GGGI TECHNICAL REPORT NO. 22

GREEN GROWTH INDEX 2021

Measuring performance in achieving SDG targets

December 2021

greengrowthindex.gggi.org

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Green Growth Index

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Please cite this publication as:
L.A. Acosta, S. Zabrocki, I. Nzimenyera, R. Sabado Jr., J.R. Eugenio, S.P. Gerrard, H.G.H. Luchtenbelt, S. Lee, K. Lehmann, and G.P. Adams (2021) Green Growth Index 2021 – Measuring performance in achieving SDG targets, GGGI Technical Report No. 16, Green Growth Performance Measurement Program, Global Green Growth Institute (GGGI), Seoul, South Korea [Contributors: M. Astralaga, A. Bhatt, N. Cantore, R. Cavatassi, S. Chonabayashi, D. Eaton, F. Eboli, G. Esambe, L. Farnia, R. Gainza, R. Hamwey, R. Hogeboom, U. Iftikhar, A. Jacob, J. John-Norville, K. Kitamori, C. Krug, G. Lafortune, R. Lasco, S. Liu, B. Liu, J. Maughan, N. Nierhoff, F. Sheng, V. Todorov, J. Vause, C. Hopkins, F. Tubiello, H. Rankine, J.G. Pineda, Z. Zarnic, Nera Mariz Puyo, Sarena Grace Quiñones, and Dervin John Valencia]

Preface

The world continues to face the economic and social impacts of the COVID-19 pandemic and at the same time the governments are increasingly pressed by the society, especially the young generation, to make concrete actions to deal with the environmental challenges posed by climate change and ecosystem degradation. There are opportunities to address the combined impacts of all these problems through COVID-19 recovery plans aiming to achieve ambitious targets for Sustainable Development Goals (SDG), Nationally Determined Contributions (NDC), National Adaptation Plans (NAP), National Biodiversity Strategies and Action Plans, and others. GGGI has ramped up its efforts to support its Member Countries and Partners in implementing green recovery measures and projects ranging from small-scale solar irrigation to large-scale green hydrogen projects. Regardless of the scale, sector, and duration of the projects, GGGI ensures that the six strategic outcomes are addressed – reduction of greenhouse gas emission, creation of green employment, access to sustainable services, improvement in air quality, adequate maintenance of natural capital, and enhanced adaptation to climate change. These will help ensure that investments, especially those that are part of green recovery packages, will support "building back better" from COVID-19.

In this context, the Green Growth Index and the tools linked to it such as the Green Growth Simulation Tool and Green Recovery Index are very relevant to assess impacts of green policies and investments for several reasons: i) they are framed on green growth model, aiming to deliver equal opportunities from economic prosperity while protecting the environment; ii) they integrate SDG indicators and targets that are relevant to green growth dimensions that support the quality of life (i.e. efficient and sustainable resource use, natural capital protection, green economic opportunities, and social inclusion); and iii) they benchmark indicators against sustainability targets including the SDGs, the Paris Climate Agreement, and the Aichi Biodiversity Targets to measure country green growth performance. The multidimensionality of the Green Growth Index and its tools allows their application in assessing impacts of policy decisions and actions related to COVID-19 recovery plans on various environmental, economic, and social sustainability indicators.

This year, for example, GGGI collaborated with the Vivid Economics to assess the greenness of COVID-19 recovery measures in 21 GGGI Member Countries and Partners. By integrating the SDG-benchmarked indicators of the Green Growth Index and, as an outcome, developing GGGI's Green Recovery Index, the strengths and limitations of the recovery measures to contribute to long-term recovery of the countries have been revealed. Moreover, the collaboration with the Organisation of Eastern Caribbean States (OECS) Commission in developing Green-Blue Growth Index for the OECS region and applying the Green Growth Simulation Tool to assess the SDG co-benefits of the climate actions in selected OECS Member State allowed the measurement of performance in green growth transition in the region. In the next years, the application of the Green Growth Index in supporting green growth related assessments is expected to be further rolled out in various key sectors including energy, water, land use, waste and different critical issues including mitigation and adaptation, biodiversity and ecosystem, and gender and social inclusion.

