisis is to pay more attention to financial system stability through prudential macro policies, which are countercyclical to the economic cycle so that they can be complementary to monetary policy

c - d) Some example of green policy reforms and its contribution to economic recovery

- When the global financial crisis occurred, Indonesia implemented several finance and macroprudential policy reforms. The State Finance Law, concerning the deficit cap and debt to GDP ratio, for instance, changed the exchange rate system to a floating

exchange rate and established Bank Indonesia as an independent institution. These reforms helped Indonesia in tackling the effect of GFC. However, some areas need to be improved, one of which is bank supervision. Thus, after GFC, Indonesia established the Financial Services Authority (OJK) to supervise banks.

- In coping with the Covid-19 pandemic, Indonesia has benefitted from prudent and disciplined fiscal management and substantial economic development it has maintained for years. However, the COVID-19 pandemic triggered a severe multidimensional crisis. Thus, like any other economy, Indonesia had to issue extraordinary and unconventional policies to mitigate and recover from the pandemic.
- Please see Question No.2 for more information on green reforms.

e) Long-term impacts of green reforms

- Policy reforms around renewable energy has helped renewable deployment especially for geothermal, for example through fiscal incentive to pioneering industries (which include renewables), exclusion of geothermal exploration from other extractive exploration, and revision of regulation around protected area use with the Ministry of Environment and Forestry.
- The climate budget tagging program has also helped increase the public climate spending effectiveness, aligning it with other social development and social protection budget. Based on the recent study done with our partners, the expenditures spend on green programs create more jobs in the short term and has been effective in dampening the unemployment effect from economics shocks.

f) Demographics

- During the COVID-19 pandemic, small businesses, the poor and vulnerable people were the most impacted since they did not have the cushion to face the crisis. In addition, contact-intensive related sectors, such as transportation, accommodation, and F&B, were also fell the lowest and recovered slower than other sectors.

2. COVID-19 policies and initiatives: Describe some policy initiatives or programmes your economy has implemented in response to the economic shocks resulting from the onset of COVID-19 (please include at least one green policy initiative or programme). What were the impacts of the structural reforms or policies? Did these reforms support a green recovery? How much did your economy invest, monetary and non-monetary, in green recovery policies? Were there obstacles in implementing green policy reforms and how were these overcome? Does your economy foresee green policies or programmes being implemented beyond the pandemic?

- Several measures to mitigate the impact of COVID-19, focusing on economic, health, social, export & import, and MSMEs policy. Regarding health policy, Government has been accelerating the vaccination program. As of March 15th, 2022, more than 151 million people have been fully vaccinated, while continue to enforce health protocols. The government also continues to implement social assistance programs, including food assistance, conditional cash transfers, and wage subsidies and providing incentives for small businesss to cushion the impact of the pandemic.

- The government budget has always played a crucial role in handling the COVID-19 crisis. It provided immediate responses for the most affected groups in society. Until now, the government budget has remained flexible and responsive to support public health and prevent economic and social disruption. Some policy initiatives during the COVID-19 pandemic:
 - The Government issued Regulation in Lieu of Law (Perppu) 1/2020 concerning the fiscal stimulus to those affected as soon as possible and as needed. For example, by flexibly adjusting the deficit beyond 3% of GDP until 2022 and returning to a maximum of 3% by 2023.
 - Economic Recovery Program (PEN) in 2020 to cushion the impact of Covid-19 and accelerate recovery, focusing on the most prioritized aspects such as health (including mass vaccination), Social Protection, MSMEs, and Tax Incentives.
- Indonesia seized the pandemic momentum to implement comprehensive structural reforms to bolster Indonesia's medium to long-term economic growth. While at the same time, it serves as the foundation to actualize the Vision of Advanced Indonesia (Indonesia Maju) 2045. Several structural reforms were enacted during the pandemic:
 - Job Creation (Omnibus Law on Job Creation) strengthens the economy by increasing competitiveness, creating jobs and making it easier to do business in Indonesia. At the same time, Indonesia's sovereign wealth fund, dubbed the Indonesia Investment Authority (INA), was established collectively with the approval of the Omnibus Law. INA will be an exclusive legal entity protected against any investment loss and operating independently by commercially driven professionals.
 - Implementation of tax harmonization Law (UU HPP) and voluntary disclosure program (PPS) to increase economic growth, accelerate economic recovery, and fiscal consolidation strategy. As a part of UU HPP, Indonesia also introduced a carbon tax in April 2022. The introduction of the carbon tax is expected to support the achievement of the NDC by internalizing the externality cost and a source for the state budget to provide investment in the green project and support the community.
- The policies mentioned above and structural reforms have shown positive impacts on the recovery process and building a stronger fundamental for medium-long term development.
 - Indonesia's economy continues to strengthen its recovery path. Indonesia recorded a strong growth performance in 2021, at 3.69 percent, in which the real GDP level has exceeded the pre-pandemic GDP level. Key sectors of the economy, both from the expenditure and production sides, recorded positive growth, highlighting a broader recovery base.
 - Effective policy measures to tackle the Covid-19 pandemic have successfully protected the vulnerable group. Along with the positive economic growth, welfare indicators also showed improvement, among others reflected in the poverty rate, which returned to a single digit (9.71% as of September 2021) and the decline of unemployment rate (6.49% as of August 2021).
- Several policies related to green recovery are as follow:
 - In 2020, as part of the National Economic Recovery Program (PEN), local railway operator Kereta Api was bailed out for US\$ 220 million. The bail-out supports the transition to and expansion of low-carbon rail-based transportation and helps achieve Indonesia's climate goals.

- To help the renewable energy industry in its recovery efforts, Indonesia implemented several support measures for renewable energy projects, including the suspension and exemption from VAT and income tax as well as lower interest rates accompanied by the temporary suspension of loan instalments.
- To subsidize the use of biodiesel further while introducing a surcharge on fossil diesel. From a climate perspective, the use of biofuels has a positive impact by contributing to emissions reductions.
- To facilitate procurement for independent power providers (IPP), Indonesia eliminated fees and other financial penalties. This policy aims at fostering and accelerating the expansion of the renewables sector. It is expected to help decarbonize Indonesia's power supply.
- The government set up a scheme promoting the installation of rooftop solar power plants. This programme aims to enable low-income households to cut their electricity costs, reduce CO2 emissions and support the local solar industry alike.
- Indonesia has started an ambitious coral reef restoration and mangrove planting program. While not technically part of the COVID-19 packages, these labour-intensive programs serve both economic recovery and job creation as well as environmental and climate targets.

3. Data, measurement, and monitoring: How does your economy measure the impacts of economic shocks? Please provide some examples. Does it measure the coverage, adequacy and impact of structural reforms implemented in response? How does it define and measure whether a policy is 'green'? Please provide examples.

- The Ministry of Finance is using its Budget Tagging Program to track economy-wide climate spending. The Budget Tagging is not only applied to climate-related spending but also social-related spending. Certain spendings may receive various tags, which shows that their ability to address multiple objectives, such as climate, economy, gender, health, and others, and therefore showing the signs of the dollar's effectiveness. However, the Budget Tagging Program does not measure the impact of the tagged spendings.

4. Best practices: Among your economy's structural reforms implemented in response to economic shocks in the past, discuss some green policies you assess have been implemented effectively. Please identify the top reasons for the effectiveness of these reforms, outlining any long-term impacts they had. Has the reform increased resilience in your economy to future shocks? Does the reform have ongoing applicability to future shocks?

- The Indonesia Economic Recovery Plan (PEN) has the potential to transition to a low-carbon economy in several key sectors. If re-directed towards green options, Indonesia's large fiscal stimulus package can boost the long-run transition to low-carbon technologies and green growth while supporting the COVID-19 economic recovery. For example, financial support to MSMEs conditional on efficiency improvement targets or bound to specific types of green investment, tax-incentives and direct payments that are higher for low-emission technologies than for conventional ones, or social protection programmes supporting the electrification of remote areas. Re-directing the fiscal stimulus towards future-proof and low-carbon investment would also reduce the risk of stranded assets in the fossil sector and put the economy on a green growth trajectory.
- To support finance climate change policies, the Government issued Green Sukuk for the first time on the global market in 2018 with a total of USD 1.25 billion with an underlying green project in Ministries/Institutions. Indonesia is listed as the first economy to issue

Sovereign Green Sukuk and Sovereign Green Sukuk Retail globally. The issuance of the Green Sukuk received 10 international awards, including from IFR Asia, Euromoney, the Triple A, and the Climate Bond Initiative. Indonesia has also earned an excellent reputation for issuing the Green Sukuk.

- Since 2013, Indonesia established cooperation with Japan to promote energy efficiency, renewable energy, forestry deforestation or degradation, construction, waste management, fugitive emission, and manufacturing industry through the Joint Crediting Mechanism (JCM). It is an achievement for Indonesia as the JCM scheme becomes the market-based mechanism for emission reduction with the strongest growth domestically.

5. Action Plans: Considering the policy gaps, barriers and challenges your economy has in enabling a green response to economic shocks, what are your economy's short and medium-term plans to overcome them? If your economy has developed metrics and benchmarks to identify the appropriate policy responses and track progress, please provide details.

- Indonesia announced low carbon development in its Medium-Term Development Plan (RPJMN) 2020-2024 and committed to reduce greenhouse gases in NDCs by 29 percent and by 41 percent with international support by 2030. Indonesia's NDC roadmap and targets cover five sectors, forestry, agriculture, energy and transportation, waste, and IPPU (Industrial Process and Product Use) with different emission reduction targets.
- The Financial Services Authority (OJK) developed a Green Taxonomy document. Green Taxonomy refers to equalizing the language of business activities or service products by grouping sectors based on business activities that support environmental protection efforts and climate change mitigation and adaptation. This concept is in line with definitions made by other economies, such as the EU Green Taxonomy and China's Green Catalog. The green taxonomy will be one of Indonesia's policies issued together with several initiatives in other sectors such as accelerating the decarbonization of SOEs, the State Electricity Company (PLN) 2021-2030 Electricity Supply Business Plan (RUPTL), carbon trading, as well as a development roadmap battery-based motor vehicle industry.
- Indonesia could also formulate various policy instruments to accelerate the establishment of green recovery programs in the future. With reference from international models, Indonesia could assess best suited policy instruments tailored to the economic and demographic condition. The policies have the potential to be included into the Indonesia Economic Recovery Plan (PEN) budget with similar budget structure as the current PEN. This would then enable the government to transition towards a higher portion of greener stimulus. Increasing the portion of green stimulus could also be implemented through allocating the existing green project into the stimulus program to receive additional funding for project execution acceleration. The type of fiscal instruments will revolve around tax incentives, pre-employment benefits for green jobs development, industrial incentives for renewable or energy efficiency projects as well as energy trading systems. These types of incentives should be restricted to creating the initial conditions or act as a catalyst to motivate renewable industries and conservation activities to adopt and continue sustainable practices.

- Potential Fiscal Policy Instruments:

Priority Programs	Sector	Policy Instruments
Agroforestry	Agriculture	Additional working capital for sustainable farming practices
Commercial heat pumps	Energy	Industrial low carbon or energy efficiency program incentives
Residential rooftop solar	Energy	Manufacturer incentive in the form of discounted import duty tax for essential solar panel components
Geothermal plant	Energy	Employment benefit for green job transition
Mangrove restoration	Agriculture	Program extension to regional government through Ecological Fiscal Transfer (EFT), establishing regional target for mangrove restoration
Wetland restoration	Agriculture	Capacity building for the Environmental Fund (BPDH) to enhance reforestation and restoration project monitoring
Reforestation	Agriculture	Capacity building for the Environmental Fund (BPDH) to enhance their capacity reforestation and restoration project monitoring
Biogas plant	Energy	Biogas tax credit or tax waiving during the construction and/or limited period of operation
Electric cars	Transport	Electric Vehicle purchase incentive or tax exemption
Agroforestry	Agriculture	Small-scale farmers land right guarantee in cropland
Geothermal plant	Energy	Geothermal plant construction credit and loan extension
Electric cars	Transport	Battery manufacturer tax incentives
Electric cars	Transport	Tax exemption for retired EV batteries processing entities
Commercial heat pumps	Energy	Industrial energy trading system on capped emission
Residential rooftop solar	Energy	Capacity building for solar PV industry to enhance local content
Bus rapid transit (BRT)	Transport	Program extension to regional government through EFT
Reforestation	Agriculture	Enhancing nontax revenue collecting instruments

6. Regional cooperation: What role can regional cooperation and regional bodies such as APEC (but also other international bodies) play in understanding how to implement a green recovery from economic shocks? What are the areas for collaboration, or areas your economy would like to learn more about, on this topic? Does your economy consider that more regional cooperation could be valuable to better understand areas of a green recovery?

- Regional cooperation such as APEC holds prominent roles to conduct capacity building & technical assistance from developed Economies to developing Economies to help understand and implement green economy policies.
- APEC is also an ideal forum to organize collaboration with other related Fora on energy, sustainable development, and green economy to explore several topics, including renewable energy and how to reduce greenhouse gas emissions.
- Indonesia is also continuously seeks the assistance of international multilateral institutions through loan, grant and debt restructuring mechanisms. There is a significant level of urgency shown by the international donors in order for Indonesia to reach its NDC target while also strengthening its government budget.

JAPAN

1. Impact and challenges: Please answer the questions below with respect to two economic shocks that your economy has faced in the past.

- a) Describe the economic shock.
- b) What impacts did the economic shock have on your economy?
- c) What sectors of your economy were most vulnerable to the economic shock?
- d) Did your economy implement any green policy reforms in response to the economic shock? How did these reforms contribute to economic recovery?
- e) What have been the long-term impacts of green reforms, and have they helped your economy become more resilient to future shocks?
- f) How did existing structural policies, institutions and regulations allow you to adequately respond to the economic shocks?
- g) Which demographics were hit hardest by the economic shock?

a) *Describe the economic shock.*

Climate change, which is one of the long-term economic shocks that must be overcome by the entire world, including Japan.

b) *What impacts did the economic shock have on your economy?*

Global warming, in particular, is progressing in every part of the world, and in Japan the average temperature has been rising at a rate of 1.26 degrees Celsius (°C) per century, while frequency of short-duration heavy rainfall exceeding 50 mm per hour has been increased by about 1.4 times in the last 30 to 40 years.

c) *What sectors of your economy were most vulnerable to the economic shock?*

Climate change not only affects specific sectors of the socio-economy, but also threatens the basis of socio-economy itself.

d) *Did your economy implement any green policy reforms in response to the economic shock? How did these reforms contribute to economic recovery?*

The Japanese government considered countermeasures against climate change as a great opportunity for further prosperity and formulated the “Green Growth Strategy Through Achieving Carbon Neutrality in 2050” in June 2021. It aims to realize the 2050 Carbon Neutrality and a “positive circle between economic growth and environmental protection” by taking measures positively to tackle global warming as part of its growth strategy, including the promotion of green innovation in the private sector. (For more information, see our case study.)

e) *What have been the long-term impacts of green reforms, and have they helped your economy become more resilient to future shocks?*

As the Green Growth Strategy has just been formulated in June 2021, it is difficult to specifically assess its impact at this stage. (For more information, see our case study.)

f) *How did existing structural policies, institutions and regulations allow you to adequately respond to the economic shocks?*

As mentioned above, efforts are currently being made to tackle climate change based on the Green Growth Strategy, which was newly formulated last year.

g) *Which demographics were hit hardest by the economic shock?*

As mentioned above, climate change not only affects, specific sectors and economies but also threatens the rest of the world.

2. COVID-19 policies and initiatives: Describe some policy initiatives or programmes your economy has implemented in response to the economic shocks resulting from the onset of COVID-19 (please include at least one green policy initiative or programme). What were the impacts of the structural reforms or policies? Did these reforms support a green recovery? How much did your economy invest, monetary and non-monetary, in green recovery policies? Were there obstacles in implementing green policy reforms and how were these overcome? Does your economy foresee green policies or programmes being implemented beyond the pandemic?

Not applicable.

3. Data, measurement, and monitoring: How does your economy measure the impacts of economic shocks? Please provide some examples. Does it measure the coverage, adequacy and impact of structural reforms implemented in response? How does it define and measure whether a policy is ‘green’? Please provide examples.

The impact of economic shocks and their countermeasures is difficult to assess in general, as it depends on the type of economic shocks and economic sectors. On the other hand, for example, as countermeasures against climate change, the Japanese Government has set a target of achieving carbon neutrality by 2050. In addition, the Green Growth Strategy formulated in June 2021 sets targets to be achieved and initiatives to be undertaken in each of the 14 fields. (For more information, see our case study.)

4. Best practices: Among your economy’s structural reforms implemented in response to economic shocks in the past, discuss some green policies you assess have been implemented effectively. Please identify the top reasons for the effectiveness of these reforms, outlining any long-term impacts they had. Has the reform increased resilience in your economy to future shocks? Does the reform have ongoing applicability to future shocks?

The Green Growth Strategy: The Japanese government considered countermeasures against climate change as a great opportunity for further prosperity and formulated the “Green Growth Strategy Through Achieving Carbon Neutrality in 2050” in June 2021. It aims to realize the 2050 Carbon Neutrality and a “positive circle between economic growth and environmental protection” by taking measures positively to tackle global warming as part of its growth strategy, including the promotion of green innovation in the private sector. (For more information, see our case study.)

5. Action Plans: Considering the policy gaps, barriers and challenges your economy has in enabling a green response to economic shocks, what are your economy’s short and medium-term plans to overcome them? If your economy has developed metrics and

benchmarks to identify the appropriate policy responses and track progress, please provide details.

For each of the key areas essential to achieving Carbon Neutrality by 2050, the Japanese government formulated “Action Plans” under the framework of the Green Growth Strategy which include (1) targets with clearly defined time limits, (2) research, development, and demonstration, (3) regulatory reform, standardization, and other institutional improvements, and (4) international collaboration, and so on. (For more information, see our case study.)

6. Regional cooperation: What role can regional cooperation and regional bodies such as APEC (but also other international bodies) play in understanding how to implement a green recovery from economic shocks? What are the areas for collaboration, or areas your economy would like to learn more about, on this topic? Does your economy consider that more regional cooperation could be valuable to better understand areas of a green recovery?

Climate change is, after all, a global problem that requires a global solution, such as strengthening international cooperation. What is particularly important for realizing global energy transitions will be support for decarbonization efforts in Asia and other emerging economies including the composition of infrastructure projects and capacity building projects such as providing technical know-how for local industries and government officials, as well as international rule-making such as the Paris Agreement and the WTO. In this context, APEC is expected to continue to play a role as an incubator model, primarily in capacity building activities, sharing and deployment of best practices and international rule-making.

KOREA

1. Impact and challenges: Please answer the questions below with respect to two economic shocks that your economy has faced in the past.
- a) Describe the economic shock.
 - b) What impacts did the economic shock have on your economy?
 - c) What sectors of your economy were most vulnerable to the economic shock?
 - d) Did your economy implement any green policy reforms in response to the economic shock? How did these reforms contribute to economic recovery?
 - e) What have been the long-term impacts of green reforms, and have they helped your economy become more resilient to future shocks?
 - f) How did existing structural policies, institutions and regulations allow you to adequately respond to the economic shocks?
 - g) Which demographics were hit hardest by the economic shock?

a) Describe the economic shock.

In the past decades, Korea faced two large economic shocks. One is the Korean Financial Crisis in 1997, and the other is the Global Financial Crisis in 2008.

b) What impacts did the economic shock have on your economy?

The two economic shocks had considerable negative impacts on the Korean economy. Because of the Korean Financial Crisis in 1997, Korea's real GDP dropped by 5.1% in 1998, and the number of employees decreased sharply by 1.3 million. In 2009, Korea's real GDP grew only 0.8%, and the number of employees reduced by 87 thousand.

c) What sectors of your economy were most vulnerable to the economic shock?

Since the Korean economy heavily relies on manufacturing sector and goods exports, the manufacturing sector was hit hardest by the economic shocks. The manufacturing sector's contribution to Korea's real GDP growth was -1.7%p in 1998 and -0.6%p in 2009, respectively.

d) Did your economy implement any green policy reforms in response to the economic shock? How did these reforms contribute to economic recovery?

In the past, the Korean government mainly focused on economic policy to recover from the economic shocks.

e) What have been the long-term impacts of green reforms, and have they helped your economy become more resilient to future shocks?

f) How did existing structural policies, institutions and regulations allow you to adequately respond to the economic shocks?

During the Korean Financial Crisis in 1997, the Korean government implemented structural reform policies. For example, Korea changed its exchange rate system to the flexible exchange rate system and liberalized capital flows. Also, the Korean government implemented large-scale restructuring. These structural reforms allowed Korea to respond

relatively well to the Global Financial Crisis shock. In 2009, Korea's real GDP growth rate (0.8%) was higher than the OECD average (-3.4%).

g) *Which demographics were hit hardest by the economic shock?*

Women and young people were most affected by the economic shocks. The number of employed women contracted by 641 thousand in 1998 and 93 thousand in 2009, respectively. Also, the number of employed young people shrank by 616 thousand in 1998 and 146 thousand in 2009, respectively.

2. COVID-19 policies and initiatives: Describe some policy initiatives or programmes your economy has implemented in response to the economic shocks resulting from the onset of COVID-19 (please include at least one green policy initiative or programme). What were the impacts of the structural reforms or policies? Did these reforms support a green recovery? How much did your economy invest, monetary and non-monetary, in green recovery policies? Were there obstacles in implementing green policy reforms and how were these overcome? Does your economy foresee green policies or programmes being implemented beyond the pandemic?

In order to overcome the economic crisis caused by COVID-19 and pre-emptively respond to changes in economic and social structures, the Korean government introduced the Korean New Deal in July 2020. This economy-wide strategy seeks to transform Korea into a smart, green, and safe economy by 2025. In 2020 and 2021, the Korean New Deal facilitated fiscal and private investment and institutional reforms. As the structural changes in the economy and society caused by the COVID-19 pandemic have accelerated over the past year, the government was faced with a growing need to upgrade the policy. In this context, the government introduced the Korean New Deal 2.0 in July 2021. The Korean New Deal 2.0 has 4 pillars: the Digital New Deal, the Green New Deal, the Human New Deal, the Regional New Deal.

In particular, the Green New Deal seeks to accelerate the transition towards a low carbon and green economy. Since 2020, the Korean government has invested KRW 10.3 trillion in the Green New Deal, and the government plans to invest KRW 61 trillion by 2025. Based on the Green New Deal, the government is actively supporting the green transformation of the economy by investing in various fields, such as strengthening climate change response, expanding green infrastructure, spreading renewable energy, and fostering green industries.

As the transition to a low-carbon and green economy is a global trend, Korea is focusing on policies aimed at carbon neutrality and converting its economic base to a low-carbon and eco-friendly one through the Green New Deal. In addition, Korea will continue to promote related policies after COVID-19.

3. Data, measurement, and monitoring: How does your economy measure the impacts of economic shocks? Please provide some examples. Does it measure the coverage, adequacy and impact of structural reforms implemented in response? How does it define and measure whether a policy is 'green'? Please provide examples.

Basically, Korea measures the impact of economic shocks by macroeconomic indicators, such as GDP, trade volume, employment rates, etc. Also, market indicators, such as stock prices, interest rates, exchange rates, and other quantitative indicators are used to identify and monitor the impact. These indicators are also used to measure the impact of structural reform policies.

It is hard to define green policy by a unified standard. However, according to the Green New Deal, green policies can be partly defined as policies that aim to accelerate the transition towards a low-carbon and green economy.

4. Best practices: Among your economy's structural reforms implemented in response to economic shocks in the past, discuss some green policies you assess have been implemented effectively. Please identify the top reasons for the effectiveness of these reforms, outlining any long-term impacts they had. Has the reform increased resilience in your economy to future shocks? Does the reform have ongoing applicability to future shocks?

5. Action Plans: Considering the policy gaps, barriers and challenges your economy has in enabling a green response to economic shocks, what are your economy's short and medium-term plans to overcome them? If your economy has developed metrics and benchmarks to identify the appropriate policy responses and track progress, please provide details.

The Korean government is implementing the Green New Deal by establishing an annual fiscal investment plan for the short term, and, for the medium term, a fiscal investment plan has been established and will be implemented by 2025.

The Green New Deal has 4 focus areas (Building a foundation for carbon neutrality implementation, Green transition of infrastructure, Low-carbon and decentralized energy supply, Innovation in the green industry) and 11 projects. The Korean government is managing and monitoring projects by setting quantitative indicators for each projects.

6. Regional cooperation: What role can regional cooperation and regional bodies such as APEC (but also other international bodies) play in understanding how to implement a green recovery from economic shocks? What are the areas for collaboration, or areas your economy would like to learn more about, on this topic? Does your economy consider that more regional cooperation could be valuable to better understand areas of a green recovery?

Through regional cooperation, economies can share green policy experiences and build capacity to promote green recovery. Since effective responses to climate change cannot be achieved by the efforts of some economies, regional cooperation is essential. In this context, enhancement of regional cooperation will be helpful to achieve a green recovery.