Along with these expectations go the need to continue to improve the policy relevance of the Green Growth Index. In this year's edition of the Green Growth Index, four significant improvements were made to ensure robustness and enhance interpretability of its results. First, the SDG indicators that are important for efficient and sustainable resource use such as food loss and waste, among others, were added. Second, the confidence level on the Index trend based on data availability from 2010 to 2020 were estimated. Third, weights on the indicators to reduce the impact of green economic opportunities, which only has four indicators compared to twelve in other dimensions, were used. And fourth, country factsheets for 119 countries with scores for the Green Growth Index were included in the report. In collaboration with the experts, GGGI will continue to review and improve the Green Growth Index and its related tools in the next few years.

I would like to thank again the experts who are behind the continued success of the Green Growth Index. They include the policymakers from GGGI Member Countries and Partners as well as the members of the international expert group, which consists of professionals and specialists from relevant international organizations, non-government organizations, and the academe, who continue to participate in the annual review of the green growth indicators for the Index. The warmest gratitude is given to the scientists who are actively supporting the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) and Intergovernmental Panel on Climate Change (IPCC) assessments, and who, on their own interest and capacity, participated again in the review of the Green Growth Index this year. The GGGI Country Teams who believe in the value of the Green Growth Index and are thus interested in integrating it in their projects also deserve deep appreciation. GGGI's Green Growth Performance Measurement (GGPM) Global Program under the leadership of Dr. Lilibeth Acosta is responsible for the development and application of the Green Growth Index.

Dr. Frank Rijsberman
Director General
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Acknowledgements

This report was prepared by the Green Growth Performance Measurement (GGPM) team, including the consultants, researchers, and interns, and in close collaboration with the international expert group, whose members are experts and practitioners on metrics and indicators from international organizations, research institutions, and knowledge networks. On behalf of the authors of this report, GGGI would like to extend its sincere gratitude to the 102 experts who provided their valuable feedback to the indicators in this 2021 edition of the Green Growth Index. The conduct of the review through online survey allowed the participation of experts from different parts of the world. These experts represent 51 countries including 10 countries in Africa, 15 in Asia, 9 in the Americas, 12 in Europe, and 5 in Oceania. As in the previous years, the experts are from GGGI Headquarters and Country Offices, international organizations, policymakers from GGGI Member Countries and Partners, scientists from reputable universities and research institutions, and relevant non-government and private organizations. This year, about 26% of the experts are first time participants in the review, which indicates the increasing interest in the issue of green growth. The kind cooperation and participation of the GGGI colleagues in the Headquarters and Country Offices also deserve sincerest acknowledgement.

GGGI continues to benefit from the support of the international expert group by not only providing expert opinion on the Green Growth Index but also extending other significant support. Valentin Todorov, former officer in the United Nations Industrial Development Organization (UNIDO), deserves special gratitude for continuing to provide updated data on the share of green employment in total manufacturing employment for the Green Growth Index. Sincere appreciation is offered to Joan John-Norville and her colleagues in the Organisation of Eastern Caribbean States (OECS) Commission for supporting the application of the Green Growth Index framework to the OECS Green-Blue Growth Index and coordinating the series of webinars to raise awareness of experts on this new Index. Shun Chonabayashi, former officer in the World Bank, also deserves the warmest gratitude for expressing continued interest in the expert group in his new position as Visiting Scholar in the Soka University in Japan. As the COVID-19 pandemic continues to make life and work very challenging, the members of the international group are expressing more commitment than ever to support further development of the Green Growth Index.

It is also important to acknowledge with gratitude the support of the GGGI colleagues in implementing various projects on the application of the Green Growth Index this year. Deepest thanks to the following colleagues for coordinating the work on the application of the Green Growth Simulation Tool with their respective government partners: Kristin Deason, Caribbean Representative; Julie Godin and Miklos Szekely, Country Representative and Program Officer, respectively, in Hungary; and Romain Brillie and Aida Diongue Niang, Country Representative and Deputy Country Representative, respectively, in Senegal. Special thanks are given to Stelios Grafakos for supporting the integration of the Green Growth Simulation Tool in projects related to Low Emissions Development Strategies (LEDS), Diana Alejandra Quezada Avila for good collaboration on the integration of the Green Growth Index in the assessment of COVID-19 green recovery measures, and the entire team of the Climate Action and Inclusive Development (CAID) Unit led by Ingvild Solvang for productive ideas and discussions on the integration of the Green Growth Index and Simulation Tool in various project proposals. Finally, the publications of the Green Growth Index and applications of the Green Growth Simulation Tool will not be possible without the unrelenting support of Frank Rijsberman, GGGI's Director General.

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Acronyms and Abbreviations

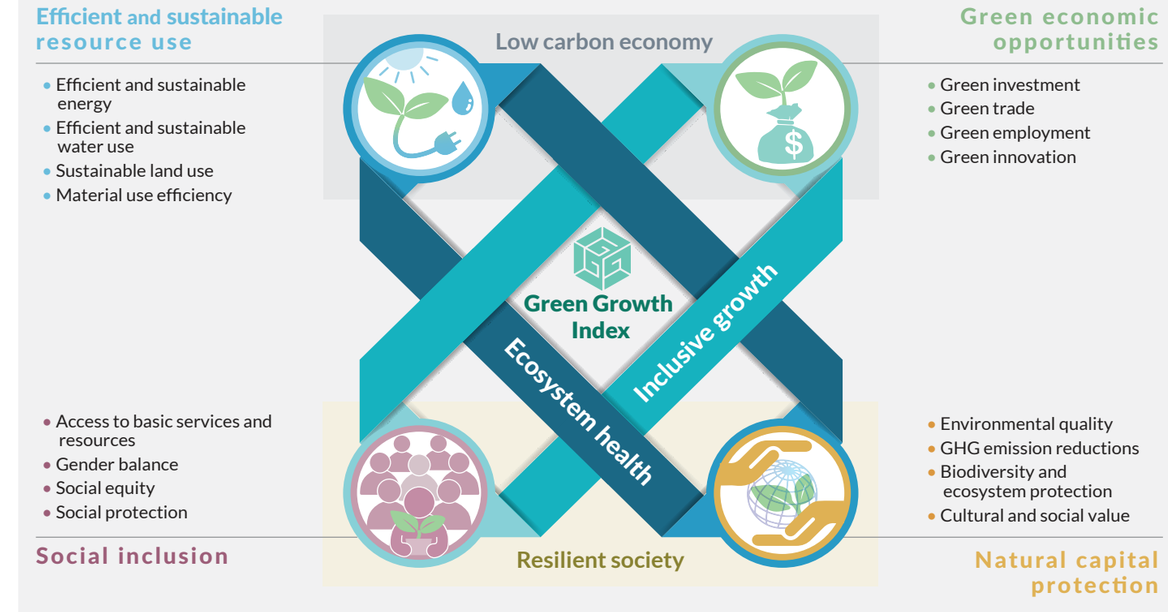
AB	Access to Basic Services and Resources
ADB	Asian Development Bank
AfDB	African Development Bank
AFOLU	Agriculture, Forestry, and Other Land Use
AHP	Analytic Hierarchy Process
BAU	Business-as-usual
BE	Biodiversity and Ecosystem Protection
CAID	Climate Action and Inclusive Development
CO_2	Carbon Dioxide
COVID-19	Coronavirus disease
CPF	Country Planning Framework
CV	Cultural and Social Value
DALY	Disability-Adjusted Life Year
DMC	Domestic Material Consumption
EA	Early Action
EE	Efficient and Sustainable Energy
EGD	European Green Deal
EPI	Environmental Performance Index
EQ	Environmental Quality
ESRU	Efficient and Sustainable Resource Use
EU	European Union
EW	Efficient and Sustainable Water Use
FAO	Food and Agriculture Organization of the United Nations
FAOSTAT	Food and Agriculture Organization Corporate Statistical Database
GB	Gender Balance
GDP	Gross Domestic Product
GE	GHG Emissions Reduction
GEM	Green Economy Model
GEO	Green Economic Opportunities
GEP	Green Economy Progress
GGGI	Global Green Growth Institute
GGKP	Green Growth Knowledge Partnership
GGPA	Green Growth Potential Assessment
GGPM	Green Growth Performance Measurement
GHG	Greenhouse Gas
GJ	Green Employment
GN	Green Innovation
GNI	Gross National Income
GT	Green Trade
GV	Green Investment
GW	Gigawatts
HDI	Human Development Index
HLPE	High Level Panel of Experts
HQ	Headquarters
IEA	International Energy Agency
IISD	International Institute for Sustainable Development
IPBES	Intergovernmental Platform on Biodiversity and Ecosystem Services
IPCC	Intergovernmental Panel on Climate Change
IRENA	International Renewable Energy Agency
KBA	Key Biodiversity Areas
LA	Late Action
LAC	Latin America and the Caribbean
Lao PDR	Lao People's Democratic Republic
LDC	Least Developed Country
LEDS	Low Emission Development Strategies
LPI	Logistics Performance Index
ME	Material Use Efficiency
MENA	Middle East and North Africa
MF	Material Footprint
MJ	Megajoule
MSW	Municipal solid waste
MSY	Maximum Sustainable Yield
Mt	Metric tons
MtCO2e	Metric tons of carbon dioxide equivalent
N_2O	Nitrous Oxide
NAP	National Adaptation Plan
NCP	Natural Capital Protection
NDC	National Determined Contributions
NDP	National Development Plan
NGGS	National Green Growth Strategy
NGO	Non-government organizations
OECD	Organisation for Economic Co-operation and Development
OECS	Organisation of Eastern Caribbean States
PA	Protected Area
PAP	Priority Action Plan
PCA	Principal Component Analysis
PM	Particulate matter
PM2.5	Particulate matter with a diameter of less than 2.5 micrometers
PNIA	Peru's National Agricultural Innovatio
PPP	Purchasing power parity
PROIGUALDAD	Programa Nacional para la Igualdad entre Mujeres y Hombres
PSE	Emerging Senegal Plan
PV	Photovoltaic
SDG	Sustainable Development Goal
SDSN	Sustainable Development Solutions Network
SE	Social Equity
SEAI	Sustainable Energy Authority of Ireland
SI	Social Inclusion
SL	Sustainable Land Use
SP	Social Protection
SSRN	Social Science Research Network
Sum4All	Sustainable Mobility for All
TWh	Terawatt-hour
UHC	Universal Health Coverage
UN COMTRADE	United Nations International Trade Statistics Database
UNDP	United Nations Development Programme
UN ECA	United Nations Economic Commission for Africa
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
UNICEF	United Nations International Children's Emergency Fund
UNIDO	United Nations Industrial Development Organization
UNIOGBIS	United Nations Integrated Peacebuilding Office in Guinea-Bissau
UNSTATS	United Nations Statistics Division
USD	United States Dollar
WB	World Bank
WFP	World Food Programme
WHO	World Health Organization
WVI	World Vision International
WWF	World Wildlife Fund