MALAYSIA

1. Impact and challenges: Please answer the questions below with respect to two economic shocks that your economy has faced in the past.
- a) Describe the economic shock.
 - b) What impacts did the economic shock have on your economy?
 - c) What sectors of your economy were most vulnerable to the economic shock?
 - d) Did your economy implement any green policy reforms in response to the economic shock? How did these reforms contribute to economic recovery?
 - e) What have been the long-term impacts of green reforms, and have they helped your economy become more resilient to future shocks?
 - f) How did existing structural policies, institutions and regulations allow you to adequately respond to the economic shocks?
 - g) Which demographics were hit hardest by the economic shock?

a) *Describe the economic shock.*

Economic Planning Unit

- The Malaysian economy has been hit by crises in the past, but the current one is quite unlike those it has been affected by in the last 20 years. Because the present COVID-19 crisis is both a health and economic crisis. It demands a serious reconsideration of Malaysia's growth strategy.
- The global financial crisis 2008/2009 caused sharp declines in the regional equity and bond markets. There was a large reversal in short-term capital flows, especially in the second half of 2008 as these funds were remitted back to the US. This sharp reversal of funds flows was, however, well absorbed by the domestic financial markets, given the ample liquidity in the financial system and the sound banking system.
- Malaysia has experienced strong economic growth over recent decades, resulting in a transformation of our economy and sustained improvements in living standards. The COVID-19 pandemic has interrupted our economic development, but our goal to become a high-income and developed economy and one, which exhibits shared prosperity, remains.

b) *What impacts did the economic shock have on your economy?*

Economic Planning Unit

- 2008/2009 Global Financial Crisis. As Malaysia is a highly open economy, the impact of the global recession was felt strongly in the external trade-related sectors. The recession in the advanced economies started to impact the Malaysian economy in the fourth quarter of 2008. Exports and manufacturing production declined by 7.4% and 11.1% respectively, and private investment activity was dampened by the deteriorating business conditions. However, the resilience of domestic demand, particularly private consumption, provided support to the economy, preventing it from contracting in the fourth quarter of 2008, real GDP growth: 0.1%. Malaysia's gross exports declined by 20% during the quarter, resulting in subsequent reductions in production, particularly in the manufacturing sector.

- In response to the significantly lower exports and production activity, firms undertook measures to reduce the cost of labour by enforcing a freeze on new hiring, initiating pay-cuts, reducing overtime work and laying off some workers. Retrenchments increased to 12,590 persons in the first quarter, compared with a quarterly average of 3,873 persons during the 2005-2008 period, affecting mainly workers from the manufacturing sector. The unemployment rate increased to 4% in the first quarter. As a result, aggregate domestic demand declined by 2.9% and the economy contracted sharply by 6.2% in the first quarter of 2009, the first contraction since the third quarter of 2001. The Malaysian economy contracted by 1.5% in 2009, as recovery strengthened in the second half of the year.
- **COVID-19.** In 2020, Malaysia's GDP contracted by 5.6% (2019: 4.3%) due to the various Movement Control Order (MCO) phases implemented since 18 March 2020 to curb the outbreak of COVID-19. However, the economy expanded by 3.1% in 2021 (2020: -5.6%) reflecting a continued recovery trajectory, supported mainly by the improvement in domestic demand and robust exports performance.

c) *What sectors of your economy were most vulnerable to the economic shock?*

Economic Planning Unit

- **2008/2009 Global Financial Crisis.** Malaysia is a very open economy, with exports and imports totaling RM1.11 trillion, two times the domestic GDP. For a economy that is as dependent on trade as Malaysia is, it is obvious that if demand from Malaysia's dominant trade partners were to decrease, its repercussions would be felt throughout the economy. The evidence for the extent of dependence on trade is striking when one notes the structure of Malaysian exports. This structure clearly indicates the dominance of manufactured goods which accounts for about 82% of total exports. This is followed by mining which contribute about 8% of exports. The share of agricultural commodities accounts for about 7% of total exports.
- Within the category of manufactured goods, electronics, electrical machinery, and appliances are about 53% of the exports share. This category of commodities drives the manufacturing sector. Again, as a component of this broad category, electronics goods are the most dominant. Exports of electronics products can be sub-divided into semiconductors and electrical equipment and appliances, both of which have roughly equal importance. There is no doubt that the export of manufactured goods is particularly vulnerable to drops in external demand. Since the demand for electronics goods largely comes from developed economies (particularly the US, EU, and Japan), a decline in consumption in these economies is bound to have a negative impact on the exports of Malaysian manufactured goods. It is important to note that percentage share in total exports has slipped the most from the previous year's percentage in 2008 in goods such as semiconductors (2.4%) and electronics equipment (3.3%). The export of electronics, electrical machinery, and appliances fell by 5.8% from 2007 to 2008. While manufactured goods accounted for 78.4% of total exports in 2007, it dropped to 74.1% in 2008.
- The sharp decline in exports of manufactured goods had led to a significant slowdown in production activity. The manufacturing sector, particularly the export-oriented

industries was severely affected by the significant deterioration in external demand. After registering a small positive of 0.8% in 2008 (2007: 3.2%), the manufacturing sector contracted sharply by 9.1% in 2009.

- **COVID-19.** Labour market conditions weakened amid a decline in firms' production activities, which weighed on economies' domestic demand, production, external trade and global growth, particularly in the second quarter of 2020. The disruptions to the global manufacturing supply chains further affected export activity in the second quarter of 2020. Given the nature of the crisis, only selected export products, such as electrical and electronics (E&E) and rubber products, were more resilient during the year. These reflected the higher demand for work from home equipment and medical-related products. Meanwhile, export of services contracted significantly by 46.0% due mainly to the sharp fall in tourist arrivals (2020: 4.3 million persons, 2019: 26.1 million persons) as international borders were closed since March 2020. In 2020, all economic sectors registered a contraction in growth, particularly the construction sector. The services sector was affected by weaker consumer-related activities, while the manufacturing sector contracted, as activities allowed to operate were restricted to essentials and global value chains. The decline in the agriculture sector was mainly due to weaker oil palm production and the mining sector was weighed down by facility closures for maintenance purposes. Meanwhile, the construction sector plunged, as activities were constrained by operating capacity limits. In 2021, all economic sectors registered improvements, particularly the manufacturing (9.5%), services (1.9%) and mining (0.7%) sectors. Meanwhile, the agriculture (-0.2%) and construction (-5.2%) sectors remain subdued.

- d) *Did your economy implement any green policy reforms in response to the economic shock? How did these reforms contribute to economic recovery?*
- e) *What have been the long-term impacts of green reforms, and have they helped your economy become more resilient to future shocks?*
- f) *How did existing structural policies, institutions and regulations allow you to adequately respond to the economic shocks?*

Economic Planning Unit

- Plans and policies in Malaysia are prepared using both top-down and bottom-up approaches. The ministries/agencies coordinate issues and recommend the macroeconomic measures to address any specific issues.
- The bottom-up approach involves extensive engagements with various stakeholders, providing avenues for everyone to contribute and to ensure development projects and programmes are aligned to the objectives and goals of the plans. This comprehensive engagement session ensures, leaving no one behind, with the involvement of the public and private sectors including industry experts and corporate members, academics, members of parliament including the opposition, community leaders, civil society organisations and international organisations.

- In addition, engagement sessions with the state government were also held and public involvement through online consultations was also considered to ensure the formulation of holistic and inclusive policies and strategies to respond to shocks.
- In addition, the Government also utilises various platforms to discuss and deliberate issues and measures to address economic shocks such as the Economic Action Council (EAC) and National Recovery Council (NRC). The NRC will be drafting the direction and strategies of the National Recovery Plan 2.0.

g) Which demographics were hit hardest by the economic shock?

Economic Planning Unit

The COVID-19 pandemic which spread across the world since the end of 2019 has a significant impact on the economy and social sectors worldwide including Malaysia. Due to this pandemic, many economies including Malaysia implemented Movement Control Order (MCO) as a vital step to curb the spread of COVID-19 pandemic. The implementation of the first MCO in Malaysia which began on 18 March 2020 (MCO Phase 1) and the subsequent MCOs have caused many economic sectors especially non-essentials to temporarily closed their businesses. This has significantly contributed to the increase in unemployment rate to 4.5 % in 2020, which comprised 711.0 thousand individuals and registered the highest rate since 1993 (4.1%).

Based on the Salaries & Wages Survey Report 2020, the average salaries and wages shrunk by 9.0 per cent as compared to 2019. The COVID-19 pandemic not only affect the bottom 40 per cent households (B40) but also those in middle 40 per cent (M40) and top 20 per cent (T20) groups and their disposable income. 20 % of households from the M40 group has moved to the B40 group while 12.8 % of T20 group had shifted to the M40 group. Moreover, based on the Household Income Estimates and Incidence of Poverty 2020, the incidence of absolute poverty increased from 5.6 % in 2019 to 8.4 % in 2020 whilst the economy-wide Gini coefficient also recorded an increase by 0.004 index points from 0.407 in 2019 to 0.411 in 2020. The economic shock caused by COVID-19 pandemic has exacerbated existing challenges faced by the poor and vulnerable, including informally employed workers and their households. Lower-income and less-educated workers were more likely to be exposed to employment and income disruptions during the crisis.

Ref: Salaries & Wages Survey Report 2020, Household Income Estimates and Incidence of Poverty 2020, Malaysia Economic Monitor December 2021 Edition by World Bank

2. **COVID-19 policies and initiatives:** Describe some policy initiatives or programmes your economy has implemented in response to the economic shocks resulting from the onset of COVID-19 (please include at least one green policy initiative or programme). What were the impacts of the structural reforms or policies? Did these reforms support a green recovery? How much did your economy invest, monetary and non-monetary, in green recovery policies? Were there obstacles in implementing green policy reforms and how were these overcome? Does your economy foresee green policies or programmes being implemented beyond the pandemic?

Economic Planning Unit

Malaysia has undertaken measures to contain the spread of the virus, through the implementation of the Movement Control Order (MCO), which began on 18 March 2020. This order was enforced under the Control and Prevention of Infectious Diseases Act 1988 and the Police Act 1967.

The rollout of the National COVID-19 Immunisation Programme will also improve confidence and support economic recovery. Malaysia's integration in fast-growing segments of the global value chains and diversified external trade structure, as well as continued policy support would be key factors in driving the rebound in economic growth in 2021.

The Government has adopted 6Rs (Resolve, Resilience, Restart, Recovery, Revitalise and Reform) to balance between the COVID-19 containment and people's livelihood as well as the economy.

Malaysia has unveiled a landmark comprehensive rescue plan comprising eight (8) stimulus packages worth RM530 billion aimed to protect the welfare of the *rakyat*, support businesses and strengthen the economy.

The National Recovery Plan (NRP) was introduced in June 2021 comprising a four-phase exit strategy from the COVID-19 in Malaysia, which allows for a safe reopening of the economy.

The digital economy, Fourth Industrial Revolution (4IR), connectivity and gig economy will be leveraged to accelerate growth, particularly for the post-COVID-19 recovery period. The pandemic has accelerated the use of digital platforms for businesses and trade, education as well as communication. The adoption of e-commerce increased as businesses switched to the online platform to cushion the impact of COVID-19, while consumers relied on the online platform for the purchase of household items. This trend is expected to continue in future. Teaching and learning activities are also conducted online to ensure the continuity of lessons for students. However, the adoption of the digital platform is still limited among certain segments of the population due to the lack of reliable connectivity, particularly in the rural areas.

In the Twelfth Malaysia Plan (12MP), concerted efforts have been undertaken to rejuvenate all economic sectors to ensure the growth momentum is restored. For this purpose, the focus will be on **boosting productivity** mainly through **accelerating technology adoption, expanding market exports, strengthening the effectiveness of financial intermediation ecosystem, enhancing the role of industrial estates** as well as **improving governance and policy**.

In addition, the 'new normal' created by the global COVID-19 pandemic has provided Malaysia with a window of opportunity to reform its economic foundation towards a stronger recovery. The implementation of the said measures will support these sectors to be more productive in driving the growth of the economy.

The policies are structured to ensure sustainable economic growth, with mainly focus on environmental sustainability. The Plan have been aligned to the Sustainable Development Goals (SDGs) of the 2030 Agenda for Sustainable Development (2030 Agenda). Focus will be given in accelerating the adoption of green practices among industries and enhancing the related implementation mechanisms as below:

- Industries will be encouraged to accelerate the adoption and implementation of green practices, particularly sustainable consumption and production (SCP) practices;
- Industries will be urged to procure and utilise local green products and services;
- Industries will be encouraged to implement the circular economy concept throughout the products and services value chain;
- The triple helix collaboration in R&D will be strengthened to increase innovation and commercialisation of green products as well as transfer best practices into mass-production for higher productivity;
- Efforts to inculcate green practices in the *agriculture sector* will be intensified by encouraging farmers to adopt good agriculture practices such as myGAP, MSPO and Malaysian Organic (myOrganic);
- Agriculture procurement for contract farming will be leveraged to promote adoption of green practices;
- A short-term action plan and a guideline on government green procurement (GGP) on works will be introduced to encourage green practices in the construction sector;
- Industry players will be urged to adopt green certification and performance tools for new development projects as well as renovation and retrofitting works;
- The adoption of the eco-industrial parks concept which embodies the circular economy model will be made a pre-requisite for the development of new industrial parks; and
- Industry players will be required to adopt the environment, social and governance (ESG) elements in their business practices.

The implementation of green practices across all sectors of the economy is intended to build long-term resilience, generate sustainable businesses and new economic opportunities as well as provide societal and environmental benefits.

However, government continue to face issues and challenges to implement green practices economy-wide. Issues with respect to higher cost occurred, lack of awareness, financial restrictions and lack of knowledge or technical expertise hinder the economy from achieving environmental sustainability agenda. These challenges have been compounded by the COVID-19 pandemic that requires comprehensive strategies and effective implementation to increase the adoption of green practices. Despite facing these issues, government remains committed to implement green growth initiatives by adopting green technology and best practices. These initiatives will facilitate the reduction of greenhouse gas (GHG) emissions, minimise pollution and ensure sustainable utilisation of natural resources. This will also unlock opportunities for innovation and value creation as well as mainstream environment into economic activities.

What were the impacts of the structural reforms or policies?

- The Malaysian economy is projected to grow between 5.5% and 6.5% in 2022, driven by healthy domestic demand and continued growth in exports. This is in line with the projections by the World Bank that the Malaysian economy will grow by 5.8% in 2022, while IMF estimated 5.7% growth.
- Growth will be supported by the reopening of all economic sectors, following the rapid progress of the economy-wide vaccination programme as well as the effectiveness of the economic stimulus packages. The services sector is expected to expand as economic and social activities resume operations fully, mainly driven by the wholesale and retail trade; information and communications; finance and insurance;

transportation and storage; and food & beverages and accommodation subsectors. Meanwhile, strong global demand prospects for E&E products will continue to provide the impetus for Malaysia's manufacturing sector.

- In addition, the implementation of 807 development projects with high multiplier effects, amounting to RM75.6 billion and targeted tourism activities especially for business, health and education purposes would also spur economic growth.

Did these reforms support a green recovery? How much did your economy invest, monetary and non-monetary, in green recovery policies? Were there obstacles in implementing green policy reforms and how were these overcome? Does your economy foresee green policies or programmes being implemented beyond the pandemic?

3. Data, measurement, and monitoring: How does your economy measure the impacts of economic shocks? Please provide some examples. Does it measure the coverage, adequacy and impact of structural reforms implemented in response? How does it define and measure whether a policy is 'green'? Please provide examples.

Economic Planning Unit

- The impact of economic shocks is typically measured by monitoring high-frequency economic indicators, such as the equity market, consumer price index, leading index, purchasing managers' index, labour market (unemployment, retrenchment and vacancies) and exchange rate. However, some of these indicators are only available a few months after the end of the reference period. Thus, early estimates on the impact of economic shocks are prepared using internal economic models as well as special surveys (such as the recent Special Survey 'Effect of Covid-19 on the Economy and Individual' by the Department of Statistics Malaysia). The same economic indicators are also used to measure the coverage, adequacy and impact of structural reforms.
- Specifically on green growth, Green Economy Indicators (GEI) which is published by Department of Statistic Malaysia, is a complementary tool that is used to assess the impact of development on the environment. The GEI composed of 79 indicators which include carbon emission, energy intensity, and share of renewable energy, forest area, aquaculture production and usage of chemical fertilisers.
- GEI is one of the measurement tools to track Malaysia's progress toward sustainable development and as an input in measuring the achievement of Sustainable Development Goals (SDG) in Malaysia. For the record, in 2017, the GEI Index has increased by 1.9% per annum from the baseline in 2010 to 114 points. Out of five, two components of GEI, namely the policy responses and economic opportunities as well as economic, demographic and social context for sustainable development recorded fastest improvement.
- To further strengthen the sustainable growth through green growth approach, and as a complementary tool to the existing macroeconomic planning and impact analysis, a green economic model will be introduced in the Twelfth Plan. The model will establish links between economic growth and the use of natural resources as well as environmental impact. It will serve as a key reference for policy-making. Furthermore, the development of this model will leverage the GEI and the System of Environmental Economic Accounting for Malaysia.

4. Best practices: Among your economy's structural reforms implemented in response to economic shocks in the past, discuss some green policies you assess have been implemented effectively. Please identify the top reasons for the effectiveness of these reforms, outlining any long-term impacts they had. Has the reform increased resilience in your economy to future shocks? Does the reform have ongoing applicability to future shocks?

5. Action Plans: Considering the policy gaps, barriers and challenges your economy has in enabling a green response to economic shocks, what are your economy's short and medium-term plans to overcome them? If your economy has developed metrics and benchmarks to identify the appropriate policy responses and track progress, please provide details.

6. Regional cooperation: What role can regional cooperation and regional bodies such as APEC (but also other international bodies) play in understanding how to implement a green recovery from economic shocks? What are the areas for collaboration, or areas your economy would like to learn more about, on this topic? Does your economy consider that more regional cooperation could be valuable to better understand areas of a green recovery?

Economic Planning Unit

The world community is well aware on issues related to GHG and will be costly if no action is being taken. Thus, regional cooperation and coordination are essential and able to spearhead global efforts towards transition of green economy and society. Regional bodies play an important role to provide a platform for closer international partnership and linkages between economies as well as the public-private cooperation and initiatives. In addition, regional bodies could help to coordinate interventions and supporting the development as well as strengthening research and analysis, sharing knowledge and best practices particularly to low income economies. While being affected by the COVID-19 pandemic, multilateral action is needed to turn the challenges into an opportunity towards an inclusive, resilient and green sustainable development pathway. Malaysia is committed to work with regional bodies particularly in terms of technical cooperation and engagement as well as exchange of best practices to promote green economy.

NEW ZEALAND

1. Impact and challenges: Please answer the questions below with respect to two economic shocks that your economy has faced in the past.
 - a) Describe the economic shock.
 - b) What impacts did the economic shock have on your economy?
 - c) What sectors of your economy were most vulnerable to the economic shock?
 - d) Did your economy implement any green policy reforms in response to the economic shock? How did these reforms contribute to economic recovery?
 - e) What have been the long-term impacts of green reforms, and have they helped your economy become more resilient to future shocks?
 - f) How did existing structural policies, institutions and regulations allow you to adequately respond to the economic shocks?
 - g) Which demographics were hit hardest by the economic shock?

Reform of the 1980s

- a) *Describe the economic shock.*

In the early 1980s, global events and the government's responses to them drove New Zealand towards economic collapse.¹³ The international oil crises of 1973 and 1979 hit New Zealand hard given its dependence on imported oil, and when the United Kingdom joined the European Economic Community in 1973, New Zealand lost its guaranteed access to what had been its most important export market. New Zealand's external terms of trade fell and a wage price spiral ensued.

The government initially responded by investing in 'Think Big' infrastructure projects, adding subsidies for domestic industries and tightening regulations. The economic viability of some infrastructure investments depended on a steady rise in energy prices. Oil prices fell in the early 1980s, leaving the government in debt. The government maintained short-term stability with a wage and price freeze in 1982, but this only suppressed and worsened the structural distortions in the economy. By 1984, New Zealand was facing unsustainable account deficits, inflation of over 12 per cent, foreign debt at 46 per cent of GDP and a foreign exchange crisis.¹⁴

- b) *What impacts did the economic shock have on your economy?*

To address the crisis, major reforms began in 1984 with a transition towards a market-driven economy for all sectors. The reforms were extensive and economy-wide, with public policy innovations in four key areas: (1) market interventions; (2) taxation; (3) state-owned enterprises and privatization; and (4) monetary policy. Growth remained slow in the period 1984-92 and unemployment continued rising but eventually reforms led to much improved economic conditions.

¹³ Mintrom, M., & Thomas, M. (2019-09-05). New Zealand's Economic Turnaround: How Public Policy Innovation Catalysed Economic Growth. In Great Policy University Press.

<https://oxford.universitypressscholarship.com/view/10.1093/oso/9780198843719.001.0001/oso-9780198843719-chapter-14>

¹⁴ Steven Stillman, Malathi Velamuri and Andrew Aitken, *The Long-Run Impact of New Zealand's Structural Reform on Local Communities*, https://motu-www.motu.org.nz/wpapers/08_11.pdf

c) *What sectors of your economy were most vulnerable to the economic shock?*

The two decades to 1984 had seen a gradual acceleration of support for the agriculture sector, including minimum prices for agricultural goods, input subsidies, low-interest loans, tax incentives and debt write-offs. The aim was to help make up the foreign exchange shortfall from increased oil costs, the collapse in commodity prices, and the loss of significant income from agricultural exports to the United Kingdom. It was clear by the mid-1980s that this support was not sustainable – the fiscal costs were too high, and the sector was becoming increasingly uncompetitive in international markets.

d) *Did your economy implement any green policy reforms in response to the economic shock?*

The reforms included the removal of all price support payments for farmers. Land development loans, fertilizer and irrigation subsidies, and subsidized credit were phased out from 1987, as were assistance for flood control, soil conservation, and drainage schemes. These reforms were not driven by a concern for the environment; however, they have had a range of favourable environmental effects.¹⁵

Subsidies for land development and for increasing livestock numbers throughout the late 1970s and early 1980s had encouraged farmers to clear indigenous bush to increase pasture area for stock and can be linked to a rise in fertilizer usage by between 10 and 25 per cent. Following the reforms, total area in various forms of pasture declined and the area of planted forest has increased. Sheep flock numbers declined and the sector diversified into more economically viable activities including rural tourism, horticulture, viticulture and deer farming. These changes led to reductions in erosion and decreased contamination in rural waterways. More recently, the expansion of dairy farming has adversely affected water quality. However, the retention of subsidies could have made matters worse.

e) *What have been the long-term impacts of green reforms, and have they helped your economy become more resilient to future shocks?*

New Zealand has the lowest level of agricultural subsidies in the OECD – less than one per cent of producers' income. Support is limited to "Green Box" subsidies, which only have a minimal effect on trade. These cover items such as biosecurity, research and development, and relief after natural disasters.

Exposing the industry to international market pressures has made it more competitive, responsive and innovative, and less burdensome on taxpayers. The food and fibre sector remains our most important export industry, accounting for ~83 per cent of merchandise exports in 2021.¹⁶

Reduced reliance on government support has improved resilience in the agricultural sector and the wider economy. While there were periods of weaker growth (for example, through the 1998-99 drought and the Asian Financial Crisis), these tended to be relatively short-lived. The removal of most disaster relief-related support in the late 1980s ensured that

¹⁵ Vangelis Vitalis, *Agricultural subsidy reform and its implications for sustainable development: the New Zealand experience*, Environmental Sciences, March 2007; 4(1): 21 – 40, DOI: 10.1080/15693430601108086

¹⁶ Ministry of Primary Industries, *Situation and Outlook for Primary Industries June 2021*, <https://www.mpi.govt.nz/dmsdocument/45451-Situation-and-Outlook-for-Primary-Industries-SOPI-June-2021>

sheep and beef farmers adopted stocking policies that are better adapted to climatic risks and are quicker to respond to early signs of drought.

In many areas Rural Support Trusts were formed to provide support services such as farming or business advice, financial information, health, mental health, and counselling services. Today, the 14 Rural Support Trusts are invaluable, not just on a day-to-day basis, but also in the aftermath of a natural disaster or climatic event.

f) How did existing structural policies, institutions and regulations allow you to adequately respond to the economic shocks?

Accommodating political arrangements facilitated a swift change during the 1980s. In 1984 economic stress resulted in the election of a new majority government which faced little opposition in passing legislation. These conditions allowed the government to make significant decisions and transform the public sector. While many of these changes were successful and have shaped the much more stable and resilient economy of today, the speed and scale of the changes, and the lack of measures to mitigate social impacts, remains controversial.

g) Which demographics were hit hardest by the economic shock?

The period from the mid-1980s to the mid-1990s was challenging for many New Zealanders. Unemployment rose among unskilled agricultural workers and unskilled factory workers. Many local level services were cut-back, including postal, banking, health, and education services. Income inequality rose during the late 1980s until the 1990s, after which it remained steady¹⁷. During the late 1980s and 1990s, New Zealand experienced a doubling in the rate of child poverty¹⁸.

A number of rural businesses stopped operating, unemployment temporarily rose and some small rural towns experienced reductions in population.¹⁹ The Government provided some transition assistance to farmers through debt rescheduling in 1986 – 1987 and provided a modest exit package for farmers who remained in debt. Despite the hardships, very few farmers left the sector, with only about one per cent of farmers taking exit packages and about five per cent of farmers leaving the land between 1985 and 1989. These numbers are not much greater than the normal rate of farm bankruptcies.

On the other hand, due to the prevalence of Māori (New Zealand indigenous) working in the primary sector (for example, forestry) and the aforementioned secondary industries, these economic reform events had a significant impact on Māori communities. Māori unemployment increased to 25 per cent by 1992, when the overall rate was 10 per cent.²⁰

¹⁷ John Creedy, Norman Gemmell and Loc Nguyen, Income Inequality in New Zealand, 1935 – 2014. Working Paper 07/2017, July 2017

¹⁸ Michael Fletcher and Maire Dwyer, A Fair Go for all Children. Actions to address child poverty in New Zealand. A report for the Children's Commissioner and Barnardos. August 2008.

¹⁹ Ministry of Primary Industries, *New Zealand Agriculture – A policy perspective*, <https://www.mpi.govt.nz/dmsdocument/27282-New-Zealand-Agriculture>

²⁰ <https://nzhistory.govt.nz/culture/the-1980s/overview>

Christchurch Earthquake

a) Describe the economic shock.

At 4.35 am on 4 September 2010, a magnitude (Mw) 7.1 earthquake struck 40 kilometres west of the city of Christchurch near the small town of Darfield, causing no fatalities but significant land damage. A series of earthquakes followed that caused loss of life and damage at a scale not seen since the Hawkes Bay earthquake in 1931. On 22 February 2011 a Mw 6.3 earthquake occurred 5 km beneath Christchurch, killing 185 people and injuring more than 7,000 people. There was widespread damage to land (including liquefaction), housing, and infrastructure across the region. Air and water quality were also affected. Around 167,000 homes were damaged, representing approximately 90 per cent of greater Christchurch's housing stock.

What impacts did the economic shock have on your economy?

Estimates indicate total economic losses to buildings and infrastructure of around \$40 billion, ~20 per cent of New Zealand's GDP.²¹ Total employment in the Canterbury region decreased by 8 percent in the year to the September 2011 quarter.²² There was also a massive impact on wellbeing in the region, with research showing that people who lived through the earthquakes and their aftermath were 40 per cent more likely than those living outside the region to have at least one of major depression, post-traumatic stress disorder, or anxiety disorder.²³ Environmental impacts beyond those directly related to the earthquake include creation of around 9 million tonnes of construction and demolition waste which required new landfill sites and on-going monitoring of contaminants.²⁴

b) What sectors of your economy were most vulnerable to the economic shock?

All sectors were heavily impacted by the earthquake due to the loss of infrastructure which underpinned all activity. Accommodation, food services and retail were hit hardest in terms of job losses, with a fall in employment in these sectors of 12,600 people (22.4 percent) during the year. International education was one of the worst impacted industries. The visitor economy was also significantly impacted with many tourism operators and independent travellers choosing to bypass the city in their itineraries.

c) Did your economy implement any green policy reforms in response to the economic shock?

The formation of the Stronger Christchurch Infrastructure Rebuild Team (SCIRT) played a vital role in enabling the repair and rebuild of Christchurch's earthquake damaged infrastructure to be carried out urgently and in an environmentally responsible manner. SCIRT's structure was an unusual alliance model that encompassed both collaboration and competition. Five contractors jointly managed the horizontal infrastructure work programme for three clients: Christchurch City Council, Canterbury Earthquake Recovery

²¹ New Zealand Treasury, *Budget 2013*, <https://www.treasury.govt.nz/publications/budgets/budget-2013>

²² Emma Doherty, *Economic effects of the Canterbury earthquakes*, <https://www.parliament.nz/en/pb/research-papers/document/00PLibCIP051/economic-effects-of-the-canterbury-earthquakes>

²³ Paul Bellamy, *Social effects of Canterbury earthquakes*, <https://www.parliament.nz/en/pb/research-papers/document/00PLibC51211/social-effects-of-the-canterbury-earthquakes>

²⁴ S. H. Potter, J. S. Becker, D. M. Johnston, K. P. Rossiter, *An overview of the impacts of the 2010-2011 Canterbury earthquakes*, *International Journal of Disaster Risk Reduction* Volume 14, Part 1, December 2015, Pages 6-14, <https://doi.org/10.1016/j.ijdr.2015.01.014>

Authority (CERA, established through the Canterbury Earthquake Recovery Act 2011 as a central government agency responsible for coordinating the rebuild and recovery) and the New Zealand Transport Agency.²⁵

Normally, public-sector clients put out projects for tender, and competing civil engineering companies bid for the work. Instead, SCIRT set the budget and the fees for individual projects in advance. As the rebuild progressed, jobs were divided among SCIRT delivery teams based on how well each had performed on earlier work. Performance was judged based on key performance indicators encompassing safety, value for money, team, community satisfaction and environmental outcomes. The application of this approach to a disaster was novel and brought together the design, the construction and the funding into one organization which oversaw projects from beginning to end.

Inclusion of non-price performance measures such as safety, community satisfaction and environmental outcomes led to industry-leading performance in these areas. Independent surveys consistently confirmed a high level of community satisfaction with SCIRT's proactive communications. Following the introduction of various safety initiatives, total annual injuries dropped below the goal of 10 in 2014 and stayed at or below 6 for the remainder of the programme. The approach also fostered sharing of innovations and methods of best practice, which included dewatering guides, trench shield processes, and a suite of data capture tools and processes.²⁶

To ensure the physical works were carried out in an environmentally sound manner while not slowing down the recovery with regulatory barriers, SCIRT, Christchurch City Council and Environment Canterbury collaborated to develop a suite of global consents. Rather than awarding individual consents for specific projects, which each could take months to process, global consents were given for several widespread activities. For example, global consent was given for the rebuild of new pump stations across the City, rather than separate land use consents for each one. The Canterbury Earthquake Recovery Act 2011 paved the way for this framework as it included provisions to streamline legislative compliance for earthquake recovery activities.

To supplement the streamlined consenting process, SCIRT's team of environmental advisers interacted with site crews and regulatory authorities to develop simple effective methods of environmental risk management and created environmental awareness training material for delivery teams. The success of the approach was illustrated by a high level of environmental compliance, with a very low number of environmental incidents compared to New Zealand averages. New procedures were developed for mitigating environmental issues, and environmental impact was minimised in many cases – for example, waste going to landfill was reduced to about 5 per cent due to a variety of initiatives including reusing soil and materials, designs that minimised the creation of waste and a risk-based approach to contaminated land waste.

The New Zealand government also introduced policies and programs to promote inclusion during recovery. Legislation for the Canterbury recovery ensured that the local Ngāi Tahu iwi was consulted on an equal footing with the Government and local authorities involved in the recovery. It went beyond a 'ticking of the box' exercise of a consultation process. The relationship between Ngāi Tahu and CERA is thought to be a world first, where local

²⁵ SCIRT, <https://scirtlearninglegacy.org.nz/>

²⁶ SCIRT, *The Value of SCIRT Final Report*, <https://ivm.org.uk/app/uploads/2020/04/2019-01-30-The-Value-of-SCIRT-1.pdf>

indigenous people are involved in the redesign and reconstruction of a city from the governance level to the physical reconstruction.^{27, 28}

Another notable policy measure taken as part of the earthquake recovery was CERA's designation of the worst affected areas as 'red zones', not recommended for continued residential development in the short term. Between June 2011 and August 2015, the government announced a series of offers to purchase properties in the residential red zone. Land suitable for repairing and rebuilding was designated 'green' then further categorised depending on the complexity of required safety assessments. This helped concentrate limited geotechnical resources in the worst affected areas, allowing rebuilding to proceed quickly, and to high safety standards. While not exclusively a 'green' reform, the decision played a role in building resilience to future disasters, as outlined below.

- d) *What have been the long-term impacts of green reforms, and have they helped your economy become more resilient to future shocks?*

SCRIT's performance measurement framework has had long lasting impacts. Good practices developed during SCIRT have carried on beyond SCIRT. All five delivery teams recognised that safety could be done better within their own industry. Many of these delivery teams also now cooperate and collaborate on projects they never would have prior to SCIRT.²⁹ The development of a consistent framework of global consents, together with a methodology of risk-based management planning provided a unique environment for the 5 contractor delivery teams to work together to 'raise the bar' in complying with the global consents – a practice that has left a lasting legacy. The environmental awareness training material used by SCIRT teams has been adapted into a Civil Contractors' Environmental Guide for the industry.

Collaboration during recovery led to recognition of Ngāi Tahu in the Greater Christchurch Regeneration Act of 2016.³⁰

The decision to designate areas as 'red zones' has played a role in building resilience to climate change. A large tract of the red zoned land runs from the Christchurch CBD along the banks of the Ōtākaro / Avon River. In 2006, there were more than 10,000 people living along this river corridor. Now, there are fewer than 100. One of the most popular ideas for the future of the red zone was a "green spine" – a long stretch of native bush connecting the central city to the sea. This concept became the centrepiece of the Ōtākaro Avon River Corridor Regeneration Plan announced in 2019, which broadly sets out what can happen to the red zone, while passing its management on to local authorities.

Historically this area was part of an extensive network of riparian floodplain wetlands supporting a rich mosaic of ecosystem, the majority of which were drained for development. This area will see increased flood risk with climate change. Policies preventing suburbs from being rebuilt and encouraging ecological restoration of the river corridor will protect Christchurch from future property damage associated with flooding.

²⁷ Steve Matthewman and Luke Goode, *City of quakes: Excavating the future in Christchurch*, New Zealand Sociology 35 (2) 2020

²⁸ Canterbury Earthquakes Symposium Conference Report, December 2019, ISBN 978-0-947520-21-2, <https://quakestudies.canterbury.ac.nz/store/object/524916>

²⁹ Sophie Horsfall, *Case study: SCIRT*, https://www.resorgs.org.nz/wp-content/uploads/2020/08/LR12087_NZ_Construction_Sector_Perf_Measurement_Case_Study_SCIRT.pdf

³⁰ Canterbury Earthquakes Symposium Conference Report, December 2019, ISBN 978-0-947520-21-2, <https://quakestudies.canterbury.ac.nz/store/object/524916>

Furthermore, as part of the regeneration plan, parts of the river will become a "living laboratory", where methods for adapting to climate change can be trialled.

- e) *How did existing structural policies, institutions and regulations allow you to adequately respond to the economic shocks?*

New Zealand has a far higher degree of insurance cover for earthquakes (up to 99 per cent for homes and 82 per cent for contents) than is typical for comparable economies. This is largely due to the natural disaster cover provided by the government since 1945, through the Natural Disaster Fund managed by the Earthquake Commission. This coverage minimised the financial cost of the shock for many property owners, but it also contributed to the earthquakes ranking as one of the costliest natural disasters for insurers worldwide since 1950. Government interventions played a significant role in reinstating reinsurer confidence, ensuring that New Zealand continues to have appropriate cover for future events.³¹

Existing standards meant that new buildings and infrastructure were built to be more resilient to natural disasters and more energy efficient compared to their counterparts which were built before the standards were in place. For example, there had been significant changes in the structural loading standards and building regulations which ensured new buildings would be more earthquake resistant.

- f) *Which demographics were hit hardest by the economic shock?*

Part-time, youth and female employment have been particularly badly affected. This may reflect the disproportionate impact on accommodation, food services and retail sectors. Red-zoned areas tended to be lower-decile neighbourhoods, meaning those communities were disproportionately affected.

2. COVID-19 policies and initiatives: Describe some policy initiatives or programmes your economy has implemented in response to the economic shocks resulting from the onset of COVID-19 (please include at least one green policy initiative or programme). What were the impacts of the structural reforms or policies? Did these reforms support a green recovery? How much did your economy invest, monetary and non-monetary, in green recovery policies? Were there obstacles in implementing green policy reforms and how were these overcome? Does your economy foresee green policies or programmes being implemented beyond the pandemic?

The New Zealand government's initial response to the COVID-19 pandemic was to impose swift and stringent lockdown in March 2020. As a result, the economy experienced the sharpest fall in real GDP on record, with a contraction of 11.0 per cent in the second quarter of 2020. However, this response successfully eliminated all COVID-19 cases in New Zealand, helping to limit the COVID-19 health toll. Together with measures to protect jobs and incomes and highly expansionary macroeconomic policies, this strategy led to rapid recovery. By the third quarter of 2020, real GDP and major labour market indicators had already recovered to the pre-COVID-19 level.

³¹ New Zealand Department of Prime Minister and Cabinet, *Whole of Government Report – Lessons from the Canterbury earthquake sequence*, <https://dpmc.govt.nz/news/whole-government-report-lessons-canterbury-earthquake-sequence>

The New Zealand Government set a budget NZD \$69.1 billion to support the COVID-19 response and recovery, NZD \$64.8 billion of which has been allocated to various initiatives as of 25 November 2021:³²

- On 17 March 2020, the Government announced an initial support package totalling NZD \$12.1 billion.
- In Budget 2020, the Government established the NZD \$50.0 billion COVID-19 Response and Recovery Fund (CRRF).
- In September 2021, the Government increased the overall CRRF total by NZD \$7.0 billion.

The Government has taken the precaution of topping the fund up by \$5 billion in February 2022, to support the ongoing response to the Omicron variant and prepare for future outbreaks, bringing the total funding set aside for COVID response to \$74.1 billion. To give a sense of scale, this sum equates to over 19 times the operating allowance in Budget 2019, which was \$3.8 billion.³³

In 2020, the Government focused on supporting businesses and protecting jobs. The largest budgetary measure was the Wage Subsidy, which was initially paid to businesses that lost at least 30 per cent of revenue due to the COVID-19 crisis so that they could continue to employ and pay their staff. The scheme has cost NZD \$18 billion between March 2020 to November 2021 (~5 per cent of GDP)³⁴ and covered 71 per cent of businesses and 60 per cent of employment at one point.³⁵ The fiscal package also included infrastructure investment in transportation, environment, housing and community development amounting to NZD \$3 billion, NZD \$2.6 billion of which was allocated to “shovel-ready” projects that could start within the year. To complement this investment the Government introduced the COVID-19 Recovery (Fast-track Consenting) Act 2020 which provides for an interim additional consenting process to fast-track projects that can boost employment and support the certainty of ongoing investment in New Zealand while continuing to promote the sustainable management of natural and physical resources.

In Budget 2021 the majority of CRRF investment went to the NZD \$3.8 billion Housing Acceleration Fund (HAF), which will support housing development as the economic recovery continues. The HAF will provide the build-ready land and connecting infrastructure that is needed to expand the supply of housing. This initiative is intended to address continually increasing house prices which have led to a shortage of affordable housing in New Zealand.

As a whole, so far, the CRRF has been effective in supporting employment and the associated positive social outcomes. The unemployment rate, which was forecast to peak at 10 per cent, increased to only 5.2 per cent in the September 2020 quarter, before declining to 4.9 and 4.7 per cent in the December and March quarters respectively. However, the Wage Subsidy is not a permanent solution. To prepare for future economic shocks, in Budget 2021 the Government announced their intention to develop an unemployment insurance scheme. Under the scheme, someone who loses their job will be given payments worth 80 per cent of their former income

³² New Zealand Treasury, *COVID-19 funding allocation and expenditure*, <https://www.treasury.govt.nz/publications/budgets/covid-19-funding-allocation-expenditure>

³³ New Zealand Treasury, *The Wellbeing Budget 2019*, <https://www.treasury.govt.nz/publications/wellbeing-budget/wellbeing-budget-2019-html#section-13>

³⁴ New Zealand Treasury, *Budget Policy Statement*, <https://www.treasury.govt.nz/system/files/2021-12/bps22.pdf>

³⁵ OECD, *OECD Economic Surveys: New Zealand, January 2022*, https://www.oecd-ilibrary.org/economics/oecd-economic-surveys-new-zealand_19990162

for up to seven months. It will be funded by a levy of 1.39 cents on every dollar earned by employees and businesses.

Some of the CRRF was allocated to environmental initiatives. The largest of these investments was NZD \$1.1 billion supporting the ‘Jobs for Nature’ program which provides employment in environmental projects. The NZD \$3 billion infrastructure expenditure included NZD \$210 million for climate resilience and flood protection, NZD \$155 million for transformative energy projects, and NZD \$95 million for waste and resource recovery infrastructure.³⁶ The CRRF also included NZD \$1.2 billion for rail infrastructure which will contribute to lowering transport sector emissions. In addition, the government introduced the Government Investment in Decarbonising Industry Fund (GIDI) – a partnership between Government and businesses providing NZD \$69 million in contestable grants to accelerate decarbonisation of industrial process heat and contribute to the COVID-19 recovery. The first two rounds of the GIDI Fund have supported projects that will deliver lifetime emissions cuts of 6.6 million tonnes.

Given its scale, the COVID-19 economic stimulus may be viewed as a unique opportunity to invest in the transition to a green economy. New Zealand’s Climate Change Commission, established as an independent advisory body under the Climate Change Response (Zero Carbon) Amendment Act 2019, has written to the government urging it to invest recovery funds into large transformative projects that address emissions reduction and adaptation. The Commission also gave feedback on the COVID-19 Recovery (Fast-track Consenting) Bill, that its requirement for the Minister for the Environment to “have regard to” whether projects would assist climate change mitigation and adaptation was inadequate. They recommended the Government to apply a climate change lens to all projects, emphasising that climate change needs to be the focus for future investments.

When viewed as a proportion of overall expenditure, it is unclear whether the investments made are enough to outweigh support for emissions-intensive activities and transform the economy in the long-term. The Government announced that Budget 2022 will include a focus on investing in initiatives to reduce emissions and meet our climate goals, including the creation of the NZD \$4.5 billion Climate Emergency Response Fund ³⁷.

The COVID-19 crisis has disrupted some green initiatives which were ongoing before the pandemic. New Zealand had just set emissions targets in its Climate Change Response (Zero Carbon) Amendment Act 2019 and had planned to publish its first Emissions Reduction Plan, as mandated under the new Act, in December 2021. Consultation on the Emissions Reduction Plan was delayed due to COVID-19 restrictions, and the Plan will now be published in May 2022. Some predator control programmes scheduled for 2020 were delayed, or in one case cancelled due to COVID-19 restrictions.

New Zealand’s COVID-19 recovery efforts were successful in protecting the wellbeing of the population. The Government’s focus on health, employment and housing and longer-term reforms such as the Employment Insurance Scheme, may pay off in the future, as it puts New Zealanders in a better position to respond to the challenges ahead.

3. Data, measurement, and monitoring: How does your economy measure the impacts of economic shocks? Please provide some examples. Does it measure the coverage,

³⁶ New Zealand Government, *Infrastructure investment to create jobs, kick-start COVID rebuild*, <https://www.beehive.govt.nz/release/infrastructure-investment-create-jobs-kick-start-covid-rebuild>

³⁷ <https://www.beehive.govt.nz/release/budget-2022-boost-health-and-climate-action>

adequacy and impact of structural reforms implemented in response? How does it define and measure whether a policy is ‘green’? Please provide examples.

New Zealand’s Treasury uses the Living Standards Framework (LSF) to understand the drivers of wellbeing and to consider the broader impacts of our policy advice in a systematic and evidenced way. The framework draws on indicators representing the wellbeing of our people, our environment, our communities, and our finances and built infrastructure. A policy which supports all four aspects of wellbeing may be considered ‘green’. Statistics New Zealand is developing [Ngā Tūtohu Aotearoa – Indicators Aotearoa](#) to support the government’s ambition to use a wellbeing approach to strategic decision-making. The Treasury’s [LSF Dashboard](#) collates relevant indicators to support the Treasury’s staff in applying the LSF.

In 2020, the Public Finance Act (1989) was amended to require the Treasury to report periodically on the state of wellbeing in New Zealand, and the Government to report annually on its wellbeing objectives via the Budget.

The government analysed wellbeing and economic data through the COVID-19 pandemic, drawing on a range of sources, in particular the wellbeing supplement introduced into the Household Labour Force Survey (HLFS) in 2020. Survey results summarised in the [Wellbeing Outlook of Budget 2021](#) indicate that New Zealanders remained healthy, financially secure overall and well connected to others during the pandemic. The COVID-19 shock exacerbated some wellbeing challenges present before the pandemic, such as relatively high-income inequality and poor housing affordability.

Analysis of wellbeing indicators formed the basis for policy objectives in Budget 2021. For example, in terms of human capability, reported life satisfaction levels were lower for the unemployed. Physical capital indicators revealed a deficit in infrastructure investment and lack of adequate housing. These findings have provided the rationale for introducing an Unemployment Insurance Scheme and for the NZD \$3.8 billion investment in housing.

New Zealand also monitors progress towards emissions and climate adaption targets. Gross and Net emissions are reported annually by the Ministry for the Environment in New Zealand’s Greenhouse Gas Inventory. In May 2021 the Climate Change Commission provided the Government with advice on the first three emissions budgets (2022–25, 2026–30, 2031–35).³⁸ In 2024, the Climate Change Commission will produce a monitoring report, which will independently assess progress against the 2050 target and the first emissions budget. The Climate Change Response (Zero Carbon) Amendment Act 2019 also requires a National Climate Change Risk Assessment and National Adaptation Plan to be produced every 6 years. To provide access to the necessary data, the Act allows the Minister of Climate Change and the Climate Change Commission to request information on how policy and service delivery organisations are preparing for the impacts of climate change. In 2021, the Ministry for the Environment produced a summary of responses to the first of these information requests.³⁹

4. [Best practices](#): Among your economy’s structural reforms implemented in response to economic shocks in the past, discuss some green policies you assess have been implemented effectively. Please identify the top reasons for the effectiveness of these reforms, outlining any long-term impacts they had. Has the reform increased resilience in

³⁸ New Zealand Ministry for the Environment, *Emissions budgets and the emissions reduction plan*, <https://environment.govt.nz/what-government-is-doing/areas-of-work/climate-change/emissions-budgets-and-the-emissions-reduction-plan/>

³⁹ New Zealand Ministry for the Environment, *Adaptation preparedness: 2020/21 baseline*, <https://environment.govt.nz/assets/publications/FINAL-PDF-Adaptation-Preparedness-2020-21-Baseline-report.pdf>

your economy to future shocks? Does the reform have ongoing applicability to future shocks?

The removal of subsidies for New Zealand's agricultural sector in the 1980s has led to positive outcomes for the sector in the long term. Exposure to competition and external market forces cultivated greater innovation, productivity, and resilience within our agricultural sector. This experience has shown that in the face of an economic shock, it is best not to continue to prop up incumbent industries, but rather to facilitate the growth of new economic activities which could be more sustainable in the future. In today's context, a similar approach can be applied in removing support for emissions-intensive industries and facilitating the growth of new businesses which are responding to increasing demand for digital and green technologies.

Some of the government policies in the 1980s had a negative impact which has highlighted the importance of providing better support for the wellbeing of a community through a transition. This has led to the government to adopt a 'Just Transition' strategy to make the transition more fair, equitable and inclusive.

The earthquake recovery experience highlighted the need to co-create recovery plans with local communities and authorities. After the earthquakes struck, the Christchurch City Council was celebrated for its 'Share an Idea' process of public 'conversations' which solicited 106,000 ideas from 60,000 citizens, envisioning the central city's future. Drawing from this consultation, central government prepared the Christchurch Central Recovery Plan. One of the lasting criticisms of the process for developing the Christchurch Central Recovery Plan has been the perception that central government interfered with, and took over from, a local government-led initiative and failed to realise the public's desire for a cohesive, environmentally sustainable city.^{40, 41}

On the other hand, efforts to take a more collaborative approach have paid off in the long term. SCIRT with its collaborative approach, was awarded the Brunel Medal by the UK's Institute of Civil Engineers for excellence in civil engineering. In 2013 SCIRT, Christchurch City Council, Environment Canterbury and Beca won the New Zealand Planning Institute Best Practice Award for its collaborative approach to developing the global consent framework.⁴² The long-lasting impacts of collaboration with Ngāi Tahu have also been recognised as a key success of the recovery effort.

5. Action Plans: Considering the policy gaps, barriers and challenges your economy has in enabling a green response to economic shocks, what are your economy's short and medium-term plans to overcome them? If your economy has developed metrics and benchmarks to identify the appropriate policy responses and track progress, please provide details.

The proportion of funding directed towards fossil fuel energy since the beginning of the COVID-19 pandemic indicates that New Zealand still faces challenges in enabling a green response to economic shocks. In the near-term, New Zealand is developing reporting standards to ensure that the effects of climate change are routinely considered in investment decisions. In October 2021, New Zealand passed the Financial Sector (Climate-related Disclosures and Other Matters) Amendment Act 2021 which will require approximately 200 organisations,

⁴⁰ New Zealand Department of Prime Minister and Cabinet, *Whole of Government Report – Lessons from the Canterbury earthquake sequence*, <https://dpmc.govt.nz/news/whole-government-report-lessons-canterbury-earthquake-sequence>

⁴¹ Steve Matthewman and Hugh Byrd, *From "perfect green dream" to "total failure": The rise and fall of Christchurch's District Energy Scheme*, New Zealand Sociology 35(1) 2020

⁴² SCIRT, *The Value of SCIRT Final Report*, <https://ivm.org.uk/app/uploads/2020/04/2019-01-30-The-Value-of-SCIRT-1.pdf>

comprising large listed issuers, banks, insurers, and investment scheme managers to disclose climate-related information. Further information on this new legislation is provided in our case study.

To put a price on negative climate impacts and to ensure it continues to assist New Zealand in meeting its domestic and international climate targets, the government continues to reform New Zealand's Emissions Trading Scheme (ETS). In June 2020, the government reformed the ETS to phase out free industrial allocations of carbon units and lift the cap on the price of carbon. According to the new legislation, agricultural emissions are still exempt, but will be subject to a carbon price from 2025 onwards. Income generated from the scheme will be used to fund emissions reduction and climate adaption projects. In 2022, the Government established the Climate Emergency Response Fund, and allocated an initial NZD \$4.5 billion to this fund, based on the forecasted proceeds from the ETS over the next four years.

The Ministry for the Environment is also currently working with stakeholders to co-design Product Stewardship Schemes for six priority products, which will increase circular resource use and place responsibilities for managing end-of-life products on producers, importers and retailers rather than on communities, councils, neighbourhoods and nature.