1 Introduction

1.1 About the Green Growth Index

Green Growth Index is one of the tools[1] developed in-house by the GGGI to support the assessment of green growth performance and transition of its Member Countries and Partners. It a is composite index measuring a country's performance in achieving sustainability targets including Sustainable Development Goals (SDGs), Paris Climate Agreement, and Aichi Biodiversity Targets for four green growth dimensions – efficient and sustainable resource use, natural capital protection, green economic opportunities, and social inclusion (Acosta, et al., 2019a). The four dimensions of green growth are closely interlinked (Figure 1). Their interlinkages were framed on four sustainability concepts – low carbon economy, ecosystem health, inclusive growth, and resilient society (Box 1). Each dimension consists of four indicator categories, which can be interpreted as "pillars" of green growth, forming the basis for transition to efficient and sustainable resource use, enhancement of natural capital protection, creation of green economic opportunities, and enablement of social inclusion. Box 2 presents the definitions of the indicator categories. Each category consists of green growth indicators which have been selected through series of stakeholder dialogues and expert consultations. These indicators are mainly SDG indicators and benchmarked by the sustainability targets. This complementary set of internationally accepted targets and related indicators serves as a reliable reference for the Green Growth Index and allows governments to align their pathway to green growth with achieving the SDGs and national climate and biodiversity goals (Acosta et al., 2019b).

Figure 1 Conceptual Framework for the Green Growth Index



Box 1 Sustainability concepts framing the Green Growth Index

The interlinkages among the four green growth dimensions were drawn from the concepts of low carbon economy, resilient society, ecosystem health, and inclusive growth (details are available in Acosta et al., 2019a). These concepts guided the determination of four indicator categories that represent each dimension. They can be interpreted as "pillars" of green growth, forming the basis for transition to efficient and sustainable resource use, enhancement of natural capital protection, creation of green economic opportunities, and enablement of social inclusion. Using natural resources efficiently and sustainably will produce more goods and services with less resources. It will protect natural capital including water, energy, land, and materials as well as the ecosystem services they provide. A healthy ecosystem characterized by, for example, fertile soil, multifunctional forests, productive land and seas, good quality freshwater and clean air, and pollination increases economic productivity and creates new economic opportunities. Green Growth advocates the protection of natural capital because it provides sources of economic growth such as green jobs, trade, and investment. And it emphasizes not only people benefitting from growth but also people contributing to the efficient use and protection of natural resources. This makes social inclusion a key mechanism to both achievement and distribution of gains from green growth.

Source: Acosta et al. (2020a; p.2)

[1] *Other tools include the Green Growth Simulation Tool, Green Recovery Index, and adapted Green Economic Model.*

Box 2 Definitions of the indicator categories in Figure 1

1. Efficient and sustainable energy refers to delivering more services or products per unit of energy used and meeting present needs by using renewable sources to ensure sustainability of energy for future use (IRENA & C2E2, 2015; Kutscher, Milford, & Keith, 2018).
2. Efficient and sustainable water use refers to delivering more services or products per unit of water used, reducing environmental impact resulting from water scarcity and pollution, and improving water allocation among competing uses (UNEP, 2014; Wang, Yang, Deng, & Lan, 2015).
3. Sustainable land use refers to delivering more services or products for a fixed amount of land used and without compromising many ecosystem services provided by land (Auzins, Geipele, & Geipele, 2014; Smith, 2018).
4. Material use efficiency refers to delivering more services or products per unit of raw material used and reducing material demand through increased recycling, longer-lasting products, and component re-use, among others (Allwood, Ashby, Gutowski, & Worrell, 2011; Lifset & Eckelman, 2013).
5. Environmental quality refers to properties and characteristics of the environment which may affect the health of human beings and other organisms, including air, water and noise pollution, access to open space, and visual impacts of buildings (EEA, 2015, 2017).
6. Greenhouse gas (GHG) emission reduction refers to the reduction and removal of CO_2 and non-CO_2 emissions from the atmosphere in order to address climate change (IPCC, 2013; Symon, 2013).
7. Biodiversity and ecosystem protection refers to the protection of species, habitats, and ecosystems as well as the services they provide, with protected areas as an important measure to achieve biodiversity conservation (UNEP-WCMC & IUCN, 2016; IPBES, 2018).
8. Cultural and social value refers to the societal value given to natural capital due to its importance to communities and their local culture, which encourages sustainable use and protection of natural resources (Small, Munday, & Durance, 2017; da Rocha, Almassy, & Pinter, 2017).
9. Green investment refers to public and private investment that promotes, in a direct or indirect manner, sustainable resource use, including material, water, energy, and land, and natural capital protection, such as environmental protection and climate action, advancing sustainable development and green growth (Eyraud, Wane, Zhang, & Clements, 2011; Lović Obradović, 2019).
10. Green trade refers to the competitiveness of a country to produce and export environmental goods that can contribute to environmental protection, climate action, green growth, and sustainable development (PAGE, 2017a; European Parliament, 2019).
11. Green jobs refer to employment created and sustained by economic activities that are more environmentally sustainable; contribute to protecting the environment and reduce people's environmental footprint; and offer decent working conditions (UNEP, ILO, IOE, & ITUC, 2008; ILO, 2015).
12. Green innovation refers to product, process, and service innovations such as energy-saving, pollution-prevention, waste recycling, green product designs, or corporate environmental management that yields environmental benefits (Schiederig, Tietze, & Herstatt, 2011; Gao et al., 2018).
13. Access to basic services refers to the general availability of services, such as telecommunications, financial, water and sanitation, and energy services, to people regardless of income and location, and which requires an effective governance at multiple scales due to the local nature of these services (OECD & WB, 2006; UCLG, 2014).
14. Gender balance refers to equality based on gender in terms of rights, resources, opportunities, and protection, and the ability to use them to make strategic choices and decision. Women's social and economic empowerment at work, home, and communities increases inclusive growth and reduces poverty (UNICEF, 2011; UN Women, 2018).
15. Social equity refers to a fair and equitable public and social policy, giving equal opportunities to all by a fair allocation of and access to resources that take into account social inequalities. Addressing and embedding equity issues in the design of a policy will lead to sustainable economic growth over the long term (Clench-Aas & Holte, 2018; OECD, 2018).
16. Social protection refers to programs designed to provide benefits to ensure income security and access to social services, contributing to social equity and inclusive society and reducing poverty and exposure to risks (UNRISD, 2010; ESCWA, 2015).