Another barrier New Zealand is facing in enabling a green response to economic shocks is the risk that those already at a disadvantage will be left behind in an industrial transformation, as was seen in the 1980s. New Zealand has established a Just Transition Unit, which was expanded in Budget 2021, and the Future of Work Forum to build resilience in those communities most affected by economic change. Through these fora, the government will work together with business, unions, Māori, and affected communities in transition planning.

6. Regional cooperation: What role can regional cooperation and regional bodies such as APEC (but also other international bodies) play in understanding how to implement a green recovery from economic shocks? What are the areas for collaboration, or areas your economy would like to learn more about, on this topic? Does your economy consider that more regional cooperation could be valuable to better understand areas of a green recovery?

Regional bodies such as APEC can facilitate a green recovery through international regulatory cooperation. The development and adoption of international standards and guidelines, especially for emerging industries and technologies, can help consumers make informed choices that support a green recovery, and create an enabling environment for multinational corporations to introduce green products into new markets. Continued cooperation is essential for New Zealand. For example, we are currently developing a Climate-related Disclosure standard based on the recommendations of the international Task Force on Climate-related Financial Disclosures (TCFD) and are working with APEC to develop a low-carbon hydrogen standard for the region.

New opportunities for cooperation are likely to arise in other areas including emissions pricing. In the context of our updated Nationally Determined Contribution (NDC), New Zealand will prioritise domestic action, but we also expect to access offshore mitigation to meet our climate targets. The focus will be on partnerships in the Asia-Pacific to promote sustainable development and resilience in the region. ETS linking may be part of the portfolio of options that is developed.

PAPUA NEW GUINEA

1. Impact and challenges: Please answer the questions below with respect to two economic shocks that your economy has faced in the past.
 - a) Describe the economic shock.
 - b) What impacts did the economic shock have on your economy?
 - c) What sectors of your economy were most vulnerable to the economic shock?
 - d) Did your economy implement any green policy reforms in response to the economic shock? How did these reforms contribute to economic recovery?
 - e) What have been the long-term impacts of green reforms, and have they helped your economy become more resilient to future shocks?
 - f) How did existing structural policies, institutions and regulations allow you to adequately respond to the economic shocks?
 - g) Which demographics were hit hardest by the economic shock?

2015/2016 El Nino drought

- PNG suffered from drought and frost caused by the El Nino phenomenon which started in mid-2015 and ended in early 2016. This event disrupted food production and livelihoods as well as adversely affected economic activity.
- To negate these factors, the government adopted prudent fiscal policies to continue PNG's growth record and medium-term prospects. Those policies continued to address PNG's development agenda and insulate PNG from declining government revenues.
- A major impact on PNG's revenue came in the form of the Ok Tedi mine (one of PNG's largest copper, gold, and silver mine) standing down its workforce and halting production. Low water levels in the Fly River (which is located close to and used by the mine) saw Ok Tedi struggle to transport copper ore from their port to the mouth of the river.
- The 2015 Supplementary Budget contained the government's initial fiscal policy response to the deteriorating economic conditions through the inclusion of a number of targeted savings and additional revenue measures.
- The government estimated that 700,000 people lived in areas of high impact which meant food production was severely impacted and assistance was needed. Overall, communities demonstrated remarkable resilience and recovery, with food gardens, cash crops, and water sources recovering relatively well.
- While the emergency response was fairly swift, it was evident that assistance was and is needed for rural communities to mitigate against future shocks, particularly to re-establish food gardens, reduce ongoing water stress, and reduce the risk of health impacts from sanitation and water concerns. Geographically, remote and smaller islands, as well as the rural Highlands remain a challenge.

2018 Earthquake

- In February 2018, a 7.5 magnitude earthquake struck PNG, triggering landslides, burying people and houses, affecting water sources, and destroying crops. The government declared a state of emergency on 01 March for Hela, Southern Highlands,

and Western and Enga provinces. Hela and Southern Highlands Provinces were the worst affected.

- Some 544 000 people were affected with 270 000 in need of immediate humanitarian assistance. Access to clean drinking water, food, shelter, medicine, and health services were the immediate concerns. Damaged airfields, bridges and roads, coupled with security threats related to inter-communal violence, complicated the response in some affected areas. A third of all health facilities in Hela and Southern Highlands Provinces closed in the immediate aftermath of the earthquake.
- The declining trend in government revenues was and is being addressed through reforms under the Medium Term Revenue Strategy 2018-2022. Revenue increases are mainly due to growth in both mineral and non-mineral receipts. These results were achieved despite the earthquake which caused severe social and economic disruptions and dampened GDP growth significantly. These effects were mitigated by increased nameplate production from the PNG LNG Project and improved oil and gas prices.

2. COVID-19 policies and initiatives: Describe some policy initiatives or programmes your economy has implemented in response to the economic shocks resulting from the onset of COVID-19 (please include at least one green policy initiative or programme). What were the impacts of the structural reforms or policies? Did these reforms support a green recovery? How much did your economy invest, monetary and non-monetary, in green recovery policies? Were there obstacles in implementing green policy reforms and how were these overcome? Does your economy foresee green policies or programmes being implemented beyond the pandemic?

- Since the onset of the pandemic there have been a number of measures taken by the PNG government as a response to the impact of COVID-19 and to support economic recovery and growth. PNG's economic outlook was perceived to recover strongly from the devastating impact of the COVID-19.
- Greater attention is being placed on the non-resource sector in reference to PNG's economic outlook going forward as this area of the economy has the greatest impact on the livelihoods of majority Papua New Guineans. The broad objectives of the fiscal recovery and repair programme is to provide the platform for economic recovery and fiscal consolidation, while continuing with strategic capital formation necessary to sustain growth. In particular, the aim is to diversify the non-resource sector, expand the tax base and strengthen the efficiency of the delivery of public services.
- The government continues to increase investments in agriculture, tourism and SMEs that support 85 per cent of PNG's population. These sectors have been hit hard by the impact of the COVID-19 pandemic. Hence, recent Budgets have continued to provide stimulus to support these sectors. The government has also continued to support key capital programs introduced such as the Connect PNG and Special Intervention Programs that aim to reduce the cost of doing business and to connect and expand the economic corridors to stimulate economic growth while generating employment opportunities in rural communities.

3. Data, measurement, and monitoring: How does your economy measure the impacts of economic shocks? Please provide some examples. Does it measure the coverage, adequacy and impact of structural reforms implemented in response? How does it define and measure whether a policy is 'green'? Please provide examples.

- PNG National Budgets have produced two measures of economic performance: one focusing on real growth in the overall economy (Gross Domestic Product – GDP), the second focusing on the performance of the non-resource economy. These figures can be put into per capita terms (so taking account of population, which in PNG is currently averaging about 2.1% per annum) to get a better estimate for how the economy is growing per person in PNG.
- Currently PNG lacks a specific definition and measure for ‘green’ policies but it is expected that this will be pursued through the Inclusive Green Finance Policy (IGFP) Project that was initiated in 2021 with the support of the NZ government. It is expected that an official taxonomy will be developed to guide government agencies, financial institutions, and other private sector entities on which activities are considered ‘green’ and/or ‘inclusive’. This is also expected to assist government agencies to monitor, regulate, and promote green financial flows into and within the economy.
- Furthermore, the government has approved and launched the ‘Digital Transformation Policy’ and the Digital Government Act 2022 for PNG. The policy and act aims to create a government that puts people first, by serving its customers, empowering its employees, and fostering excellence. The policy will set the broad framework for digitization in the economy while the act aims to provide for digital government through the use of information and communication technologies and enable the streamlining, planning, coordination, development and implementation across the whole of government of digital services, digital infrastructure, digital skills and all other aspects of digital government and for related purposes. With such digital transformation there are new possibilities that can allow us to measure and track sustainability progress, optimize the use of resources, reduce greenhouse gas emissions, and enable a more circular economy.

4. Best practices: Among your economy’s structural reforms implemented in response to economic shocks in the past, discuss some green policies you assess have been implemented effectively. Please identify the top reasons for the effectiveness of these reforms, outlining any long-term impacts they had. Has the reform increased resilience in your economy to future shocks? Does the reform have ongoing applicability to future shocks?

‘Climate Resilience and Inclusive Green Growth’ is one of the key pillars of Papua New Guinea’s Development Strategy. Its importance is emphasized in ‘PNG Vision 2050’, ‘PNG Development Strategy Plan 2010-2030’, ‘National Strategy for Responsible Sustainable Development (StaRS)’, and ‘Medium Term Development Plan 2018-2022’. The government has set various targets to achieve goals such as reduced GHG emission, increasing power generation from renewable resources, and improved disaster monitoring, etc.

5. Action Plans: Considering the policy gaps, barriers and challenges your economy has in enabling a green response to economic shocks, what are your economy’s short and medium-term plans to overcome them? If your economy has developed metrics and benchmarks to identify the appropriate policy responses and track progress, please provide details.

- PNG with support from the NZ government has initiated the Inclusive Green Finance Policy (IGFP) Project in June 2021. It is aimed at achieving greater climate resilience and inclusive green growth in PNG. IGFP marks the first step towards green finance in PNG, thereby facilitating future efforts to monitor, regulate, and promote green finance flows. The goal of this policy is to increase and facilitate the flow of domestic and international funds and investments in a systematic manner towards business, projects, and initiatives

that are ‘inclusive’ and/or ‘green’. The three outputs to the IGFP will be a green taxonomy with a strong emphasis on financial inclusion, a diagnosis on the state of inclusive green finance in PNG, and an implementation roadmap.

- PNG’s Sustainable Development Goal 13 Roadmap consists of a set of 30 actions ranging from climate governance, energy, forestry, infrastructure, agriculture, minerals, health, biodiversity and tourism. These 30 sets of actions aim to be completed between 2020 and 2030 in order for PNG to meet SDG 13 and make progress across all 17 of the SDGs. It provides a path towards climate compatible development which will reduce the PNG’s vulnerability to climate change and contribute to global action on reducing greenhouse emissions. The roadmap is a product of an extensive mapping exercise where stakeholders and scientists were engaged to identify climate hazards and risks.

6. Regional cooperation: What role can regional cooperation and regional bodies such as APEC (but also other international bodies) play in understanding how to implement a green recovery from economic shocks? What are the areas for collaboration, or areas your economy would like to learn more about, on this topic? Does your economy consider that more regional cooperation could be valuable to better understand areas of a green recovery?

Observing that the preconditions for a green recovery differ between economies, a holistic approach is needed to assess each economy’s industrial mix and the capabilities and skills of its workforce. While some economies are considered ‘renewable resource rich’, others would be considered ‘fossil fuel importers’ and highly dependent. Economies in a regional setting would need to consider concrete green recovery approaches, with sufficient consideration given to those that depend heavily on fossil fuels and have weak balance sheets who may find the implementation of a green recovery quite challenging and less feasible.

PERU

1. Impact and challenges: Please answer the questions below with respect to two economic shocks that your economy has faced in the past.
 - a) Describe the economic shock.
 - b) What impacts did the economic shock have on your economy?
 - c) What sectors of your economy were most vulnerable to the economic shock?
 - d) Did your economy implement any green policy reforms in response to the economic shock? How did these reforms contribute to economic recovery?
 - e) What have been the long-term impacts of green reforms, and have they helped your economy become more resilient to future shocks?
 - f) How did existing structural policies, institutions and regulations allow you to adequately respond to the economic shocks?
 - g) Which demographics were hit hardest by the economic shock?

a) Describe the economic shock.

The spread of COVID-19 has generated a severe health and economic crisis. The arrival of COVID-19 has forced governments to implement confinement measures and mobility restrictions to control the advance of the pandemic. After the spread of the virus from Asia to other regions of the world such as Europe and America, most economies established total and/or partial quarantines, and limitations on service activities such as commerce, tourism and entertainment, prioritizing teleworking. However, as cases of infection and deaths from COVID-19 continued to rise in March, governments in more than 130 economies expanded and tightened social distancing and lockdown restrictions.

b) What impacts did the economic shock have on your economy?

In 2020, the crisis generated by the expansion of COVID-19 in Peru has had significant negative effects on economic activity. Indeed, the GDP was reduced 11.0% in 2020, mainly due to the sharp deterioration of the economy during the first semester of 2020 associated with the isolation measures and mandatory social immobilization to contain the spread of COVID-19. These measures affected both supply and demand, which resulted in a sharp contraction of the GDP in March (-17.7%) and April (-39.1%). However, as of May, the process of economic recovery has taken place at a higher speed. Thus, the GDP registered the first positive rate in December 2020 (1.1%), after registering its biggest drop in April. This recovery coincides with the process of reopening economic activities; in addition, the economic reactivation measures implemented by the Government such as the important fiscal boost through the Economic Plan against COVID-19.

c) What sectors of your economy were most vulnerable to the economic shock?

COVID-19 caused a significant supply shock, as the quarantines paralyzed the production of several economic sectors, especially in services (such as commerce, tourism, transport and education). Also, global supply chains were adjusted and there were cuts in the level of employment. Likewise, there was an abrupt contraction of aggregate demand, resulting in lower purchasing power of families; an adjustment in the expectations of economic agents; a contraction in external demand; and high volatility in financial markets. In particular, the emerging economies faced a sharp tightening of financial conditions due to an unprecedented capital outflow, depreciation pressures against the dollar and significant

falls in the prices of raw materials. In the medium and long term, it will affect productivity growth and generate an increase in trend unemployment – which would translate into a substantial increase in poverty and inequality.

- d) *Did your economy implement any green policy reforms in response to the economic shock? How did these reforms contribute to economic recovery?*
- e) *What have been the long-term impacts of green reforms, and have they helped your economy become more resilient to future shocks?*
- f) *How did existing structural policies, institutions and regulations allow you to adequately respond to the economic shocks?*

In general, governments worldwide have deployed different economic support measures to face the economic and social challenges generated by the COVID-19 pandemic. On the fiscal side, economies have deployed a set of fiscal measures aimed at dealing with the health emergency, and providing economic support and liquidity to the most affected companies and individuals. These measures include increased public spending on health and scientific research, tax relief, liquidity support through subsidies to households and businesses, specific support programs for the most affected sectors (eg tourism and transportation), additional transfers to sub-central governments, greater investment in infrastructure and government-backed guarantees for bank loans, mainly aimed at MYPE.

Peru has a long history of responsible fiscal management, which placed its public debt as one of the lowest among emerging economies at the end of 2019 (close to 27% of GDP). Therefore, Peru's strong fiscal and monetary institutions provide it with the resilience to respond to adverse events. In particular, Peru carried out an Economic Plan to mitigate the negative impacts of the pandemic on economic activity and the well-being of citizens. This plan was equivalent to about 21% of GDP (one of the largest among emerging economies) and had tax, public spending and liquidity elements (such as government guarantees); Likewise, it contemplated the phases of containment and reactivation, in order to face the emergency, provide support to families, companies and guarantee the functioning of the payment chain. The implementation of this response involved the exceptional and temporary suspension of fiscal rules, which guide the disciplined and prudent management of public finances at regular times, in order to flexibilize the use of the strengths accumulated in previous years in a context of high uncertainty.

- g) *Which demographics were hit hardest by the economic shock?*

The health and economic crisis has exacerbated the vulnerability of Latin America and the Caribbean, a region already characterized by deep inequality, high levels of poverty, and weak health and social protection systems. In addition, it has further highlighted socioeconomic inequalities and inequalities in access to health services and social protection. In particular, in Peru, as a result of the pandemic, poverty levels have increased from 20.2% of the population in 2019 to 30.1% in 2021; however, with the progressive reversal of the effects, it has recovered and in 2021, poverty reached 25.9%, but has not yet been reduced to its pre-crisis levels.

2. COVID-19 policies and initiatives: Describe some policy initiatives or programmes your economy has implemented in response to the economic shocks resulting from the onset of

COVID-19 (please include at least one green policy initiative or programme). What were the impacts of the structural reforms or policies? Did these reforms support a green recovery? How much did your economy invest, monetary and non-monetary, in green recovery policies? Were there obstacles in implementing green policy reforms and how were these overcome? Does your economy foresee green policies or programmes being implemented beyond the pandemic?

In order to counteract the effects of the pandemic, Peru has implemented an economic plan for more than 21% of GDP, which includes tax, public spending and liquidity measures, such as government guarantees for company loans (mainly SMEs) with the aim of support the chain of payments in the economy. This plan ranked as one of the largest among emerging economies due to Peru's macroeconomic and fiscal strength, which allowed for a broad fiscal response without compromising the sustainability of public finances. In addition, measures focused on public spending have continued, which were aimed at strengthening the health system, the acquisition of vaccines, support for vulnerable families through monetary subsidies, and a boost to the economy through the maintenance and construction of infrastructure (“Arranca Peru and Trabaja Peru”). Going forward, resources will continue to be directed towards public spending that mitigates the effects of the pandemic on the most vulnerable families (education, health, among others), and optimizing the management and execution of public investment, all under the continuity of responsible tax policies.

3. Data, measurement, and monitoring: How does your economy measure the impacts of economic shocks? Please provide some examples. Does it measure the coverage, adequacy and impact of structural reforms implemented in response? How does it define and measure whether a policy is ‘green’? Please provide examples.

4. Best practices: Among your economy’s structural reforms implemented in response to economic shocks in the past, discuss some green policies you assess have been implemented effectively. Please identify the top reasons for the effectiveness of these reforms, outlining any long-term impacts they had. Has the reform increased resilience in your economy to future shocks? Does the reform have ongoing applicability to future shocks?

5. Action Plans: Considering the policy gaps, barriers and challenges your economy has in enabling a green response to economic shocks, what are your economy’s short and medium-term plans to overcome them? If your economy has developed metrics and benchmarks to identify the appropriate policy responses and track progress, please provide details.

The Peruvian National Competitiveness and Productivity Plan: it is designed based on the National Competitiveness and Productivity Policy (PNCP). Although, this is not a plan designed in response to economic shocks, it establishes measures and goals for every priority policy objective of the PNCP for the following 10 years. The priority policy related to the environment is “Promoting environmental sustainability in the operation of economic activities”. In this context, it is important because considers the sustainability aspect and its influence in competitiveness, also considering a scenario with climate change and the importance of natural resources management (Priority objective. N°9).

The objective of the National Competitiveness and Productivity Plan is to serve as a link between the vision of Peru formulated and designed based on the PNCP and the implementation of the necessary policy measures to guide Peru’s reality towards that vision.

6. Regional cooperation: What role can regional cooperation and regional bodies such as APEC (but also other international bodies) play in understanding how to implement a green recovery from economic shocks? What are the areas for collaboration, or areas your economy would like to learn more about, on this topic? Does your economy consider that more regional cooperation could be valuable to better understand areas of a green recovery?

Regional cooperation platforms or bodies such as the APEC, AILAC and Alianza del Pacifico, among other spaces where economies can discuss and work together on a common agenda, play an important role in defining actions, commitments, and positions aligned with different economies, also considering similitudes and differences of every context. Also, it permits to exchange information and learning experiences. In this context, regional cooperation is already contributing to align concepts and positions about common challenges that our economies are facing at this moment, for example COVID -19 and economics crisis. One valuable point to discuss further could be the development of capacity within an economy to face the climate change effectively.

THE PHILIPPINES

1. Impact and challenges: Please answer the questions below with respect to two economic shocks that your economy has faced in the past.
 - a) Describe the economic shock.
 - b) What impacts did the economic shock have on your economy?
 - c) What sectors of your economy were most vulnerable to the economic shock?
 - d) Did your economy implement any green policy reforms in response to the economic shock? How did these reforms contribute to economic recovery?
 - e) What have been the long-term impacts of green reforms, and have they helped your economy become more resilient to future shocks?
 - f) How did existing structural policies, institutions and regulations allow you to adequately respond to the economic shocks?
 - g) Which demographics were hit hardest by the economic shock?

a) *Describe the economic shock.*

Climate change and **natural disasters** are two economic shocks with significant impact to the Philippines.

The Philippines ranks fourth in the Global Climate Risk Index (CRI)⁴³ in 2021, being highly vulnerable and most affected by the impacts of climate change⁴⁴ and extreme weather events⁴⁵. In the World Risk Report 2021⁴⁶, the Philippines ranks eighth among economies with highest disaster risk worldwide.

b) *What impacts did the economic shock have on your economy?*

The Philippines has experienced 317 climate-change/disaster-related events between 2000 and 2019, with annual average fatalities at 93 per 100,000 inhabitants and economic losses of about USD 3,179.12 million or 0.54 percent of Gross Domestic Product (GDP).⁴⁷

c) *What sectors of your economy were most vulnerable to the economic shock?*

The sectors most affected by disasters vary depending on the magnitude of the disaster, and the vulnerabilities and coping capacity of the areas affected. In the case of Typhoon Yolanda, one of the strongest typhoon that affected the economy, the following were the economic impact in various sectors:

⁴³ Global Climate Risk Index 2021. Germanwatch. https://germanwatch.org/sites/germanwatch.org/files/2021-01/cri-2021_table_10_countries_most_affected_from_2000_to_2019.jpg

⁴⁴ Climate change refers to long-term shifts in temperatures and weather patterns caused mainly by natural (e.g., variations in the solar cycle) or man-made activities (e.g., greenhouse gas emissions, etc.).

What is climate change? United Nations (UN): <https://www.un.org/en/climatechange/what-is-climate-change>

⁴⁵ The Philippines has experienced destructive typhoons (i.e., Typhoons Vamco/ Ulysses in 2020 and Rai/Odette in 2021) and other extreme weather events causing economic losses and loss of life, among others.

⁴⁶ World Risk Report (2021). World Risk Index 2021. Bündnis Entwicklung Hilft. Retrieved from <https://reliefweb.int/sites/reliefweb.int/files/resources/2021-world-risk-report.pdf>

⁴⁷ Germanwatch: https://germanwatch.org/sites/germanwatch.org/files/2021-01/cri-2021_table_10_countries_most_affected_from_2000_to_2019.jpg

Table 1. Effects of Typhoon Yolanda, per sector

Sector	Damages (in PHP Million)	Losses (in PHP Million)
Infrastructure ¹	9,584.60	2,614.19
Housing	2,358.74	3,177.33
Health	367.06	145.69
Education	2,385.02	2,896.76
Agriculture & Fisheries	18,851.85	24,582.46
Trade, Industry and Services	2,855.48	4,654.48
Tourism	46.12	30.53
Mining	80.17	263.43
Governance	2,521.54	1,349.19
Environment ²	547.49	3,045.55
TOTAL	89,598.07	42,759.63

Source: Post Disaster Needs Assessment Report

Notes: Infrastructure covers transportation, water, power, telecommunications, school buildings, health facilities, agriculture/irrigation facilities, and government buildings; Environment covers natural resources and effects to the environment

d) Did your economy implement any green policy reforms in response to the economic shock? How did these reforms contribute to economic recovery?

Various green policy reforms have been put in place to support sustainable economic growth and improve the Philippines' resiliency.

- Republic Act (RA) No. 9729 or Climate Change Act of 2009 aims to mainstream climate change in government policy formulation.
- RA 10771 or the Green Jobs Act of 2016 mandates the development of green skills and competencies required in a green economy.
- RA 11285 or the Energy Efficiency and Conservation Act aims to promote efficient utilization of energy and encourages adoption of energy efficiency and renewable energy technologies.
- The fuel excise tax reform under RA 10963 or the Tax Reform for Acceleration and Inclusion (TRAIN) seeks to make fuel taxation "pro-environment."
- The National Security Policy 2017-2022 calls for the enhancement of the security sector's capability for humanitarian assistance and disaster response, protection and preservation of the Philippines' ecosystems, and the promotion of the sustainable use of renewable energy, among others.
- The National Disaster Risk Reduction and Management Plan (NDRRMP) 2020-2030 lays down outcomes, strategies and activities that will contribute towards risk reduction, sustainable development, and climate resiliency.

- The National Climate Change Action Plan (NCCAP) 2011-2028 is the domestic framework strategy for climate change adaptation and mitigation.
- The Philippine Green Building (GB) Code requires buildings to comply with green measures.
- The Green Public Procurement (GPP) Program (EO 301) mandates all government departments, offices, and agencies to establish a Green Procurement Program.
- The Sustainability Reporting Guidelines for Publicly-Listed Companies⁴⁸ required the inclusion of sustainability report in companies' Annual Report.

International commitments to climate change⁴⁹, the Sustainable Development Goals (SDGs) and the Philippines' Long-Term Vision (Ambisyon 2040) are also incorporated into the Philippines' medium-term development plans.

- e) *What have been the long-term impacts of green reforms, and have they helped your economy become more resilient to future shocks?*

The aforementioned laws and policies contributed to the improvement of governance mechanisms that address climate change and disaster impacts by strengthening the policy environment and institutionalizing coordination mechanisms and assignment of responsibilities at all levels of government.

While the impact of the Philippine Green Jobs Act of 2016 have yet to be studied, the contribution of the green sub-sector is estimated at an average Gross Value Added (GVA) of PHP 2.6 trillion between 2016 and 2030.⁵⁰ Further, labor demand in the green subsector is expected to grow by 2.7 percent, slightly higher than the 2.1 percent growth for the conventional subsector.

- f) *How did existing structural policies, institutions and regulations allow you to adequately respond to the economic shocks?*

RA 10821, or the Children's Emergency Relief and Protection Act Before, During, and After Disasters and Emergencies, strengthens the mandate of local government units to construct adequate evacuation centers. Further, the Department of Education's (DepEd) Disaster Risk Reduction and Management Service (DRRMS) was created in 2011 to ensure safety and learning continuity amidst disasters; institutionalize disaster risk reduction and management, climate change adaptation and education in emergencies; and strengthen the education system amidst natural and human-induced hazards.