The scores for the Green Growth Index range from 1 to 100, with 1 having the lowest or very low performance and 100 having the highest or very high performance. Because the indicators are benchmarked against sustainability targets (see Chapter 1.2.3 Link to the SDGs), a score of 100 on the index, dimensions, and indicator categories means that a country has reached a given target. The scores are classified in a given range and can be interpreted as follows:

- 80–100 are very high scores, having reached or almost reached the target.
- 60–80 are high scores, taking a strategic position to completely reach the target.
- 40–60 are moderate scores, finding the right balance to move forward to and avoid moving away from the target.
- 20–40 are low scores, identifying the right policies to align development toward achieving the target.
- 1–20 are very low scores, requiring significant actions to improve position relative to the target.

1.2 Updates in the 2021 Green Growth Index

When the Green Growth Index was first published in 2019, the experts participating in the review recognized that the available indicators do not sufficiently cover the issues relevant to measure green growth performance. Moreover, as SDG indicators will be continuously developed and improved in the next few years, the Green Growth Index will benefit from reviewing those additional SDG indicators that can strengthen its ability to measure distance to sustainability targets. The improvements made in this third edition of the Green Growth Index have been assessed and supported by 102 experts.

1.2.1 Changes on green growth indicators

The review of the 2021 Green Growth Index resulted to the replacements of four indicators due to (i) availability of other indicators with improved country coverage from the UNSTATS SDG database; (ii) inclusion of new indicators which are currently being suggested to be part of the UNSTATS SDG database; (iii) exclusion of indicators for which time-series data are not available and their availability is not expected to change soon. These changes did not alter the number of indicators in the Index.

For this year's edition of the Green Growth Index, there were four motivations for the improvements of the indicators. The first one resulting to an increase in number of indicators from 36 in 2020 to 40 in 2021. The motivations are as follows:

1. **Motive 1:** The availability of other indicators that will complete the target number of indicators per category.
2. **Motive 2:** The availability of other indicators for economic sector that have big impact on climate change.
3. **Motive 3:** The availability of other indicators with improved country coverage from the UNSTATS SDG database.
4. **Motive 4:** The inclusion of new indicators related to food security which continue to be adversely impacted by the COVID-19 pandemic.

Table 1 provides the list of the four added indicators in the efficient and sustainable resource use and the replaced indicators in the social inclusion. These changes allowed the representation of sustainability issues that require urgent policy attention. These issues include transport which contributes about 24% of direct global CO2 emissions from fuel combustion (IEA, n.d.), ruminant livestock which contributes about 14.5% of the global greenhouse gas (GHG) emissions (Gerber et al., 2013) or even much higher as recent study suggested (Rao, 2021), food waste which contributes 8-10% of the global GHG emissions (IPCC, 2020; UNEP, 2021), and fisheries which contributes about 34% of biologically unsustainable fish stock levels (FAO, 2020). An important motivation for adding prevalence of undernourishment (AB2) as a new indicator in social inclusion is to capture the increasing adverse impact of COVID-19 pandemic on access to adequate food, which has implications on poverty reduction and health due to reduction in calorie intake and nutrition. People living in poverty and with health problems will have reduced capacity to participate in creating and benefit from green economic opportunities. According to World Bank (2021), about 30% (2.37 billion) of the global population was suffering from inadequate food due to combined impacts of price increase and income reduction/loss in 2020 and the situation is expected to further deteriorate by the end of 2021. As the pandemic could persist in the near future, other added indicators in the Green Growth Index would also contribute to ensuring adequate food supply including sustainable fisheries (EW3) and reduced food loss and waste (ME3).