- g) *Which demographics were hit hardest by the economic shock?*

While climate change and natural disasters impact the entire population, the hardest hit by these economic shocks are those residing in hazard-prone areas such as coastal communities, flood plains, low-lying areas, areas with unstable slope, fault lines, and in volcanic slopes. Within this population, the poor suffer the most impact given their general lack of financial resources to cope with economic shocks.

⁴⁸ Securities and Exchange Commission (SEC) Memorandum Circular No. 4, Series of 2019

⁴⁹ i.e., reduction of greenhouse gas (GHG) emissions of about 70 percent by 2030

⁵⁰ Abrigo, M.R.M. (2018) Greening the Philippine Employment Projection Model Baseline Results.

2. COVID-19 policies and initiatives: Describe some policy initiatives or programmes your economy has implemented in response to the economic shocks resulting from the onset of COVID-19 (please include at least one green policy initiative or programme). What were the impacts of the structural reforms or policies? Did these reforms support a green recovery? How much did your economy invest, monetary and non-monetary, in green recovery policies? Were there obstacles in implementing green policy reforms and how were these overcome? Does your economy foresee green policies or programmes being implemented beyond the pandemic?

The COVID-19 pandemic has resulted in the increased volume of infectious health care wastes, solid wastes from packaging materials from delivery of food and other essential supplies, and food waste due to spoilage of highly perishable commodities during restrained mobility. In response, the Philippine government implemented measures and strategies to ensure proper waste management.⁵¹

The government also launched the Urban Agriculture and Plant Plant Plant Programs aimed to promote community gardening/urban agriculture to mitigate food insecurity and diversify sources of livelihood in urban communities.⁵²

Other non-“green” COVID-19 policies and initiatives include:

- Republic Act 11494, or the Bayanihan to Heal as One Act (Bayanihan I), provided financial aid and support to households and displaced workers, and resources to strengthen health system of the Philippines.
- RA 11519, or the Bayanihan to Recover as One Act (Bayanihan II) provided additional health-related interventions, financial support to vulnerable households, assistance to workers and businesses in critically impacted sectors, and capital infusion to government financial institutions and credit guarantees.
- RA 11525 or the COVID-19 Vaccination Program Act of 2021 established a COVID-19 National Vaccine Indemnity Fund to be used to fund compensation for any person who had adverse event following immunization

3. Data, measurement, and monitoring: How does your economy measure the impacts of economic shocks? Please provide some examples. Does it measure the coverage, adequacy and impact of structural reforms implemented in response? How does it define and measure whether a policy is ‘green’? Please provide examples.

Economic impacts of disaster events caused by natural hazards are determined through a Post-disaster Needs Assessment (PDNA). The PDNA is a multidisciplinary approach in assessing the impacts of disaster, including the identification of recovery and reconstruction needs. Its purpose is two-fold: (i) to estimate short term interventions that are required to initiate recovery from the damages and losses; (ii) and to determine the financial requirements of programs and projects to achieve overall post disaster recovery, reconstruction and risk management. It contains assessment of productive, social, and infrastructure sectors, as well as cross sectoral concerns (i.e., governance, macroeconomy, environment). The National Economic and Development Authority spearheads the macroeconomic assessment of the PDNA, which

⁵¹ These include the following: i) issuance of special permit to transport hazardous wastes within the quarantine period; guidelines on the hazardous wastes management during the extended enhanced community quarantine period; utilization of online permitting systems to process and issue permits and clearances relevant to hazardous waste management (e.g., hazardous waste manifest system, clearance for import of recyclable materials containing hazardous substance; and guidelines on the Management of Health Care Wastes in Health Facilities

⁵² DA (02 July 2021). DA intensifies urban agri through community gardening. Retrieved from <https://www.da.gov.ph/da-intensifies-urban-agri-through-community-gardening/>

includes macroeconomic analyses of disaster impacts based on pre- and post-disaster projections of economic performance.

Concerned agencies also monitor and track the impact of economic shocks in their specific sectors. COVID-19 data is monitored daily by the Department of Health and the Inter-Agency Task Force for the Management of Emerging Infectious Diseases, which serves as the basis for policy decisions issued during the pandemic.

4. Best practices: Among your economy's structural reforms implemented in response to economic shocks in the past, discuss some green policies you assess have been implemented effectively. Please identify the top reasons for the effectiveness of these reforms, outlining any long-term impacts they had. Has the reform increased resilience in your economy to future shocks? Does the reform have ongoing applicability to future shocks?

The following initiatives showcase some of the best practices in implementing the green policy reforms and contributing to the greening of product designs and economic activities in the Philippines:

- *Green Public Procurement (GPP) in Quezon City.* Quezon City is a highly urbanized city and the most populous city in the Philippines. It prides itself as one of the pioneer cities promoting eco-governance as reflected in its implementation of policies towards environmental protection and climate change. Quezon City was a pilot site for the implementation of the GPP program, which aimed to promote sustainability in the local government procurement process by increasing preference for green products and patronage for green suppliers. Aside from procurement of eco-labeled products, the initiative also facilitated development of standard environmental criteria to be incorporated in the technical specifications of commonly procured products (e.g., bulbs, ballast, steel cabinets, tables, chairs, copiers, personal computers, and janitorial services).
- *Lighting and Appliance Products with Energy Label.* Importers, manufacturers, distributors, and dealers of household appliances, lighting products, motor vehicles and other energy-consuming equipment are expected to comply with the following requirements of the Philippine Energy Standards and Labeling Program (PESLP) before sale of their products will be allowed: (a) mandatory attachment of energy label, which indicates the energy efficiency of the product; (b) minimum energy performance as set by the Department of Energy; and (c) other performance requirements for specific product types. This labeling scheme informs consumers on which products to patronize based on efficiency rating.
- *Products awarded with The National Ecolabelling Programme-Green Choice Philippines (NELP-GCP) seal.* Various companies have been awarded with the eco-labelling seal for their products that were adherent to the criteria for environmentally-preferable products to guide consumers and institutions in their purchasing decisions. Products that have been granted the NELP-GCP Seal of Approval belong to the following categories: laundry detergent, cement, natural infill material, engine oil, ceramic tile, water-based paint, LED light, paper hand towel, tissue papers, induction lamp, electronic ballast, organic liquid disinfectant, fiber cement board and photocopier.

- *Buildings Certified under the Building for Ecologically Responsible Design Excellence (BERDE) Rating System.* BERDE is a voluntary green building rating system developed by the Philippine Green Building Council (PhilGBC), which is a member of the World Green Building Council (WorldGBC). The Core Framework of BERDE defines the essential characteristics in developing a green building project such as: management, use of land and ecology, energy efficiency and conservation, water efficiency and conservation, waste management, green materials, transportation, indoor environment quality and emissions. To be certified by BERDE, projects must undergo formal assessment, rating, and final certification. BERDE-certified buildings in the Philippines include: the Net Metropolis Building and the Laguna Lake Development Authority Building.

5. Action Plans: Considering the policy gaps, barriers and challenges your economy has in enabling a green response to economic shocks, what are your economy's short and medium-term plans to overcome them? If your economy has developed metrics and benchmarks to identify the appropriate policy responses and track progress, please provide details.

- **The Philippine Action Plan for Sustainable Consumption and Production (PAP4SCP)**

Prior to the pandemic, the Philippine Government has already formulated the Philippine Action Plan for Sustainable Consumption and Production (PAP4SCP) to steer sustainable practices across sectors. With the COVID-19 pandemic, the PAP4SCP provides a foundation to facilitate green recovery and enhance resiliency against future health-related diseases.

The PAP4SCP builds on the existing green policy reforms in the Philippines and identifies programmatic set of actions over the short- (2021-2022), medium- (2022-2030), and long-term (2030-2040). It includes key strategies geared towards having more Filipino consumers and producers prefer green goods and services. These cover efforts to:

- institutionalize natural capital accounting,
- conduct carrying capacity assessments,
- enhance eco-labelling and green procurement programs,
- pursue green and innovative technologies and business models,
- scale-up sustainability reporting for the private sector to report and assess their contribution to sustainable development
- support sustainable and efficient use of natural resources
- improve waste management system by (a) applying circular economy approaches (e.g., urban mining to recover metals from e-waste); developing alternatives to single-use plastics; developing life cycle analysis (LCA) program to determine a product's environmental impacts; and establishing extended producer responsibility (EPR) scheme to make producers/manufactures responsible for the disposal and treatment of post-consumer products.

- **Sustainable Finance Frameworks and Sustainable Finance Roadmap**

In line with increasing climate-related risks, as well as the increasing demand for sustainable finance globally and locally, the government adopted the Sustainable Finance Frameworks (SFF) and the Sustainable Finance Roadmap (SFR).

The Bangko Sentral ng Pilipinas' (BSP) SFF⁵³ aims to safeguard the stability of the financial system against the potentially significant and protracted impact of climate change and other environment-related risks. The SFF outlines responsibilities bank management should undertake such as promoting a culture that fosters environmentally and socially responsible business decisions, as well as adopting an Environmental and Social Risk Management System.

The BTr's SFF⁵⁴ sets out the framework for the development of green, social and sustainability bonds to finance green and social projects. Proceeds raised under this Framework will be used to support projects that reflect the Philippines' commitments under the United Nations Sustainable Development Goals (UN SDGs), in line with the Philippine Development Plan ("PDP") 2017-2022 and Public Investment Program ("PIP") 2017-2022. The issuance of sustainable financing instruments will additionally support the Philippines' climate change commitments under the National Framework Strategy on Climate Change (NFSCC), including the Philippine Nationally Determined Contribution (NDC) in accordance with UN objective to reduce greenhouse gas emissions by 75% by 2030.

Meanwhile, the Sustainable Finance Roadmap (SFR)⁵⁵ sets out the foundation to mainstream sustainable finance in the Philippines. **The SFR will address policy and regulatory gaps related to sustainable investments and sustainable financing.**

- **The Updated Philippine Development Plan (PDP) 2017-2022** includes short/medium-term strategies to address challenges related to climate change and disasters, such as in Chapter 10: Human Capital Development Towards Greater Agility, Chapter 11: Ensuring Food Resiliency and Reducing Vulnerabilities of Filipinos, Chapter 12: Building Safe, Resilient, and Sustainable Communities, and Chapter 20: Ensuring Ecological Integrity, Clean and Healthy Environment.
- The Post Disaster Shelter Recovery Framework (PDSRF) will capacitate the Philippines in ensuring full and timely recovery of households and communities affected by natural disasters. The framework will also enable improved coordination among government and the private sector, optimize the use of resources, align various policies, and reduce the impact of future disasters. Local government units (LGUs) can learn and adopt best practices on disaster risk reduction and management of other LGUs (i.e., Pasig City, Marikina, Albay) in using multi-hazard maps, developing databases of possible populations that may be affected, and building additional evacuation sites in the community that incorporates health standards, among others.

6. Regional cooperation: What role can regional cooperation and regional bodies such as APEC (but also other international bodies) play in understanding how to implement a green recovery from economic shocks? What are the areas for collaboration, or areas your economy would like to learn more about, on this topic? Does your economy consider that more regional cooperation could be valuable to better understand areas of a green recovery?

⁵³ BSP Circular 1085 s. 2020, which was released in April 2020, set out broad expectations on the integration of sustainability principles in the corporate governance, risk management systems, business strategies and operations of banks. Meanwhile BSP Circular 1128 s. 2021 that was released in November 2021 set out granular expectations on the integration of climate change and environmental and social risks in the credit and operational risk management frameworks of banks.

⁵⁴ https://www.treasury.gov.ph/?page_id=43119

⁵⁵ launched in October 2021 by the Philippines Inter-Agency Technical Working Group for Sustainable Finance (ITSF)

APEC can provide a platform to facilitate cooperation in the form of technical assistance that will support economies in accelerating their implementation of sustainable consumption and production, including circular economy strategies. In particular, domestic capacities need to be strengthened with respect to the use of innovative technologies, including digital and smart infrastructures, to improve resource-use efficiency and enhance environment and natural resource monitoring. Moreover, to facilitate changes in behavior, pilot testing and replication of circular economy and other sustainable business models will be critical, including those related to eco-labelling, sustainability certifications, and design for recycling.

APEC can also provide technical assistance and capacity building in the effective implementation of the Philippines' sustainable finance frameworks and roadmap.

RUSSIA

1. Impact and challenges: Please answer the questions below with respect to two economic shocks that your economy has faced in the past.
 - a) Describe the economic shock.
 - b) What impacts did the economic shock have on your economy?
 - c) What sectors of your economy were most vulnerable to the economic shock?
 - d) Did your economy implement any green policy reforms in response to the economic shock? How did these reforms contribute to economic recovery?
 - e) What have been the long-term impacts of green reforms, and have they helped your economy become more resilient to future shocks?
 - f) How did existing structural policies, institutions and regulations allow you to adequately respond to the economic shocks?
 - g) Which demographics were hit hardest by the economic shock?

Russia's GDP fell by 3% in 2020 compared to larger contractions of 3.8% in the world economy. Hit hardest were retail sales, consumer services and catering sector. In 2021, Russia's GDP growth restored at 5.2% level. Several factors helped Russia perform relatively better. Among them are Russia's sizeable fiscal buffers and supportive monetary policy. This allowed for a substantial countercyclical fiscal response (about 4.5% of GDP). Russia's steps were primarily aimed at preserving the income of the population, supporting business and reducing its costs, and assistance to the most affected economic sectors, regions, remote and rural areas.

In order to ensure the growth of Russia's economy, the National Economic Recovery Plan until December 2021 was implemented, which focused on supporting the most vulnerable groups of the population and small businesses, strengthening investment activity, increasing exports and ensuring the sustainability of healthcare institutions. The overall government assistance to the economy recovery amounted to more than 60 billion US dollars. To stimulate economy and employment, the government of the Russian Federation has implemented various policies and measures, including fiscal and monetary ones, MSME support and social payments. For example, fiscal policy measures included consumer loan and mortgage holidays, temporary stop debt servicing, a 3-6 month deferral on insurance contributions and a temporary deferral of rents for leases of state-owned or municipal properties.

As for social measures, substantial support was provided to families with low income including subsidies and support to families with children aged 3-16 years old. In order to maintain stability of medical assistant Russia made a significant contribution to the healthcare system: 47.5 billion rubles (640 million US dollars) were provided to ensure the health of hospitals and clinics. More than 10 billion rubles (140 million US dollars) were allocated for incentive payments to health staff. To support vulnerable groups of people and to prevent further spread of pandemic Russia developed a bunch of effective COVID-19 vaccines, including Sputnik-V and Sputnik-Light.

Russia's pre-pandemic advances in digitization and climate change regulation also paid off and enabled Russian society to operate reasonably effectively during pandemic shocks. In 2020, federal laws entered into force in Russia, which made possible to implement remote working solutions and conduct remote interaction between employees and employers, including in terms of maintaining electronic employment history, concluding and storing employment contracts, and introducing electronic HR workflow, carrying out biometric identification of recipients of notary services.

To support most vulnerable groups of citizens, especially in remote and rural areas Russia has actively used technological initiatives and digital solutions:

- multifunctional centers and centers “My Business” are successfully operating in all 85 regions of Russia. They allow our citizens to get more than 100 types of electronic services in a “single window” format.
- mobile bank offices provide financial services in remote and rural areas.
- portative laboratories have been launched, a number of telemedicine mobile applications are successfully functioning.
- in the sphere of education, there is a number of digital platforms that include a wide pool of online courses, including from the top leading universities.

Strategy of Socio-Economic Development of Russia with a low level greenhouse gas emissions until 2050 has become an important step for the Economy, having set the goal of reducing emissions (so that to enable carbon neutrality by 2060). In addition, The National Plan for Adaptation to Climate Change is being implemented, and Russia is preparing more detailed plans for adapting sectors of the economy to climate change, global energy transition and potential further economic shocks.

A successful transition requires broader diversification of assets of the economy – including human capital, renewable natural capital, and a shift to “green” produced capital. Resources raised from carbon pricing can support this ambition, but just as important will be investing in softer assets, such as institutions, governance, innovation and entrepreneurship. This would be part of a broader reform agenda to enable the emergence of a more dynamic, competitive, and innovative private sector to take the leading role in creating an internationally competitive low-carbon Russian economy.

2. COVID-19 policies and initiatives: Describe some policy initiatives or programmes your economy has implemented in response to the economic shocks resulting from the onset of COVID-19 (please include at least one green policy initiative or programme). What were the impacts of the structural reforms or policies? Did these reforms support a green recovery? How much did your economy invest, monetary and non-monetary, in green recovery policies? Were there obstacles in implementing green policy reforms and how were these overcome? Does your economy foresee green policies or programmes being implemented beyond the pandemic?

As mentioned above, in order to ensure economic growth, the Government adopted the National Economic Recovery Plan until December 2021, focused on supporting the most vulnerable groups of the population and small businesses, strengthening investment activity, increasing exports and ensuring the sustainability of healthcare institutions.

As part of the green policy response and measures to outline the framework for environmentally sustainable recovery, the Federal law “On greenhouse gas emissions limitation” was adopted (signed July, 2 2021 № 296-FZ). The document ensures mandatory GHG emissions reporting for large emitters, a framework for voluntary GHG emissions reporting, and a system of voluntary emissions reductions and removals projects and a carbon offset market.

Meanwhile Russia is advancing the following instruments:

- The first regional cap-and-trade emissions trading system (ETS) experiment is being prepared for launch - Sakhalin region. Russia expects to achieve carbon neutrality in this region by the end of 2025 - the draft federal law has been submitted to the Government, a detailed program of the experiment is being formed.

- Russia is exploring potential for the generation and certification of carbon-free and low-carbon electricity (“green certificates scheme”). Together with the implementation of climate projects, such certificates will allow interested companies to reduce the carbon footprint of products in a verified way.
- Domestic taxonomy of sustainable, including “green” and adaptation projects has been approved. The Moscow Exchange has already issued about 30 billion rubles (450 mln US dollars) of green bonds, while their volume is predicted to reach 250-300 billion rubles (4 - 4,5 bln US dollars).

3. Data, measurement, and monitoring: How does your economy measure the impacts of economic shocks? Please provide some examples. Does it measure the coverage, adequacy and impact of structural reforms implemented in response? How does it define and measure whether a policy is ‘green’? Please provide examples.

One of the effective tools of assessing the coverage and adequacy of structural reforms is the regulatory impact assessment (RIA), introduced in the practice of decision-making since 2010. The institute of RIA allows to treat systemically the processes of introduction, changes and cancellation of legal norms regulating economic activity, and, as a result, to provide a significant increase in the quality of regulation and predictability and validity of possible changes in the regulatory framework of economic activity.

The key objectives of the RIA procedure are:

- calculation of the benefits and costs of subjects of business and other economic activities, as well as the state associated with the introduction of new regulation;
- assessment of the impact of regulation on the business climate and investment attractiveness of a economy or a region, competition and market structure;
- ensuring the selection of the most effective solution to the problems;
- reduction of risks associated with the introduction of new regulation and increase of public and business confidence in the decisions taken by the government.

Recent years’ areas of improvement of the mechanism include: extension of the subject area of RIA procedures, optimization of RIA mechanisms at different stages, implementation of the “regulatory guillotine” mechanism, implementation of ex post evaluation.

The tool is not prejudiced to particular spheres and thus equally covers environmental issues.

4. Best practices: Among your economy’s structural reforms implemented in response to economic shocks in the past, discuss some green policies you assess have been implemented effectively. Please identify the top reasons for the effectiveness of these reforms, outlining any long-term impacts they had. Has the reform increased resilience in your economy to future shocks? Does the reform have ongoing applicability to future shocks?

As of now, the Government hand in hand with businesses implements a number of programs and events with a view to provide increase in quality of living standards, infrastructure development, improvement of ecological situation, technological modernisation.

Russia achieved the voluntary goal set in 2013 limiting emissions at 75% of 1990 level by 2020. The economy is a global leader in terms of cumulative emissions reductions since 1990 (over 40 bn tons of CO₂ equivalent, comparable to all global emissions in a single year) and real emissions reductions since 1990 (-49% by 2019).

This is the result of a substantial reconstruction of the Russian industry and energy sectors. About 40% of the Russian energy balance is made up of low-emissions energy including nuclear one. In particular, nuclear energy is currently the largest source of green energy in Russia – by end 2020 nuclear power plants provided power generation amounting to 215,75 kWh or 20,3% of the total volume of domestic electricity generation. All in all, the Russian design nuclear power plants save about 213 mln tons of CO₂ equivalent per year.

There is substantial room for enhancing removals to offset emissions in those industries where there are still no technological solutions to reduce emissions or such solutions are so expensive that their mass introduction is difficult (at least for now). In respective Strategy 2050, Russia set the task to determine on the basis of objective and instrumental methods the current removals of forests, swamps, soils, coastal ocean zones and other ecosystems, and also the potential for increasing the removals capacity of these ecosystems. This is necessary for the development of innovative nature-based solutions that will be aimed at preserving the climate. Preliminary calculations show that Russia's potential can reach an unprecedented 2-2.5 billion tons of CO₂ equivalent per year or even more (as of now – 0,6 billion tons of CO₂ equivalent per year).

Amidst growing demand for ESG financial assets and ESG disclosures constantly evolving, Russia developed the taxonomy defining criteria for green and adaptation projects. The taxonomy is expected to facilitate efficient capital allocation and help track sustainable finance flows to be able to measure them and take a policy action such as setting incentives.

5. Action Plans: Considering the policy gaps, barriers and challenges your economy has in enabling a green response to economic shocks, what are your economy's short and medium-term plans to overcome them? If your economy has developed metrics and benchmarks to identify the appropriate policy responses and track progress, please provide details.

Targets at economy-wide level:

In terms of the accumulated volume of emission reductions since 1990 (more than 40 bln tons of CO₂ equivalent, comparable to the annual emissions of all economies of the world) and the actual reduction in emissions since 1990 (-49% by 2019) Russia is the world leader.

- Target by 2030 – reduction by 70% from the level of 1990. The target for 2030 is included in the first economy-wide determined contribution of the Russian Federation to the implementation of the Paris Agreement (posted on the official portal of the UNFCCC in November 2020)
- By 2050 – reduction by 60% from the level of 2019 and by 80% from the level of 1990. Net emissions for 2021-2050 should not exceed the EU level. Further implementation of this scenario will allow Russia to achieve carbon neutrality by 2060. (Strategy of socio-economic development of Russia with a low level greenhouse gas emissions until 2050)
- By 2060 – achieve carbon neutrality
- Mandatory emission reporting for large emitters (initially for organizations with emissions of more than 150 thousand tons of CO₂ equivalent per year (2023), starting from 2024 - more than 50 thousand tons) (Federal Law, July 2021).

All emission reduction targets outlined into following domestic regulatory policy/plans:

- Strategy of Socio-Economic Development of Russia with a low level greenhouse gas emissions until 2050 (Government Decree, 01.11.2021)
- Federal Law “On limiting greenhouse gas emissions” (02.07.2021, № 296-FZ);

- Presidential Decree “On reduction of greenhouse gas emissions” (04.11.2020, № 666)
- Federal Law on domestic regional experiments on the elaboration of greenhouse gas emission trading systems (at final stage of approval). The first region of implementation is the Sakhalin Region. It is expected to achieve carbon neutrality in this region by the end of 2025.

Challenges to overcome:

inadequate international cooperation on the climate agenda, lacking global consensus on green taxonomy, pressure on the principle of technological neutrality, non-unified methodologies to monitoring and counting emissions, need to accurately balance environmental and socio-economic development policies, need for additional investments.

6. Regional cooperation: What role can regional cooperation and regional bodies such as APEC (but also other international bodies) play in understanding how to implement a green recovery from economic shocks? What are the areas for collaboration, or areas your economy would like to learn more about, on this topic? Does your economy consider that more regional cooperation could be valuable to better understand areas of a green recovery?

As has been demonstrated by Russia’s recent projects, including the ones on stocktaking carbon pricing initiatives and analysis of practices regarding flexible work arrangements, participation of international organizations’ representatives helps to improve understanding of particular economic issues. Having prominent expertise, OECD, IMF, ADB and others are invaluable contributors to discussions aimed at revealing both risks and opportunities of the matters under consideration. They may offer methodologies that proved effective, databases, analytical tools and even conclusions that may be tested on their applicability for the region.

At the same time, it is vital to consider non-APEC integration undertakings. Since APEC remains an incubator of ideas, it is critical to take into account experiences of diverse integration blocks. For instance, partners may benefit from the EAEU competence in terms of trade regulation, investments, competition, digitalisation, energy and industrial development.

In addition, we find it important to enhance communication with business community of the APEC in order to shape the sub-fora’s agenda in the most efficient and relevant manner.

Among the topics of our interest:

- convergence of approaches towards verification of GHG emissions reports and emissions reductions and removals projects, definition of carbon footprint and benchmarking for sectors/trade items
- mutual recognition of carbon credits from climate projects and accreditation services
- implementation of up-to-date energy effective and carbon-neutral technologies in frames of joint climate projects
- unleashing green finance and investment agenda, linking taxonomies
- further cooperation on carbon pricing mechanisms.

SINGAPORE

1. Impact and challenges: Please answer the questions below with respect to two economic shocks that your economy has faced in the past.
 - a) Describe the economic shock.
 - b) What impacts did the economic shock have on your economy?
 - c) What sectors of your economy were most vulnerable to the economic shock?
 - d) Did your economy implement any green policy reforms in response to the economic shock? How did these reforms contribute to economic recovery?
 - e) What have been the long-term impacts of green reforms, and have they helped your economy become more resilient to future shocks?
 - f) How did existing structural policies, institutions and regulations allow you to adequately respond to the economic shocks?
 - g) Which demographics were hit hardest by the economic shock?

2008 Global Financial Crisis

- a) *Describe the economic shock.*

The Global Financial Crisis in 2008 was an economic shock that affected Singapore. It started as a US sub-prime mortgage crisis in 2007, but quickly evolved into a global financial and economic crisis which brought about the failure of several large financial institutions. This led to increased risk aversion, tightening of credit, collapse in equity prices, and a fall in global trade.

- b) *What impacts did the economic shock have on your economy?*

In the fourth quarter of 2008, the Singapore economy contracted for the third consecutive quarter by 2.3% on a seasonally-adjusted annualised quarter-on-quarter basis. For 2008 as a whole, real GDP grew by 1.9%, compared with 9.0% in 2007.

The collapse in external demand adversely affected our exports. In 2008, non-oil domestic exports (NODX) fell by 7.8%. The weak economic prospects and heightened risk aversion also negatively affected foreign direct investment (FDI) inflows. FDI inflows into Singapore grew at a relatively slower pace of 9.4% in 2008, compared to the 25.9% recorded in 2007.

Conditions in the labour market also deteriorated. Total employment in Singapore grew by 21,300 in the fourth quarter of 2008, representing less than half the gains of 55,700 in the previous quarter. Redundancies nearly tripled from 3,180 in the third quarter of 2008 to 9,410 workers in the fourth quarter of 2008. For the whole of 2008, a total of 16,890 workers were made redundant.

- c) *What sectors of your economy were most vulnerable to the economic shock?*

Sectors dependent on external demand were especially vulnerable to the decline in global confidence. For example, the manufacturing sector contracted by 4.2% in 2008, a reversal from the growth of 5.9% achieved in 2007. By contrast, the impact of the global economic slowdown on our services sector was more moderate. Services producing industries expanded by 4.6% in 2008 compared to the strong growth rate of 9.7% recorded in 2007.

The slowdown in growth was seen across most services industries, with wholesale & retail trade, accommodation, and finance & insurance being the worst affected.

Given our financial institutions' relatively lower exposure to distressed assets and strong fundamentals, Singapore's banks largely escaped the direct impact of the global financial shock. Instead, the impact was mainly limited to effects from the fall in asset prices due to dampened market sentiments.

Sectors dependent on external demand were especially vulnerable to the decline in global confidence. For example, the manufacturing sector contracted by 4.2% in 2008, a reversal from the growth of 5.9% achieved in 2007. By contrast, the impact of the global economic slowdown on our services sector was more moderate. Services producing industries expanded by 4.6% in 2008 compared to the strong growth rate of 9.7% recorded in 2007. The slowdown in growth was seen across most services industries, with wholesale & retail trade, accommodation, and finance & insurance being the worst affected.

Given our financial institutions' relatively lower exposure to distressed assets and strong fundamentals, Singapore's banks largely escaped the direct impact of the global financial shock. Instead, the impact was mainly limited to effects from the fall in asset prices due to dampened market sentiments.

d) How did existing structural policies, institutions and regulations allow you to adequately respond to the economic shocks?

Singapore's tripartism – collaboration among unions, employers and the Government – allowed for the smooth rollout of skills renewal and job redesign programmes to assist retrenched workers and the unemployed. For example, the Skills Programme for Upgrading and Resilience (SPUR) was launched. SPUR brought together a full range of skills upgrading programmes available in our existing continuing education & training (CET) system with enhanced financial support for both companies and workers.

To stimulate bank lending and give businesses easier access to credit, the Government introduced or enhanced several credit schemes. Examples include the Bridging Loan Programme, the Loan Insurance Scheme and the Local Enterprise Finance Scheme. Some of these schemes were further enhanced as part of the Special Risk-Sharing Initiative (SRI) introduced by the Government during Budget 2009. Some 142,000 companies, representing 99.7% of all enterprises based in Singapore, were eligible for these schemes.

Additionally, during Budget 2009, the Government unveiled a Resilience Package totalling S\$20.5 billion. In addition to stimulating bank lending via the SRI, key initiatives included preserving jobs for Singaporeans through the Jobs Credit Scheme (JCS), enhancing business cashflow and competitiveness, supporting households, and boosting infrastructure. In particular, the JCS gave businesses a significant incentive to preserve jobs during the downturn, by providing employers with a 12% cash grant on the first S\$2,500 of each month's wages for each local employee on their Central Provident Fund payroll.

e) Which demographics were hit hardest by the economic shock?

Apart from residents aged 50 & over, all other age groups experienced a higher unemployment rate in 2008 compared to a year ago. By educational qualification, residents

with “Below Secondary”, “Post-secondary (non-tertiary)”, and “Degree” education experienced an increase in their unemployment rates in 2008 compared to 2007.

2020 COVID-19 Shock

Q1

a) *Describe the economic shock.*

The COVID-19 pandemic caused massive global economic disruptions in 2020. To-date, the virus has infected more than 460 million people worldwide and resulted in more than six million deaths.⁵⁶ Many economies were forced to implement strict public health measures, including lockdowns and border closures, to contain the spread of the virus. This led to significant disruptions in global economic activity, as well as changes in consumption and work patterns. In 2020, global GDP fell by 3.1% according to the International Monetary Fund (IMF).⁵⁷

b) *What impacts did the economic shock have on your economy?*

Like many economies around the world, the Singapore economy was also badly affected by the pandemic, contracting by 4.1% in 2020. This represented our worst recession since independence. The sharp downturn came about as the economy had to grapple with both demand- and supply-side shocks arising from the pandemic, including (i) a fall in external demand for goods and services produced in Singapore caused by the slowdown in major economies and global travel restrictions; (ii) supply chain disruptions; and (iii) the implementation of Circuit Breaker (CB) measures domestically from 7 April to 1 June 2020 to slow the spread of the virus in order to save lives. The effects of these shocks were the most pronounced in the first half of 2020, and there were signs of recovery in the Singapore economy in the second half of 2020 as domestic economic activities were allowed to resume gradually after the CB period and external demand recovered as major economies emerged from their initial lockdowns.

c) *What sectors of your economy were most vulnerable to the economic shock?*

There are broadly five categories of sectors that saw varying impact as a result of the COVID-19 pandemic:

- Aviation- and tourism-related sectors that rely on international travel, including the air transport, accommodation, and arts, entertainment & recreation sectors, were severely affected by global travel restrictions and border controls put in place to contain the cross-border spread of the virus. For instance, total air passengers handled at Singapore’s Changi Airport declined by 83% in 2020.
- Consumer-facing sectors such as retail trade and food & beverage (F&B) services were badly affected by the cutback in domestic consumption due to the decline in tourist demand, weak labour market and safe distancing measures (such as capacity constraints and dine-in restrictions). For instance, retail and F&B sales volumes declined by 16% and 26% respectively in 2020.
- The construction sector and the marine & offshore engineering (M&OE) segment of the manufacturing sector experienced severe manpower disruptions due to

⁵⁶ Source: WHO Coronavirus (COVID-19) Dashboard, as of 16 March 2022.

⁵⁷ Source: IMF Work Economic Outlook, January 2022.

COVID-19 outbreaks in the foreign worker dormitories, and the subsequent isolation and testing of affected foreign workers. Activities in these sectors were also largely suspended during the CB period. As a result, certified progress payments, a proxy for construction output, fell by 30% in 2020, while the output of the M&OE segment declined by 26% over the same period.

- Other domestically-oriented sectors such as real estate were affected by negative spillovers arising from the downturn in the domestic economy, with retail rentals in the central region in the fourth quarter of 2020 being around 15% lower compared to the same period in 2019 due to weak leasing demand.
- Outward-oriented sectors like manufacturing and wholesale trade experienced a fall in external demand, while production was affected by supply chain disruptions.

d) Did your economy implement any green policy reforms in response to the economic shock? How did these reforms contribute to economic recovery?

e) What have been the long-term impacts of green reforms, and have they helped your economy become more resilient to future shocks?

In Feb 2021, Singapore launched our Singapore Green Plan 2030, which charts ambitious and concrete targets over the next ten years to advance our domestic agenda on sustainable development. Further details can be found in www.greenplan.gov.sg

Under the Energy Reset pillar of the Green Plan, we plan to diversify our energy supply to achieve our vision of a clean and efficient energy future. This includes continuing to tap on natural gas, accelerating solar deployment, facilitating the development of regional power grids, and leveraging emerging low-carbon alternatives like hydrogen and carbon capture, utilisation and storage (CCUS).

Today, about 95% of Singapore's electricity is generated using natural gas. Natural gas will continue to be an important energy source in the energy transition for Singapore and other economies that have limited access to renewable energy, until alternative low-carbon generation technologies (e.g. hydrogen) are feasible.

Solar remains the most viable renewable source of energy for Singapore and we have achieved our 2020 solar target of 350 MegaWatt peak (MWp) installed capacity. We aim to accelerate the deployment of solar energy through innovative ways to achieve our next solar target of at least 2 GigaWatt peak (GWp) by 2030. To this end, we launched one of the world's largest inland floating solar farms at Temeh Reservoir of 60MWp installed capacity and we will continue to pilot the use of vertical solar panels to be installed on external walls of buildings.

We also aim to facilitate the development of low-carbon energy sources through regional power grids. These projects will facilitate greater interconnectivity between economies in the region, and provide greater resilience and stability for all parties involved. Regional grids will also facilitate investments and allow economies with higher renewable energy potential to develop these renewable energy sources, both to serve their own needs and to provide supply for export.

We are also working with companies, researchers and relevant stakeholders to develop emerging low-carbon technologies, which can be pivotal in enabling decarbonisation at

scale. We have also launched a S\$55 million Low-Carbon Energy Research Funding Initiative to support the R&D and piloting of low-carbon technologies, with a focus on low-carbon hydrogen and CCUS.

Singapore is committed to the success of the global energy transition and will continue to play our part to combat climate change. As part of Singapore's energy transition to a cleaner and more secure energy future, we will:

- Enhance the efficiency of our natural gas plants
- Quadruple our solar deployment from 2020 to 2025
- Import up to 4 gigawatts (GW) of low-carbon electricity by 2035, and
- Accelerate the deployment of low-carbon technologies such as hydrogen and CCUS.

In terms of support for sustainability efforts among businesses, the Enterprise Sustainability Programme (ESP) was launched by Enterprise Singapore in October 2021 to support Singapore enterprises on sustainability initiatives, and to capture new opportunities in the green economy. The ESP supports training courses, capability and product development projects, and key enablers in areas such as certification and financing.

f) How did existing structural policies, institutions and regulations allow you to adequately respond to the economic shocks?

Singapore's fiscal prudence and past budget surpluses had allowed us to accumulate a stock of financial reserves, which was deployed to fund fiscal measures to support firms and households during the 2020 pandemic. One such measure was the Jobs Support Scheme (JSS), a tiered subsidy ranging from 25% to 75% of the first S\$4,600 of gross monthly wages paid to local employees (with the sectors severely affected by COVID-19 receiving more help). With more than S\$28 billion disbursed, the JSS subsidy was found to have saved around 165,000 local jobs over the period of March to December 2020, and also supported local wages.⁵⁸

The Government also expanded existing policies to ensure that viable firms, especially Small- and Medium-sized Enterprises (SMEs), were able to retain access to credit during the pandemic. For instance, the Government introduced a Temporary Bridging Loan (TBL) Programme and enhanced the existing Enterprise Financing Scheme – SME Working Capital Loan. These financing schemes generally led to improvements in firm-level outcomes. As the main financing scheme to support firms during the crisis, the TBL lowered the probability of firm financial distress (i.e., the probability of a firm missing its payment obligations) and helped to support firms' employment.⁵⁹

The Government also introduced other fiscal, monetary, labour market, social and public health measures to contain the economic damage from the pandemic. An Occasional Paper, released by the Ministry of Finance Singapore,⁶⁰ provides an assessment of the impact of Singapore's response to the pandemic on economic and social outcomes.

⁵⁸ Source: Ministry of Finance Singapore's Assessment of the Impact of Key COVID-19 Budget Measures.

⁵⁹ Source: Ministry of Trade and Industry's Economic Survey of Singapore 2021 Feature Article: Impact of Enterprise Singapore's Financing Schemes during the COVID-19 Pandemic.

⁶⁰ The paper can be downloaded from https://www.mof.gov.sg/docs/default-source/default-document-library/news-and-publications/featured-reports/17-feb-2022-6-30pm-assessment-of-the-impact-of-key-covid-19-budget-measures.pdf?sfvrsn=828ebb24_2

g) Which demographics were hit hardest by the economic shock?

By occupation, residents who were non-PMETs experienced a larger increase in unemployment rate in 2020 than those who were PMETs,⁶¹ although both rates remained below previous recessionary peaks. Specifically, the resident unemployment rate for non-PMETs rose by 1.7%-point from 2019 to 2020, compared to the 0.6%-point increase for PMETs.⁶²

Sectors that recorded a larger increase in resident unemployment rate in 2020 compared to 2019 include accommodation (+5.0%-points), other community, social & personal services (+2.4%-points), construction (+2.3%-points), retail trade (+2.2%-points), F&B services (+1.8%-point), education (+1.8%-point) and administrative & support services (+1.7%-point). On the other hand, the public administration & defence (-0.3%-point), professional services (0%-point) and real estate services (+0.1%-point) sectors were the least affected, with their resident unemployment rates remaining similar to 2019 levels.

Retrenchments were the highest in the services sector in 2020, mainly in the wholesale trade, arts, entertainment & recreation and air transport sectors, due to travel restrictions and safe distancing measures.

2. COVID-19 policies and initiatives: Describe some policy initiatives or programmes your economy has implemented in response to the economic shocks resulting from the onset of COVID-19 (please include at least one green policy initiative or programme). What were the impacts of the structural reforms or policies? Did these reforms support a green recovery? How much did your economy invest, monetary and non-monetary, in green recovery policies? Were there obstacles in implementing green policy reforms and how were these overcome? Does your economy foresee green policies or programmes being implemented beyond the pandemic?

Singapore has implemented several fiscal measures to help businesses and consumers mitigate the unprecedented economic shocks brought on by the COVID-19 pandemic in 2020.

For the power sector, Singapore unveiled the Market Development and Resilience Scheme (MDRS) Phase 2, where up to S\$250 million of incentives were made available to the generation companies to help these companies maintain a high level of operational reliability and to adopt good labour management practices, among others. Singapore also provides the Energy Efficiency Grant Call for power generation companies to improve their efficiency, which in turn contributes to lowering their carbon emissions. Together, these measures contribute to a sustainable recovery from the pandemic and support Singapore's green recovery.

The Monetary Authority of Singapore has taken active steps to promote sustainable financing in the financial sector since before the pandemic and will continue to do so beyond the pandemic. Details of programmes/initiatives at the link:

<https://www.mas.gov.sg/development/sustainable-finance>

⁶¹ PMET stands for Professionals, Managers, Executives and Technicians.

⁶² Source: Ministry of Manpower's Labour Force in Singapore 2020 report

As noted above, in Feb 2021, Singapore also launched our Singapore Green Plan 2030, which charts ambitious and concrete targets over the next ten years to advance our domestic agenda on sustainable development. Further details can be found in www.greenplan.gov.sg

3. Data, measurement, and monitoring: How does your economy measure the impacts of economic shocks? Please provide some examples. Does it measure the coverage, adequacy and impact of structural reforms implemented in response? How does it define and measure whether a policy is ‘green’? Please provide examples.

The effects of economic shocks are generally measured using traditional economic indicators. These include GDP, the value-added and output of individual sectors, unemployment and retrenchment figures, value-added per worker or per hour worked, wage growth, and price indices (e.g., commercial rental indices, consumer price index). Concomitantly, the same indicators are also used to measure the coverage, adequacy and impact of structural reforms which are aimed at mitigating the effects of the shocks.

4. Best practices: Among your economy’s structural reforms implemented in response to economic shocks in the past, discuss some green policies you assess have been implemented effectively. Please identify the top reasons for the effectiveness of these reforms, outlining any long-term impacts they had. Has the reform increased resilience in your economy to future shocks? Does the reform have ongoing applicability to future shocks?

5. Action Plans: Considering the policy gaps, barriers and challenges your economy has in enabling a green response to economic shocks, what are your economy’s short and medium-term plans to overcome them? If your economy has developed metrics and benchmarks to identify the appropriate policy responses and track progress, please provide details.

The shocks that were described (i.e., COVID-19 and the Global Financial Crisis in 2008) were not energy shocks. Therefore, green responses were not the key considerations. Nevertheless, Singapore is taking steps towards our green transition.

During Budget 2022, the Government announced plans to raise Singapore’s ambition to achieve net zero emissions by or around mid-century, as opposed to our previous commitment to achieve this as soon as viable in the second half of the century.

To achieve this net zero ambition, Singapore will be raising our carbon tax to S\$25 per tonne in 2024 and 2025, and S\$45 per tonne in 2026 and 2027, with a view to reaching S\$50 to S\$80 per tonne by 2030. A large part of the revenue will be used to support a decisive shift towards decarbonisation such as through investments in new low-carbon and more energy-efficient solutions. These investments will help to lower our emissions and bring us closer towards our net zero goal.

6. Regional cooperation: What role can regional cooperation and regional bodies such as APEC (but also other international bodies) play in understanding how to implement a green recovery from economic shocks? What are the areas for collaboration, or areas your economy would like to learn more about, on this topic? Does your economy consider that more regional cooperation could be valuable to better understand areas of a green recovery?

APEC as an incubator of ideas serves as an ideal platform for economies to advance regional cooperation and explore the development of green economy initiatives. On Singapore’s part,

we would be interested to learn more about areas of collaboration for carbon trading and trade in environmental goods and services.

CHINESE TAIPEI

1. Impact and challenges: Please answer the questions below with respect to two economic shocks that your economy has faced in the past.
 - a) Describe the economic shock.
 - b) What impacts did the economic shock have on your economy?
 - c) What sectors of your economy were most vulnerable to the economic shock?
 - d) Did your economy implement any green policy reforms in response to the economic shock? How did these reforms contribute to economic recovery?
 - e) What have been the long-term impacts of green reforms, and have they helped your economy become more resilient to future shocks?
 - f) How did existing structural policies, institutions and regulations allow you to adequately respond to the economic shocks?
 - g) Which demographics were hit hardest by the economic shock?

The global financial crisis in 2008 and the COVID-19 pandemic since 2020 are the two major economic shocks we have faced.

1. Global financial crisis

The global financial crisis of 2008 was a severe economic crisis that affected the entire world. The impact of global financial crisis resulted in downside risks to our economy in the second half of 2008. The most vulnerable sectors in this shock are exporting sector and financial sector. In order to alleviate the impacts of the financial crisis, the government launched the Economic Vitalization Package in September 2008 and implemented a succession of monetary policies, financial stability measures and fiscal policies so as to increase domestic demand, stabilize the financial system, and maintain the momentum of economic growth. The government also promoted some long-term strategies such as green infrastructure building to diversify the economy and improve its resilience and sustainability.

2. COVID-19 pandemic

Since COVID-19 pandemic has spread around the world, most economies have been adopting strict pandemic containment and border control measures, interrupting production and consumption activities, which in turn have a negative impact on domestic economy. In Chinese Taipei, the pandemic caused a surge in cases from May to July in 2021, which resulted in a slowdown of economic growth, and also hit the development of domestic demand-oriented service industry; during the shock, we evaluated that employees in those sectors who were furloughed due to the pandemic containment measures were hit most by such shocks.

Facing the risk of pandemic resurging, the government has made every efforts to stabilize our economic and industrial development:

- (1) To bolster the economic growth and resilience, we have continued to implement the “Forward-looking Infrastructure Development Program” and “Trillion NT-dollar Investment Program” to create employment opportunities, promote green growth, and consolidate economic development in the next few decades.

(2) To foster industrial development and transformation, based on the solid foundation of the “5+2 Innovative Industries Program”, we have further promoted the “Six Core Strategic Industries”, including: (a) information and digital industries; (b) outstanding cybersecurity industries; (c) precision health industries; (d) economy-wide defense and strategic industries; (e) green electricity and renewable energy industries; (f) strategic stockpile industries. Such supportive policies not only has maintained the growth momentum, but also assisted our economy to grasp the opportunity of global supply chain restructuring, and transform to be a critical force in the global economy.

2. COVID-19 policies and initiatives: Describe some policy initiatives or programmes your economy has implemented in response to the economic shocks resulting from the onset of COVID-19 (please include at least one green policy initiative or programme). What were the impacts of the structural reforms or policies? Did these reforms support a green recovery? How much did your economy invest, monetary and non-monetary, in green recovery policies? Were there obstacles in implementing green policy reforms and how were these overcome? Does your economy foresee green policies or programmes being implemented beyond the pandemic?

In response to the pandemic, Chinese Taipei has been implementing a special budget amounted to near NTD 840 billion, which includes a comprehensive bailout and stimulus package. As of the end of fiscal year 2021, the package has disbursed over NTD 320 billion to help more 15 million people and enterprises overcome the economic crisis.

Besides the bailout and stimulus package, our government also implemented three major programs to boost investment and to accelerate public infrastructure. In 2020, the budget achieving rates of the overall public infrastructure projects reached 95.48%, a record high in the past 13 years, and the budget implementation rates in 2019-2020 of projects related to green energy construction within the “Forward-looking Infrastructure Development Program” has also exceeded 90%.

Net-zero emissions by 2050 is a global consensus, and it is also our goal. In the post-COVID-19 era, Chinese Taipei will adopt 5 strategies as decarbonize energy, industry and energy efficiency, vehicle electrification, carbon-negative technology and governance, to actively implement net zero emissions transition. The relevant policies will become a driving force for Chinese Taipei’s economic growth after COVID-19 and lead the economy to green and sustainable growth.

3. Data, measurement, and monitoring: How does your economy measure the impacts of economic shocks? Please provide some examples. Does it measure the coverage, adequacy and impact of structural reforms implemented in response? How does it define and measure whether a policy is ‘green’? Please provide examples.

In Chinese Taipei, the government usually assesses the impacts of economic shocks via multi-dimensional approaches: 1.in economic dimension, we measure the volatility of economic activities such as GDP growth rate, unemployment rate, core CPI, and capital market performance; 2. in social dimension, we examine the variation in social inclusiveness such as income inequality, digital divide, and social welfare; 3. in environmental dimension, we evaluate the effects on environmental management such as GHG reduction, pollution prevention, and maintaining environmental quality. Taking the COVID-19 pandemic as an example, since the pandemic broke out, the government has continued to track and measure the impact of the pandemic on economic and social outcomes. Such evaluation of impacts has

assisted the government to formulate and modify measures in time to respond to the rapid development of the pandemic outbreak and socio-economic shock.

In general, policies that help to mitigate the factors that induce greater environmental deterioration can be considered as “green” or “sustainable” policies, such as “net zero” carbon emission, sustainable energy, sustainable transportation, circular economy, environmental protection, and so on. So far, there is no formal classification of whether economic activities meet the category of “green” in Chinese Taipei.

To deal with the aforementioned challenge and reach a green economy, the government has made effort to develop a clear “green” definition and classification system. Currently, the Financial Supervisory Commission and the Environmental Protection Administration have jointly outsourced a research to initially formulate a classification system for sustainable activities. In the near future, the green classification and its relevant will be introduced and the financial sector and investors can refer to this classification and relevant assessment to screen investment and financing projects to direct their funding towards sustainable investment, and enterprises can also make contribution to the realization of sustainable economy accordingly.

4. Best practices: Among your economy’s structural reforms implemented in response to economic shocks in the past, discuss some green policies you assess have been implemented effectively. Please identify the top reasons for the effectiveness of these reforms, outlining any long-term impacts they had. Has the reform increased resilience in your economy to future shocks? Does the reform have ongoing applicability to future shocks?

To promote a green economy and ensure sustainable consumption and production patterns, Chinese Taipei has achieved the following results:

1. Increase green procurement in the public and private sectors

- (1) Since the promotion of green procurement in Chinese Taipei’s government agencies in 2012, the procurement rate for designated items has increased to 95% in 2020. The amount of green procurement in government agencies in 2020 reached NT\$10.3 billion, an increase of NT\$110 million or 1.1% compared to 2019. As a result, the market for environmental friendly products has expanded, which in turn encouraged the industry to engage in green production.
- (2) Since private enterprises and organizations implemented green procurement in 2007, there has been a significant increase in the total amount of procurement and the number of companies reporting green procurement. In 2020, 2,079 private enterprises reported green procurement, and the procurement amount reached NT\$46.1 billion, an increase of NT\$12.1 billion or 35.6% compared to 2019. The increase demonstrated an increased awareness among private businesses and organizations, and it facilitated the development of green industries and improvement in the quality of the environment.

2. Promote green factories to assist enterprises to achieve sustainable development

- (1) In response to the international trend toward net-zero carbon emission and the demands of international corporate supply chains, the Ministry of Economic Affairs has promoted the green factory labeling system to encourage industries to examine

their production and manufacturing, use environmentally friendly product designs, engage in green management, and fulfill their corporate social responsibility. The goal is to transition into green industries by examining the quality of the factories, improving efficiency in the use of energy and resources in factories, and driving toward low carbon, green, and eco-friendly manufacturing.