Table 1 List of added and replaced indicators and motivations for the change in the 2021 Green Growth Index

Dimension	Indicator		Change made	Motivations for the change
Efficient and sustainable resource use	EE3:	Efficiency in sustainable transport (Score)	Added	1, 2
	EW3:	Sustainable fisheries as a proportion of GDP (Percent)	Added	1, 3, 4
	SL3:	Share of ruminant livestock population to agricultural area (Percent)	Added	1, 2
	ME3:	Share of food loss to production and food waste to food consumption (Percent)	Added	1, 3, 4
Social Inclusion	AB2:	Prevalence of undernourishment (Percent)	Added	4
	AB3:	Universal access to sustainable transport (Score)	Replaced	2

Notes: The previous indicator AB2 population with access to electricity and clean fuels/technology (Percent) was combined with other indicators in AB1, so this indicator remained to be considered in the Green Growth Index.

1.2.2 Updated indicator framework

The new indicators were validated and confirmed by 102 experts from 51 countries (10 countries in Africa, 15 in Asia, 9 in the Americas, 12 in Europe, and 5 in Oceania) with representations from GGGI, international expert group, scientific community, policymakers, non-government organizations (NGOs), and private sector (Figure 2), through online expert consultations (see Chapter 5 Expert consultations). While NGOs and private sector appear to be underrepresented, five (19%) of the members of the international expert group are also from NGOs, increasing the total number of experts to 12 out of 102 (Figure 2). In 2018, the Green Growth Performance Measurement (GGPM) team formed the international expert group to continuously support the development of the Green Growth Index. Many experts in this group are also members of the Green Growth Knowledge Partnership (GGKP) Metrics and Indicators Working Group.

Figure 2 Characteristics of the experts who participated in the review of the new indicators