- (2) There are 125 green factories have passed the clean production compliance assessment. Over the past three years (from 2018 to 2020), companies that had received green factory labels saved 870 million kWh in electricity and 8.1 million tons of water, and reduced carbon emission by 580,000 tons. A total cost savings of NT\$6 billion has been achieved, all the while attracting investments of NT\$5.4 billion.

Our government will speed up to expand the green energy industries and make every effort to make Chinese Taipei the “green energy hub of Asia”, so that we will be an indispensable partner in the international green energy supply chain.

5. **Action Plans:** Considering the policy gaps, barriers and challenges your economy has in enabling a green response to economic shocks, what are your economy’s short and medium-term plans to overcome them? If your economy has developed metrics and benchmarks to identify the appropriate policy responses and track progress, please provide details.

Climate change has increased the frequency and strength of extreme weather events, which has posed severe challenges to the ecosystem, infrastructure, and economic growth. Chinese Taipei has exerted great effort in GHG reduction, pollution prevention, and maintaining environmental quality in recent years, multiple action plans are as follows:

1. Take effective actions to strengthen green GDP growth

In addition to increasing green investments, strong supervision as well as appropriate environmental pricing is necessary to conduct the green economy transition. Chinese Taipei currently does not levy any carbon tax, but will need to continue to closely follow international developments in carbon tax and related issues in order to formulate response measures to enhance the growth momentum of green GDP.

2. Promote green finance to support green industries:

In order to assist the domestic green industry to obtain capital required for operations and development, Our government actively promotes the “Green Finance Action Plan 2.0”. Starting by cultivating talents related to green finance in the short term, we can promote the self-operation of the financial market to support the green industry. Then through the cooperation of various ministries to promote relevant measures in the mid-to-long term, we can drive the financial market and guide people to pay attention to green sustainability, so as to make a successful transition.

3. Set up renewable energy to accelerate the transition of high energy intensive industries

Though Chinese Taipei’s industrial development has long relied on fossil fuel, the efficiency of domestic energy use has been significantly improved under the various

energy-saving and carbon-reduction measures actively promoted by the government. However, the energy consumption of domestic high energy intensive industries is still high, so there is an urgent need to actively promote the installation of renewable energy to reduce the dependence on imported energy and environmental pollution, so as to accelerate the transition of high energy intensive industries.

4. Start the regulation reform process in response to climate change

To accelerate the pace of carbon reduction and increase resilience in response to climate change, the Environmental Protection Administration of Chinese Taipei has implemented amendments to the Greenhouse Gas Reduction and Management Act and amended the name of the bill into the “Climate Change Response Act”. The draft amendment was announced on October 21, 2021. Not only will the law incorporate the 2050 net-zero emission target, it will also carefully evaluate and make overall plans for issues such as climate governance and adaptation, collection of carbon levies, a GHG Fund to combat climate change, active assistance in industrial carbon reduction transformation, and development of green technologies and green industries.

6. Regional cooperation: What role can regional cooperation and regional bodies such as APEC (but also other international bodies) play in understanding how to implement a green recovery from economic shocks? What are the areas for collaboration, or areas your economy would like to learn more about, on this topic? Does your economy consider that more regional cooperation could be valuable to better understand areas of a green recovery?

The world has now realized the climate change is a global crisis that need to be solved urgently. As a multilateral cooperation body, APEC is a perfect forum to accelerate green recovery.

In line with international net zero and carbon neutrality commitments and campaigns to combat climate change, Chinese Taipei believes APEC could contribute more to the global community through capacity building activities such as knowledge sharing, best practices dissemination, and skills and technical know-how exchange and training.

We look forward to the collaboration with other economies especially on policies and technologies supporting regional energy transition as well as green and carbon-free recovery.

THAILAND

1. Impact and challenges: Please answer the questions below with respect to two economic shocks that your economy has faced in the past.
 - a) Describe the economic shock.
 - b) What impacts did the economic shock have on your economy?
 - c) What sectors of your economy were most vulnerable to the economic shock?
 - d) Did your economy implement any green policy reforms in response to the economic shock? How did these reforms contribute to economic recovery?
 - e) What have been the long-term impacts of green reforms, and have they helped your economy become more resilient to future shocks?
 - f) How did existing structural policies, institutions and regulations allow you to adequately respond to the economic shocks?
 - g) Which demographics were hit hardest by the economic shock?

1) COVID-19 pandemic

- a) The COVID-19 pandemic is considered one of the greatest shocks that Thailand has faced. Despite notable success in curbing the spread of the virus and keeping the mortality rate low – especially in 2020 and the first half of 2021, Thailand still suffers from serious socio-economic impacts of the pandemic.
- b) The pandemic caused the Thai economy to contract by 6.1 percent in 2020, largely due to a halt in the tourism sector, sharply falling exports, and negative private investment. Although positive factors – such as the regaining of domestic demands and exports of goods – allowed the economy to recover in 2021, the GDP growth of 1.6 percent was still far from the pre-pandemic trends. Moreover, the risk of COVID flare-ups make it more challenging for Thailand to completely bounce back in the near future. The continued economic slowdown has also caused the unemployment rate to rise from 1.04 percent in 2019 to 1.69 percent in 2020 and 1.93 percent in 2021. In addition, based on the United Nations Development Programme (UNDP)'s estimation⁶³, some 21 million workers in the hardest hit sectors are being affected by the reduction of working hours, wage cuts, or layoffs.
- c) When comparing the impacts of the pandemic on the Thai economy by sector, it can be observed that tourism was hit the hardest owing to a near cessation of international tourist arrivals since March 2020. According to the Ministry of Tourism and Sports, Thailand's tourism revenue plunged from 3.03 trillion THB (18.21 percent of the GDP) in 2019 to 0.8 trillion THB (6.44 percent of the GDP) in 2020. Despite the easing of international travel restrictions and the introduction of the Test-and-Go Programme in Thailand, the number of foreign tourists in 2021 was still low. By the end of 2021, the number of international tourist arrivals stood at 0.43 million, which was significantly lower than 39.92 million 2019. In addition, the sectors relying on export, such as automotive, textiles, and machinery, were also affected by weakened global demand and disrupted value chains.
- d) To expedite sustainable post-pandemic recovery, Thailand has developed the Bio-Circular-Green (BCG) economy model based on three existing concepts, namely bioeconomy, circular economy, and green economy, and adopted it as a domestic

⁶³ UNDP. 2020. Socio-Economic Impact Assessment of COVID-19 in Thailand

agenda. At present, several agencies have already incorporated elements of the BCG Action Plan 2021-2027 into their post-pandemic strategies. For instance, the Ministry of Tourism and Sports has developed BCG in Action: Sustainable Tourism Strategic Plan 2021-2022 which is to be used by related agencies as they work towards the transition from mass tourism to eco-friendly and socially responsible tourism. By adopting the BCG as a domestic agenda, Thailand has made sustainability a mandate and a common goal for all government agencies. Their synergized and concerted efforts will, in turn, contribute greatly to Thailand's sustainable post-pandemic recovery.

- e) The long-term impacts of green reforms under the BCG model have yet to be observed due to the fact that Thailand is still in its early stage of BCG implementation. However, as government agencies and other stakeholders continue to translate the BCG principles into actions, it can be expected that all economic sectors in Thailand will be greener and that its economic growth will become more inclusive and sustainable.
- f) One of the existing tools that Thailand has utilized in response to the COVID-19 pandemic is the Emergency Decree on Public Administration in Emergency Situations B.E. 2548 (2005). Under this decree, the Thai government was able to establish the Center for COVID-19 Situation Administration (CCSA) and swiftly introduced a set of regulations and guidelines that helped control the spread of the virus. Throughout the past two years, the regulations have consistently been adjusted based on the changes in the COVID situation, allowing Thailand to balance public health priorities and economic recovery. Moreover, to alleviate the economic impacts of the pandemic, the government has passed a series of emergency decrees that enabled relevant agencies to provide timely assistance to those affected by the pandemic, such as the Emergency Decree Authorising the Ministry of Finance to Raise Loans to Solve Problems, to Remedy and Restore the Economy and Society as Affected by the Coronavirus Disease Pandemic, B.E.2563 (2020) and the Emergency Decree on the Provision of Assistance and Rehabilitation of Business Operators Impacted by the Spread of the COVID-19 Pandemic.
- g) The most affected demographics are people in poverty especially the urban poor, children and the elderly, and people with disability and chronic diseases. The loss of household income due to lay-offs, furlough, or working hours loss has resulted in poverty especially since a large number of people in these groups are/were employed in the informal sector and, therefore, not covered adequately by social protection schemes.

2) Climate change

- a) Over the past 30 years, Thailand has experienced a significant increase in surface temperatures, changes in rainfall patterns resulting in more frequent and severe floods and droughts, as well as rising sea level. These changes are extremely disruptive to the Thai economy which relies heavily on the agriculture sector and coastal tourism.
- b) Erratic weather patterns resulting from climate change have caused severe damage to the Thai economy. In 2011, 13 million people in 66 provinces were affected by severe flooding. Not only did the disaster result in more than 680 deaths, but it also left devastating impacts on the economy. According to the World Bank, the total damage

and losses from the 2011 floods amounted to 46.5 billion USD – 70 percent of which was caused by the flooding of six industrial estates for over a month, while much of the rest was owing to the damage done to economic crops such as rice and a slowdown in tourism. More recently, recurrent and prolonged droughts from 2015 to 2016 critically lowered water levels in reservoirs in the whole economy. The droughts led to shorter growing period and, in turn, lower production levels in the agriculture sector.

- c) Agriculture is one of the sectors most affected by climate change. Higher surface temperatures, as well as floods and droughts, cause the yields of major crops, such as rice, maize, and sugarcane, to fall. The Global Climate Risk Index 2019 Report states that climate change will reduce the productivity of the Thai agricultural sector by at least 25 percent. In terms of value, the International Center for Tropical Agriculture (CIAT) estimates the total economic impact of climate change on agriculture in Thailand to fall between 300 million to 420 million USD.
- d) At the policy level, Thailand has incorporated climate change into its economy-wide economic and social development plans since 2007. More recently, Thailand has developed plans that aim specifically at tackling climate change, such as the Climate Change Master Plan 2015-2050, which outlines its strategies for climate change mitigation, adaption, capacity building, and cross-cutting issues, and the first National Adaptation Plan, which serves as a framework towards climate-resilient society. In practice, several stakeholders have implemented reforms/initiatives to reduce greenhouse gas (GHG) emissions and minimize other environmental impacts of economic activities, such as projects under the Thailand Voluntary Emission Reduction Scheme (T-VER) by various government agencies and the promotion of Environmental, Social, and Governance (ESG) reporting by the Securities and Exchange Commission (SEC), Thailand.
- e) Owing to its climate actions, Thailand has significantly reduced its greenhouse gas emissions in the past years. For instance, the implementation of Thailand's Nationally Appropriate Mitigation Actions (NAMAs) has led to a 17 percent decrease in greenhouse gas emissions in the energy and transport sectors in 2019. Moreover, the SEC has successfully driven 146 out of 725 listed companies to participate in ESG reporting (as of August 2020), making their business conduct more sustainable.
- f) In Thailand, the Disaster Prevention and Mitigation Act B.E. 2550 (2007), along with six relevant subordinate legislations, has served as the main legal mechanism for disaster management practices, including disasters that occur in consequence of climate change. In the case of floods, other legal tools – such as the Royal Decree on Provision of Financial Assistance to People Affected by Floods B.E. 2555 (2012) and the Regulation of the Prime Minister Office on National Warning System Management B.E. 2552 (2009) – can and has also been used in complement to the main act. From the institutional aspect, there are several agencies responsible for disaster management and response. To address the institutional fragmentation which hindered the government's emergency responses to the 2011 floods, the Flood Relief Operations Center (FROC) was established under Article 11 (3) and (9) of the National Government Organisation Act, BE 2534 (1991) with an aim of coordinating the responses among relevant government agencies, such as the Department of Disaster Prevention and Mitigation, the Ministry of Public Health, the Thai Red Cross, and the Royal Thai Army.

- g) Since climate change has the most significant impacts on the agriculture sector, it can be inferred that farmers are hit the hardest by the effects of climate change. According to Attavanich (2017), farmers in southern, northern, and north-eastern regions suffer a higher degree of negative impacts than those in the eastern and central regions.

2. **COVID-19 policies and initiatives:** Describe some policy initiatives or programmes your economy has implemented in response to the economic shocks resulting from the onset of COVID-19 (please include at least one green policy initiative or programme). What were the impacts of the structural reforms or policies? Did these reforms support a green recovery? How much did your economy invest, monetary and non-monetary, in green recovery policies? Were there obstacles in implementing green policy reforms and how were these overcome? Does your economy foresee green policies or programmes being implemented beyond the pandemic?

In response to economic shocks related the COVID-19 pandemic, Thailand has implemented a policy package comprising, among others, fiscal stimulus measures, a lower policy rate, and financial measures to support SMEs and debtors.

- 1) **Fiscal stimulus measures**, financed by 1.5 trillion THB worth of loans, such as:
 - a) “Half-Half” co-payment scheme: launched in 2020, the co-payment scheme aims to reduce people’s living costs by having the government subsidize 50 percent of food, drink, and general goods purchases (up to 150 THB a day) for registered individuals via the government’s e-wallet mobile application. As of February 2022, the co-payment scheme has just entered its fourth phase of implementation;
 - b) “Shop More Get More” e-voucher scheme: aiming to support the local economy by encouraging the middle class and high-income earners to spend more, the scheme offers cashback e-vouchers for domestic purchases. Registered participants are eligible to receive the vouchers via the e-wallet application at a rate of 10-15% of their spending, with a maximum limit of 7,000 baht per person;
 - c) Direct cash transfer: public welfare cardholders and vulnerable groups receive monthly direct cash transfer from the government. Beneficiaries include more than 13 million low income earners and 2.25 million persons in need of special assistance.
- 2) **Policy rate:** the Bank of Thailand Monetary Policy Committee cut the policy rate to 0.5 percent, the all-time low for Thailand, in May 2020. Since then, the Committee has maintained the policy rate for 14 consecutive meetings in an attempt to support economic growth by ensuring accommodative financial conditions.
- 3) **Financial measures**, such as:
 - a) Measures to relief household and SMEs debt, ranging from short-term debt moratorium to long-term debt restructuring and asset warehousing with buy-back options;
 - b) Measures to enhance liquidity in the private sector, including a soft loan facility for businesses (totaling 250 billion THB) to support SMEs affected by the

pandemic. As of January 2022, 44,484 businesses have applied to the programme, while the approved loans have amounted to 3.25 million THB per applicant.

- c) Measure to improve debtors' access to financial services, including the introduction of platforms for debtors to seek advice and debt restructuring.

Moreover, the Thai government has started to issue sustainability bond to promote green and socially responsible economic recovery since August 2020. The proceed from the issuance of sustainability bond has been used to finance the COVID-19 relief package, providing additional income or assistance to those affected by the pandemic especially workers who are not covered by social security and people in the most vulnerable group. The rest of the proceed is being used to finance clean infrastructure projects such as the construction of the Bangkok MRT (Mass Rapid Transit) Orange line.

So far, it can be observed that this policy package, as well as related initiatives, has played a role in helping Thai people, especially those in the low-income and the vulnerable groups, cope with the economic shocks that cripple their livelihood. By creating facilitative conditions and providing direct support to the private sector, especially SMEs, Thailand's policy response has also helped sustain the Thai economy during the slowdown and lay down a strong foundation for its recovery in the coming years. Some of the measures, such as the issuance of sustainability bond by the government, are also expected to be carried forward beyond the pandemic as Thailand moves along its path toward sustainable development.

3. Data, measurement, and monitoring: How does your economy measure the impacts of economic shocks? Please provide some examples. Does it measure the coverage, adequacy and impact of structural reforms implemented in response? How does it define and measure whether a policy is 'green'? Please provide examples.

1) **COVID-19 Pandemic**

Acknowledging that the impacts of COVID-19 pandemic are multifaceted, Thailand has used several measurements in order to assess them in a comprehensive manner.

- a) Economic impacts: the macroeconomic impacts of the pandemic have been measured using macro-level indicators, such as GDP growth rate and the components of GDP (private final consumption expenditure, government final consumption expenditure, gross fixed capital formation, changes in inventories, and goods and services balance). To examine the impacts of the pandemic on each economic sector, industry-specific data collected by line ministries, such as the Tourism Satellite Account (Ministry of Tourism and Sports) and Manufacturing Production Index (Office of Industrial Economics), have been used in addition to GDP and GDP growth rate by industry.
- b) Social impacts: the social impacts of the pandemic have been measured using macro-level indicators, unemployment rate and poverty incidence, as well as daily COVID-related data, such as the number of COVID cases, the number of hospitalized people, the number of recovered people, and the number of COVID-related death.

To assess the implementation of the BCG model as Thailand's strategy for post-COVID recovery, the BCG Action Plan 2021-2027 has outlined a monitoring and evaluation mechanism, specific measurements/targets, for BCG implementation. For example, to evaluate the overall impact of BCG implementation on the economy, the revenue of the five priority

sectors (farm and food; wellness and medicine; energy and bioproducts; tourism; and the creative and circular economy) and their contribution to GDP will be used as indicators. By the year 2027, the government aims to raise the revenue of the five sectors by at least 1 trillion THB and upgrade the contribution of the service sector to GDP to at least 20 percent.

2) Climate Change

The consequences of climate change that are most prevalent in Thailand are, among others, floods and droughts. To assess the impacts of floods, Thailand has used a combination of data, such as flood frequency, affected areas, affected population, damage to life, and property damage. For droughts, the data used include, for instance, annual rainfall, usable water in reservoirs, and affected population. In some occasions, Thailand – with support from development partners – conducted in-depth analyses on the impacts of major floods and droughts. For example, the World Bank assisted Thailand in conducting the Rapid Assessment for Resilient Recovery and Reconstruction Planning after the 2011 floods. The assessment outlined a broader range of economic and social impacts caused by the floods, such as the total damage and losses, damage and losses by sector, estimated rehabilitation and reconstruction needs, and impacts on household income, etc.

To assess the impact of climate actions, the Climate Change Master Plan 2015-2050 has identified several indicators that can be used to track Thailand's progress in GHG emissions reduction, such as the ratio of GHG emissions to GDP and the proportion of farmland burned.

4. **Best practices:** Among your economy's structural reforms implemented in response to economic shocks in the past, discuss some green policies you assess have been implemented effectively. Please identify the top reasons for the effectiveness of these reforms, outlining any long-term impacts they had. Has the reform increased resilience in your economy to future shocks? Does the reform have ongoing applicability to future shocks?

To build a greener economy in response to the looming climate crisis, the Pollution Control Department (PCD) under the Ministry of Natural Resources and Environment introduced green public procurement (GPP) in Thailand in 2005. Three years later, the Green Procurement Promotion Plan 2008-2011 was formulated with an aim of increasing government spending on green products and services (based on various ecolabeling schemes). The following table summarizes GPP budget and greenhouse gas (GHG) emissions reduction from GPP Phase I (2008-2012).

Assessment Results	GPP (17 items)
Total budget (baht)	1,888,613,851
GPP budget (baht)	753,524,862
Environmental benefits from GPP (baht)	295,470,672
Average CO ₂ reduction per unit (kg CO ₂)	147.1
Procurement (unit)	8,115,749
CO ₂ reduction from GPP (kg CO ₂)	1,193,772,384

According to a study by the UN Environment Programme (UNEP), some of the success factors for GPP implementation in Thailand are as follows.

- a) **Strong support from central government:** the push from the highest policy level was reflected in the 10th National Economic and Social Development Plan (2007-

2011) which stated that government agencies were encouraged to procure environment- friendly products;

- b) **Availability of clear guidelines and procedures:** the PCD formulated a GPP Guide, which provided technical assistance to procurers on the implementation and reporting processes of green public procurement, and familiarized it among implementing agencies;
- c) **Capacity building:** the PCD organized training workshops for procurement staff within the government 3 times per year to build their capacity in implementing GPP;
- d) **Monitoring systems:** the progress of GPP implementation was easy to monitor because of established monitoring and reporting system by the PCD.

The success of GPP Phase I led to the development of the Green Procurement Promotion Plan 2013-2016, which extended the scope of GPP implementation to local authorities and the private sector. As of 2019, 97 percent of government agencies, 89 percent of state-owned enterprises, 49 percent of universities and 36 percent of local authorities in Thailand are participating in the GPP implementation. As more entities are implementing GPP and more items are included in the ecolabeling schemes, it can be expected that the environment benefits and the GHG emissions reduction will be greater in the long-run.

5. Action Plans: Considering the policy gaps, barriers and challenges your economy has in enabling a green response to economic shocks, what are your economy's short and medium-term plans to overcome them? If your economy has developed metrics and benchmarks to identify the appropriate policy responses and track progress, please provide details.

One of the key challenges that Thailand often faces in responding to economic shocks is institutional fragmentation. Economic shocks, such as the COVID-19 pandemic and natural disasters resulting from climate change, often have multifaceted impacts and, in turn, require responses from several government agencies. The fragmentation of roles and responsibilities and the lack of coordination among relevant agencies lead to ad hoc responses and result in inefficient and untimely interventions.

So far, Thailand has been addressing this issue by establishing temporary inter-agency bodies which serve as short-term mechanisms for more coordinated responses to each economic shock, such as the Center for COVID-19 Situation Administration (CCSA) and the Flood Relief Operations Center (FROC). While these inter-agency bodies can be effective in unclogging the bottleneck, a longer-term solution is still required in order to prepare Thailand for future economic shocks.

The upcoming 13th National Economic and Social Development Plan (2023-2027) picks up on this issue and proposes that “modern and effective government capable of responding to citizens’ needs” be one of the 13 milestones for Thailand’s development in the next five years. One of the main targets of this milestone is to enhance public sector capacity and agility, making it more responsive to shocks. The Plan calls for a more flexible, connected, open, and effective public management – which requires the government to take a more holistic approach to decentralization. In other words, the government is to embark on a journey to increase the

authority and capacities of government agencies at all levels while also developing policy frameworks/regulations that promote synergy and coordination among them.

In addition, the BCG Action Plan 2021-2027 has also mapped out an institutional mechanism that will help synergize and streamline efforts undertaken by various government agencies to enable sustainable post-COVID recovery. This mechanism consists of:

- a) BCG Policy Board of Directors: the Board is in charge of determining policy directions and priorities for BCG implementation at the highest level;
- b) BCG Model Implementation Committee: chaired by the Minister of Higher Education, Science, Research and Innovation, the Committee is responsible for formulating implementation plans and monitoring and evaluation frameworks that respond to the policy directions and priorities from the BCG Policy Board of Directors. It ensures coordination among different government agencies and other relevant stakeholders in implementing the plans;
- c) 11 sub-committees: consisting of experts from various sectors, the sub-committees are spearheading the monitoring of BCG implementation in each target sector. They are to report the progress of BCG implementation to the BCG Model Implementation Committee once every three months.

6. Regional cooperation: What role can regional cooperation and regional bodies such as APEC (but also other international bodies) play in understanding how to implement a green recovery from economic shocks? What are the areas for collaboration, or areas your economy would like to learn more about, on this topic? Does your economy consider that more regional cooperation could be valuable to better understand areas of a green recovery?

Regional cooperation can promote deeper understanding of a green recovery by providing a platform for knowledge collaboration among participating economies. Activities, such as policy dialogues and capacity building programmes, allow economies to not only transfer their knowledge and experience concerning the implementation of green policies, but also co-create collective knowledge/tools that will help improve each economy's performance in fostering green recovery. These tools can be in many forms, such as policy recommendations, guidelines, and frameworks. One example of such activities is the upcoming Circular Economy Technology Foresight Workshop. Set to be conducted by the APEC Centre for Technology Foresight (APEC-CTF), this workshop will provide an opportunity for APEC economies to build a technology roadmap for circular economy transformation in the region.

Regarding the potential areas of collaboration, Thailand is particularly interested in exploring the topic of sustainable finance and/or ecosystem for sustainable finance. Under this topic, APEC economies through existing mechanisms, such as the Economic Committee, Sustainable Finance Working Group, and the APEC Finance Ministers' Meeting, may explore:

- a) How financial measures can be used as tools for achieving net-zero emissions;
- b) How financial regulators, financial institutions, and corporates can manage climate and environment-related risks;

- c) What types of data and information are needed for financial regulators to effectively monitor and assess climate and environment-related risks for financial stability and environment-related risk;

Other areas of cooperation that are of interest to Thailand include sustainable tourism, digitization for green recovery, electric vehicles and related standards, and environmental management. Thailand is also hopeful that the Bio-Circular-Green economy model – which Thailand has introduced to APEC – will serve as a useful tool for the region as we work towards achieving green recovery.

UNITED STATES

1. Impact and challenges: Please answer the questions below with respect to two economic shocks that your economy has faced in the past.
- a) Describe the economic shock.
 - b) What impacts did the economic shock have on your economy?
 - c) What sectors of your economy were most vulnerable to the economic shock?
 - d) Did your economy implement any green policy reforms in response to the economic shock? How did these reforms contribute to economic recovery?
 - e) What have been the long-term impacts of green reforms, and have they helped your economy become more resilient to future shocks?
 - f) How did existing structural policies, institutions and regulations allow you to adequately respond to the economic shocks?
 - g) Which demographics were hit hardest by the economic shock?

a) *Describe the economic shock.*

The Great Recession of 2008-2009, also known as the Global Financial Crisis.

b) *What impacts did the economic shock have on your economy?*

It was a severe financial crisis that saw a steep decline in consumer and business confidence, household wealth, and access to credit. In the last quarter of 2008, employment was falling by more than 700,000 jobs per month and U.S. real gross domestic product (GDP) contracted at an 8.9 percent annualized rate.⁶⁴ Overall, 8.8 million jobs were lost between 2007-2009, with about a \$19.2 trillion lost in household wealth.⁶⁵

c) *What sectors of your economy were most vulnerable to the economic shock?*

The sectors most impacted by the Great Recession included investment-related employment, as well as manufacturing industries, particularly in the housing and auto markets.⁶⁶

d) *Did your economy implement any green policy reforms in response to the economic shock? How did these reforms contribute to economic recovery?*

The American Recovery and Reinvestment Act (ARRA) was signed into law on February 17, 2009. The United States' Council of Economic Advisers (CEA) estimates that the entire ARRA package increased GDP between 2 and 3 percent from late-2009 to mid-2011. ARRA lifted GDP 2 to 3 percent above where it would have been, and over 6 million job-years (a full-time job for one year) were supported by ARRA from 2009 to 2012. The clean energy-related funding made up roughly one eighth of the total, representing a substantial direct boost. CEA estimates that ARRA clean energy-related programs supported roughly 900,000 job-years in innovative clean energy fields from 2009 to 2015. ARRA appropriated \$787 billion at the time of passage, and this was later revised to \$831 billion over the 2009 to 2019 period. Of the initial allocations, \$90 billion, or about 11%, was allocated towards investing in a cleaner, more sustainable energy future. These

⁶⁴ https://obamawhitehouse.archives.gov/sites/default/files/page/files/20160225_cea_final_clean_energy_report.pdf

⁶⁵ https://www.treasury.gov/resource-center/data-chart-center/Documents/20120413_FinancialCrisisResponse.pdf

⁶⁶ <https://www.bls.gov/opub/mlr/2014/article/consumer-spending-and-us-employment-from-the-recession-through-2022.htm>

investments can be seen as a “down-payment” on the transition to a sustainable 21st century economy, and each has an economic rationale based on addressing multiple market failures, such as environmental externalities and innovation market failures.

ARRA’s immediate goal was to stabilize the economy, preserve and restore jobs, and assist deeply suffering industries. In a context of weak aggregate demand, already aggressive use of monetary policy tools bringing interest rates to near-zero levels, highly constrained credit, and expectations of protracted contraction, there is a strong economic case for a significant fiscal stimulus to increase near-term economic output. As documented in numerous reports, ARRA is estimated to have increased output and employment substantially relative to a baseline without the fiscal stimulus.

- e) What have been the long-term impacts of green reforms, and have they helped your economy become more resilient to future shocks?*

ARRA provided a major opportunity for laying the groundwork for sustainable long-run growth and well-being. A goal of ARRA was investing in the foundation for a robust and sustainable 21st century economy. A sizable fraction of the ARRA funds were invested in projects that improved long-run productivity, such as transportation infrastructure improvements, as well as investments in innovative technologies, including clean energy technologies and related innovations.⁶⁷

Some of these investments laid the groundwork for the remarkable growth in clean energy in the United States that occurred between 2009-2016. Solar electricity generation increased over 30-fold since 2008. Wind generation increased over three-fold since 2008. Through a variety of mechanisms, ARRA funding reached nearly every aspect of the value chain for numerous key clean energy technologies, including advanced vehicles, batteries, carbon capture and sequestration, and technologies to enhance energy efficiency. These investments are a down payment towards an innovative 21st century clean economy and promise to yield benefits for many years into the future. Moreover, green investments are most effective in communities whose workers have the appropriate “green” skills, benefiting communities with job training programs that have helped with the transition to a green economy.⁶⁸

- f) How did existing structural policies, institutions and regulations allow you to adequately respond to the economic shocks?*

The ARRA funding not only provided a stimulus, but also helped address market failures in clean energy markets. The diverse set of funding mechanisms helped to address market failures such as environmental externalities, innovation market failures, and capital market failures by investing in measures across the clean energy value chain. ARRA funding catalysed existing programs and spurred greater innovation through ongoing work by public and private institutions.⁶⁹

⁶⁷ Green Stimulus in a Post-pandemic Recovery: the Role of Skills for a Resilient Recovery (2020).

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7399593/>

⁶⁸ Green Stimulus in a Post-pandemic Recovery: the Role of Skills for a Resilient Recovery (2020).

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7399593/>

⁶⁹ <https://obamawhitehouse.archives.gov/the-press-office/2016/02/25/fact-sheet-recovery-act-made-largest-single-investment-clean-energy>

g) Which demographics were hit hardest by the economic shock?

Black Americans and Hispanic Americans have borne a disproportionate share of both the job losses and the housing foreclosures. Young adults have taken the biggest losses on the job front. Middle-aged adults have gotten the worst of the downturn in house values, household finances and retirement accounts. Men have lost many more jobs than women. And across most indicators, those with a high school diploma or less education have been hit harder than those with a college degree or more.⁷⁰

2. COVID-19 policies and initiatives: Describe some policy initiatives or programmes your economy has implemented in response to the economic shocks resulting from the onset of COVID-19 (please include at least one green policy initiative or programme). What were the impacts of the structural reforms or policies? Did these reforms support a green recovery? How much did your economy invest, monetary and non-monetary, in green recovery policies? Were there obstacles in implementing green policy reforms and how were these overcome? Does your economy foresee green policies or programmes being implemented beyond the pandemic?

As of November 30, 2021, about \$4.6 trillion in relief funds had been provided to fund response and recovery efforts for—as well as to mitigate the public health, economic, and homeland security effects of—the COVID-19 pandemic from six COVID-19 relief laws. These include the American Rescue Plan Act, the Consolidated Appropriations Act, the Paycheck Protection Program and Health Care Enhancement Act, the CARES Act, the Families First Coronavirus Response Act, and the Coronavirus Preparedness and Response Supplemental Appropriations Act. As of November 30, 2021, the federal government had expended \$3.5 trillion of the funds provided under these six laws.⁷¹

In addition, the Infrastructure Investment and Jobs Act (IIJA) also included provisions to support a green recovery and advance the Biden-Harris Administration's emissions reduction and sustainability goals. IIJA authorized \$39 billion of new investment to expand and modernize public transit over the next five years, replace thousands of deficient transit vehicles, including buses, with clean, zero-emission vehicles, and improve accessibility for the elderly and people with disabilities. IIJA also includes a \$65 billion investment to upgrade power infrastructure by building thousands of miles of new transmission lines to facilitate the expansion of renewables and clean energy. It will also fund new programs to support the development, demonstration, and deployment of cutting-edge clean energy technologies to accelerate the United States' transition to a zero-emission economy. IIJA will also invest \$7.5 billion to build out a network of electric vehicle (EV) chargers in the United States. The legislation will provide funding for deployment of EV chargers along highway corridors to facilitate long-distance travel and within communities to provide convenient charging where people live, work, and shop. This investment will support the goal of building a network of 500,000 EV chargers to accelerate the adoption of EVs, reduce emissions, improve air quality, and create good-paying jobs across the United States.

The Biden-Harris administration is committed to advancing green policies and initiatives beyond the pandemic. Examples include ongoing efforts to decarbonize industry by

⁷⁰ <https://www.pewresearch.org/social-trends/2010/06/30/how-the-great-recession-has-changed-life-in-america/>

⁷¹ GAO Covid-19 Relief Report to Congressional Committees (2022). https://files.gao.gov/reports/GAO-22-105291/index.html#TOC_Background

accelerating the development of clean hydrogen, integrate trade policy with climate goals (e.g., EU steel), and leveraging federal procurement to promote the use of low-carbon materials.⁷²

3. Data, measurement, and monitoring: How does your economy measure the impacts of economic shocks? Please provide some examples. Does it measure the coverage, adequacy and impact of structural reforms implemented in response? How does it define and measure whether a policy is ‘green’? Please provide examples.

The unemployment rate and claims on unemployment insurance (UI) are key indicators used to measure the impacts of economic shocks. For example, the Department of Labor reported in May 2020 that the U.S. nonfarm unemployment rate in April 2020 increased by 20 million, which raised the total number of unemployed Americans 23 million, or an unemployment rate of 14% of a total civilian labor force of 156 million.⁷³ By these metrics, the labor market has shown signs of improvement in recent months. Weekly initial claims for regular unemployment insurance benefits were generally similar to pre-pandemic levels in November and December 2021. Moreover, in December 2021 the employment-to-population ratio, which measures the share of the population employed, was 59.5 percent—an increase from the previous month. However, this ratio was 1.7 percentage points lower than in the pre-pandemic period, indicating that labor market conditions remain worse than in the pre-pandemic period.⁷⁴

Green economic policy encompasses fiscal measures (i.e., governmental tax and spending actions) that support short-term economic activity that enhances environmental and natural resource quality over a longer term. The deployment of energy efficiency (EE) and renewable energy (RE) technologies, as well as associated initiatives (e.g., grid modernization, electrification of transport, and so on) have been demonstrably effective in providing this kind of short-run economic boost while simultaneously strengthening the resilience of the power sector.⁷⁵

4. Best practices: Among your economy’s structural reforms implemented in response to economic shocks in the past, discuss some green policies you assess have been implemented effectively. Please identify the top reasons for the effectiveness of these reforms, outlining any long-term impacts they had. Has the reform increased resilience in your economy to future shocks? Does the reform have ongoing applicability to future shocks?

A key element of the ARRA clean energy-related investments is that while they were designed to provide long-term benefits, the allocations focused as much as possible on projects that were “shovel-ready” and could be deployed relatively quickly, in order to take advantage of resources in the economy that were under-utilized due to the Great Recession. In short, the allocations aimed to put people back to work and contributed to both the recovery and reinvestment goals of the legislation.

ARRA’s clean energy policies laid the foundation for a long-term transition to a cleaner economy by improving clean energy markets, unlocking private capital, helping drive down clean energy technology costs, and expanding research and development of new technologies.

⁷² <https://www.whitehouse.gov/briefing-room/statements-releases/2022/02/15/fact-sheet-biden-harris-administration-advances-cleaner-industrial-sector-to-reduce-emissions-and-reinvigorate-american-manufacturing/>

⁷³ <https://crsreports.congress.gov/product/pdf/R/R46270/68>

⁷⁴ https://files.gao.gov/reports/GAO-22-105291/index.html#TOC_Background

⁷⁵ Powering Post COVID-19 Resilient Recovery with Green Stimulus (2021). <https://www.nrel.gov/docs/fy21osti/78782.pdf>

5. Action Plans: Considering the policy gaps, barriers and challenges your economy has in enabling a green response to economic shocks, what are your economy's short and medium-term plans to overcome them? If your economy has developed metrics and benchmarks to identify the appropriate policy responses and track progress, please provide details.

Meeting the challenges of climate change requires an investment in the Federal Government's employees and a workforce with the knowledge and skills to effectively apply sustainability, climate adaptation, and environmental stewardship across disciplines and functions. Federal agencies will incorporate sustainability and climate adaptation into their human capital planning, including optimal staffing, training, and associated resources. The Federal Government has developed many high-quality resources to assist Federal facility managers who are implementing or coordinating internal sustainability or climate preparedness efforts.⁷⁶

6. Regional cooperation: What role can regional cooperation and regional bodies such as APEC (but also other international bodies) play in understanding how to implement a green recovery from economic shocks? What are the areas for collaboration, or areas your economy would like to learn more about, on this topic? Does your economy consider that more regional cooperation could be valuable to better understand areas of a green recovery?

APEC has clear value add in its ability to bring together a diverse group of public, private, and civil society stakeholders to support sustainability and green recovery policies. The Committee on Trade & Investment can work to develop a policy framework for compostable bioplastics, focusing on the harmonization of labeling and compostability standards and support e-waste recovery projects to identify solutions that modernize regulatory processes to move e-waste responsibly so that it can serve as productive inputs to the electronics manufacturing process. The Energy Working Group can work to secure an agreement to establish new, ambitious energy targets and build support for a new Energy Transition Initiative that would complement the existing Energy Security Initiative. APEC economies can also support efforts to further deepen engagement with the private sector and relevant stakeholders to advance the legal timber trade, including through endorsement and implementation of EGILAT's next two-year policy theme. The Ocean and Fisheries Working Group can work to promote regional and global cooperation on the development and implementation of marine debris monitoring methodologies that harmonize approaches amongst member economies and enhance information sharing to better understand the scale and scope of this transboundary issue.

⁷⁶ Federal Sustainability Plan (2021). <https://www.sustainability.gov/pdfs/federal-sustainability-plan.pdf>

VIET NAM

1. Impact and challenges: Please answer the questions below with respect to two economic shocks that your economy has faced in the past.
 - a) Describe the economic shock.
 - b) What impacts did the economic shock have on your economy?
 - c) What sectors of your economy were most vulnerable to the economic shock?
 - d) Did your economy implement any green policy reforms in response to the economic shock? How did these reforms contribute to economic recovery?
 - e) What have been the long-term impacts of green reforms, and have they helped your economy become more resilient to future shocks?
 - f) How did existing structural policies, institutions and regulations allow you to adequately respond to the economic shocks?
 - g) Which demographics were hit hardest by the economic shock?

Shortly after the accession to the World Trade Organization in 2007, Viet Nam's economy was significantly affected by the global financial crisis in 2008 which triggered the world economic downturn since 2008. The global economy also suffered from severe impacts of the food and energy crises. As a consequence, export growth was negative for the first time in Viet Nam in 2009, and economic growth dropped to 5.4% in the year. All sectors have slower growth rates in this year. Agriculture-forestry and fishery suffered from the most severe downturn, with its growth rate contracting from 4.7% in 2008 to 1.9 percent in 2009.

To address the impacts of the global financial crisis and domestic inflation, Viet Nam had to implement comprehensive structural reform, *among others*. In this process, Viet Nam also made efforts to promote the green transition. In 2012, the Decision 1393/QĐ-TTg was issued approving the National Strategy on Green Growth. The Strategy emphasized that “*green growth is an important part of sustainable development and ensures rapid, effective, sustainable economic development and significantly contributes to the implementation of the national strategy on climate change*”, and that “*Green growth must be based on scientific foundation and modern technology appropriate with Vietnamese conditions*”. The Strategy set out specific tasks of: (i) Reducing the intensity of greenhouse gas emissions and boosting the use of clean energy, renewable energy; (ii) Production greening; and (iii) Greening lifestyle and boosting sustainable consumption.

By 2019, the National Strategy on Green Growth – as part of the broader structural reform program – contributed to higher and more resilient economic growth in Viet Nam. Average GDP growth during 2016-2019 reached 7.12% p.a. The most significant impact is witnessed in the energy transition. By 2020, 113 solar and wind power projects with a total capacity of over 5,700MW have been released at full capacity. According to the report of the Ministry of Industry and Trade in 2020, after 7 years of implementing the Energy Labelling Program, over 20,000 product categories in household appliances; industrial equipment and office equipment had energy label. The elasticity of electricity/GDP in the 5-year period has decreased from 2.0 in the 2001-2010 period to 1.9 in the 2011-2015 period and to 1.43 in the 2016-2020 period.

2. COVID-19 policies and initiatives: Describe some policy initiatives or programmes your economy has implemented in response to the economic shocks resulting from the onset of COVID-19 (please include at least one green policy initiative or programme). What were the impacts of the structural reforms or policies? Did these reforms support a green recovery? How much did your economy invest, monetary and non-monetary, in green

recovery policies? Were there obstacles in implementing green policy reforms and how were these overcome? Does your economy foresee green policies or programmes being implemented beyond the pandemic?

Viet Nam carried out a diverse range of policies to support the business community and the people right from the outbreak of COVID-19. These include the rescheduling of tax payment and land lease fee, reduction of various fees, restructuring and extension of corporate loans, in-kind and in-cash support to the households and disadvantaged groups of labourers, etc. The Economic Recovery Plan was designed in 2021, with approval in January 2022 to promote economic recovery as COVID-19 situation became under control.

During the COVID-19 pandemic, Viet Nam emphasized the need to promote green recovery. At the COP26 in Glasgow, the UK, on November 3, 2021, Viet Nam's net-zero emissions target by 2050, reduction of methane, plan of action on forest and land use was announced. In 2021, the new Green Growth Strategy for 2021-2030 was approved, with a vision to 2050. It set out the general objective to accomplish green growth, thereby promoting the economic restructuring associated with innovation of growth model, in order to achieve economic prosperity, environmental sustainability and social equality; strive towards green and carbon-neutral economy and contribute to achievement of the goal to reduce global warming.

Viet Nam also made progressive efforts in promoting circular economy. The provisions on circular economy were incorporated in the Law on Environmental Protection as early as in 2020. In June 2022, the Decision No. 687/QĐ-TTg was issued approving the scheme to promote circular economy development in Viet Nam. A key task under the Decision No. 687/QĐ-TTg is to establish a regulatory sandbox for circular economy development, via a Government decree expected to be issued in March 2023.

While the impacts of above policies to support green recovery remain to be investigated, the information to date shows some early progress. Investors started to pay more attention to investing in eco-industrial zones. The model of eco-industrial estates was implemented by the Ministry of Planning and Investment in 3 industrial zones since 2015, and in another 3 industrial zones in the second phase since 2020. Some major firms investing in agriculture also adapt their business plan to incorporate circular economy models. Some local provinces also took actions to adapt circular economy models to create jobs and income for their labourers, so that these labourers do not need to migrate to major provinces again after COVID-19 pandemic.

3. Data, measurement, and monitoring: How does your economy measure the impacts of economic shocks? Please provide some examples. Does it measure the coverage, adequacy and impact of structural reforms implemented in response? How does it define and measure whether a policy is 'green'? Please provide examples.

To support measurement and monitoring of policies towards green transition and green recovery, Viet Nam has revised the Law on Statistics in 2021 (Law No. 01/2021/QH15) with updated list of indicators on environmental protection. These include: current forest area; forest coverage; number of natural disasters and level of injury; number and areas of nature reserves; area of degraded land; proportion of hazardous wastes which have been collected and treated; proportion of solid domestic wastes which have been collected and treated; percentage of existing industrial zones, export processing zones and high-tech parks with centralized wastewater treatment systems meeting environmental standards; percentage of existing industrial clusters with centralized wastewater treatment systems meeting environmental standards; greenhouse gas emissions per capita; percentage of days in a year with dust

concentrations of PM2.5 and PM10 in the atmosphere exceeding the allowable environmental technical regulations in urban centers of grade IV or higher.

To guide the circular economy models under the Law on Environmental Protection, Decree No. 08/2022/ND-CP in 2022 set out the criteria on circular economy models. The general criteria include: (i) to reduce exploitation and use of non-renewable resources and water resources; increase efficiency in the use of resources, raw materials and materials; save energy; (ii) to extend useful life of materials, equipment, products, goods, parts; and (iii) to reduce waste generated and minimize adverse impacts on the environment including reducing solid waste, wastewater and emissions; reducing the use of toxic chemicals; recycling waste, recovering energy; reducing disposable products; develop green purchasing habits. The Decree also enables line ministries and provincial authorities to develop specific criteria for circular economy models under their areas of competency. In a related aspect, the Decree on regulatory sandbox for circular economy development is being developed, so as to create economic space for private investment in specific circular economy projects, rather than having to wait until there are sufficient specific and concrete policies of all ministries and provincial authorities concerned.

4. Best practices: Among your economy's structural reforms implemented in response to economic shocks in the past, discuss some green policies you assess have been implemented effectively. Please identify the top reasons for the effectiveness of these reforms, outlining any long-term impacts they had. Has the reform increased resilience in your economy to future shocks? Does the reform have ongoing applicability to future shocks?

The quality of structural reform toward green recovery is also ensured. Viet Nam had rigorous research and reports to support the policies towards green recovery. The Ministry of Planning and Investment has conducted important research and reports to support the preparation of the National Strategy on Green Growth for 2021-2030, vision to 2045. The Central Institute for Economic Management has been developing a quantitative model to support impact assessment of climate resilient economic models since 2018. The Ministry of Natural Resources and Environment have prepared concrete regulatory impact assessment for the draft Decree to guide implementation the Law on Environmental Protection in 2020. These efforts have permitted concrete regulatory impact assessments in the rulemaking process.

Besides, Viet Nam has engaged in frequent and rigorous public consultation of green recovery policies. The Ministry of Planning and Investment has organized various workshops and policy dialogues to collect ideas, inputs and comments on the draft National Strategy on Green Growth for 2021-2030, vision 2045. The Central Institute for Economic Management has frequent consultation of line ministries, provincial authorities, and investors on the direction to develop circular economy, and the policy issues that need to be addressed quickly. The Ministry of Natural Resources and Environment also had public consultation of the draft Decree to guide implementation the Law on Environmental Protection. These public consultation efforts helped refine and improve the draft regulations concerned, while enhancing the participation and preparedness of the related authorities and business community ahead of new green recovery policies.

5. Action Plans: Considering the policy gaps, barriers and challenges your economy has in enabling a green response to economic shocks, what are your economy's short and medium-term plans to overcome them? If your economy has developed metrics and

benchmarks to identify the appropriate policy responses and track progress, please provide details.

Viet Nam has identified the below strategic directions to promote further green growth and green recovery:

1. General directions: Focus efforts on economic restructuring associated with innovation of the growth model, reduction of greenhouse gas emissions through economical and efficient extraction and use of energy and natural resources that are based on science and technology, application of digital technology and digital transformation, development of sustainable infrastructure facilities, establishment of green lifestyle, ensuring the compliance of green transformation process with equality and inclusion principles, and improvement of resilience throughout the economy.

2. Directions for development of key industries and sectors:

a) Improve productivity and efficiency in energy use, and reduce the consumption of energy in manufacturing, transportation, trade and industry; ensure the energy security towards synchronous development of energy sources, economical and efficient extraction and use of domestic sources of energy, and change of structure of energy sources towards reduction of the dependency on fossil energy; promote efficient extraction and raise the proportion of renewable energy sources and new energy in production and consumption of energy.

b) Develop modern, clean, organic and sustainable agriculture; improve quality, value added and competitiveness of agricultural production through adjustments and changes in structure of livestock, crops, forestry and aquaculture, and application of procedures and technologies that enable economical and efficient use of breeds, varieties, feed, agricultural materials and natural resources, etc.; accelerate the progress of projects on afforestation, reforestation and sustainable development of forestry economic activities.

c) Gradually impose limits on economic sectors that produce a lot of waste and cause environmental pollution and degradation; facilitate development of new green manufacturing sectors. Promote the quick development of green economic sectors in order to create more jobs, increase incomes of workers, and enrich natural capital. Attach special importance to application of green technology, and manufacturing management and control systems that comply with good manufacturing practices so as to save natural resources, reduce emissions and improve ecological environment.

d) Develop sustainable traffic, energy and irrigation infrastructure facilities by means of promotion of investments in upgrading of traffic systems and networks that must save energy, have high economic and environmental efficiency, and ability to adapt to climate change; apply modern technology so as to improve quality of electrical distribution grid, reduce electrical losses and enhance efficiency in power use towards development of smart electrical grid; develop and modernize irrigation systems that must be synchronously connected with infrastructure systems of other industries or sectors in order to ensure water security and ability to prevent, prepare for and mitigate disasters and cope with climate change, and serve production and people's life.

e) Promote urbanization towards development of smart and sustainable cities that must be resilient to climate change, ensure economic - ecological efficiency, facilitate development of public transport, increase attractiveness, competitiveness and environmental friendliness, and

save travel time; give priority to development of urban public transport systems with the participation of all economic components in investments in vehicles and operation of public passenger transport.

f) Develop new-style rural areas where the lifestyle is in harmony with the environment and nature, and decent living standards while the green, clean, beautiful and civilized landscape and environment are protected and developed. Consistently implement measures and harmoniously combine construction solutions with non-construction solutions; attach special importance to disaster risk management, climate change adaptation and environmental protection.

g) Intensify management of waste and air quality through research and development of integrated solid waste management models and waste treatment technology towards transformation of waste into manufacturing raw materials; promote implementation of measures for classifying solid waste at source, reusing and recycling solid waste; prevent and minimize generation of substances that cause air pollution from different industries/sectors and enhance efficiency in air quality management.

h) Promote green consumption and purchase through programs on energy labelling, eco-labelling, green labelling, etc.; step up green public procurement and continue to effectively employ economic tools for adjusting consumption behaviour. Gradually create an environment for and establish green culture and lifestyle.

i) Strengthen management of water and land resources, and biodiversity through promotion of efficient use of land resources and protection of soil environment, and cope with land degradation and desertification; ensure water security, and protect and efficiently use economy-wide water resources; intensify protection and restoration of natural ecosystems and preserve biodiversity; conduct research on and promote development of ocean economy.

k) Promote green transformation in social sectors such as labour and employment, healthcare and tourism; ensure equality in accessing opportunities, information and basic social services during green transformation.

6. Regional cooperation: What role can regional cooperation and regional bodies such as APEC (but also other international bodies) play in understanding how to implement a green recovery from economic shocks? What are the areas for collaboration, or areas your economy would like to learn more about, on this topic? Does your economy consider that more regional cooperation could be valuable to better understand areas of a green recovery?

APEC could facilitate green recovery efforts of member economies in various ways. First, APEC could facilitate the discussion of structural reform requirement to promote green recovery, especially with promote development of environmental services, innovative ways to connect green supply chain, development of bio-circular-green economy, etc. Second, APEC could enable member economies to share experiences and best practices in promoting green recovery, especially in incorporating green recovery in the regional and domestic structural reform agendas. APEC could finance capacity-building projects to facilitate development of regulatory sandboxes to develop economic models and activities (such as circular economy models) that can quickly contribute to green recovery.

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