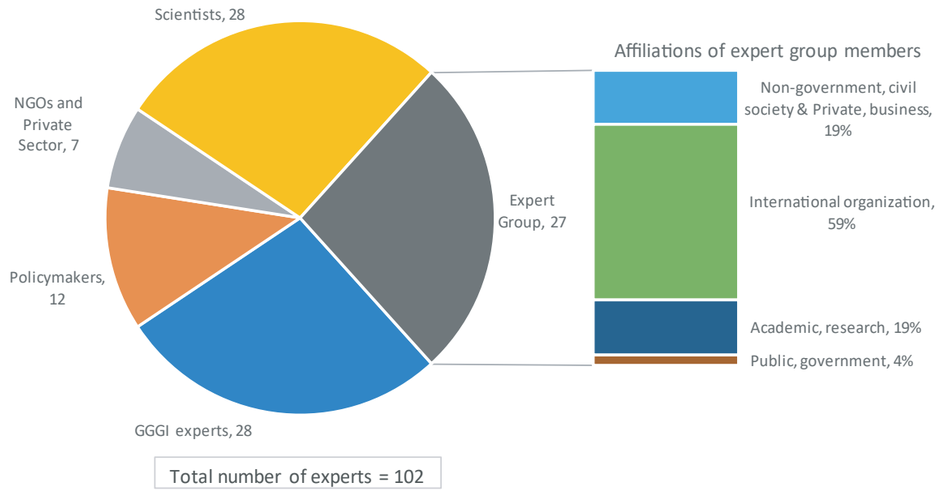


Figure 3 presents the updated indicator framework with the new green growth indicators for the 2021 Green Growth Index. Like the natural capital protection and social inclusion dimensions, the efficient and sustainable resource use dimension has three indicators per category, reaching the desired number of 12 indicators per dimension. Efficiency in sustainable transport (EE3) represents the third indicator for efficient and sustainable energy. It refers to Logistics Performance Index (LPI), which the World Bank's (WB) Sustainable Mobility for All (Sum4All) uses to represent indicator for efficiency in the sustainability mobility index (Sum4All, 2019). According to Sum4All, "an efficient sustainable transport system provide people a more consistent, reliable, convenient, and cost-effective way of transport without experiencing any problems in the system". For now, there are no other indicators for sustainable transport with global data. But a recent study showed that there is a positive and significant relationship between LPI and reduction in CO2 emissions (Karaduman et al., 2020). Hence, it can be assumed that improving the logistics system can contribute to reduction of GHG emissions in the transport sector. The LPI is published by WB using six dimensions including efficiency of customs and border management clearance, quality of trade and transport infrastructure (e.g., ports, railroads, roads, information technology), ease of arranging competitively priced shipments, competence and quality of logistics services (i.e., trucking, forwarding, and customs brokerage of logistics services), ability to track and trace consignments, and frequency with which shipments reach consignees within scheduled or expected delivery times (World Bank, n.d.-a). In addition to efficiency in sustainable transport, Sum4All publishes a universal access to sustainable transport and mobility (Sum4All, 2019), which is included as third indicator for access to basic services and resources (AB3) in the social inclusion dimension in the 2021 edition of the Green Growth Index. The previous AB3 indicator on fixed internet broadband and mobile cellular subscriptions is deemed more relevant to green economic opportunities as it is increasingly used as a platform to create business and livelihood opportunities in developing countries. It will thus be reviewed next year for inclusion under the green economic opportunities dimension.

The third indicator for efficient and sustainable water use category is the sustainable fisheries as a proportion of Gross Domestic Product (GDP) (EW3), which is published by the Food and Agriculture Organization (FAO) of the United Nations . It is an SDG indicator (14.7.1) that aims to ensure that the use of marine resources to support the fish product demand by communities and industries does not endanger the long-term sustainability of fish stocks. The indicator is very relevant to efficient and sustainable water use because SDG 14 refers to the conservation and sustainable use of water resources including oceans, seas and marine (UNSTATS, 2021a). Ensuring sustainable fisheries will continue to be a global challenge because fish consumption has increased more than the other animal protein foods (i.e., per capita consumption increasing from 9.0 kg in 1961 to 20.5 kg in 2018) and fish and fishery products have become highly traded food commodities globally (i.e., 38% of total production in 2018) (FAO, 2020). Moreover, recent studies suggested that climate change had already and will continue to have an adverse impact on fish production. For example, the total maximum sustainable yield (MSY) of 124 commercially important fish species, which represent one third of modern fisheries catch, had declined by 4.1% from 1930 to 2010 due to warming of water (Mossler, 2019). The reduction in fish catch by 40% is projected to result in some tropical exclusive economic zones due to high GHG emissions (Lam et al., 2020). Overfishing will make fish stocks more vulnerable to climate change because it reduces the age, size, and geographic diversity of fish populations (Brander, 2007).

The share of ruminant livestock population to agricultural area (SL3) is the third indicator for the sustainable land use category, which was computed by taking the proportion of total number of ruminants (i.e., cattle, sheep, goats, etc.) to the share of total agricultural area. The data for livestock population and agricultural area were downloaded from the FAOSTAT database (FAO, 2021). The indicator estimates the intensity of livestock production which indicates higher emission per unit area. Moreover, it indicates density per animal, informing about the land area used for animal grazing or for crops to produce animal feed. Ideally, ratio should be based on land area used for livestock, but this data are currently not available. However, recent global data reveal that livestock production uses 77% of the total agricultural land, while contributing only 18% and 37% of the global calorie and protein supply, respectively (Ritchie, 2019). Recent study revealed that production of animal-based food (including livestock feed) contributes 57% of the global emissions from food production (Xu et al., 2021). Within the livestock sector, ruminants represent 62% of the GHG emissions and sustainable livestock management can contribute to significant emissions reduction (FAO, n.d.-a). Although meat consumption is slowly shifting towards poultry, beef still accounts for a significant 20% of total global meat consumption (OECD & FAO, 2021).

The combined share of food loss to production and food waste to food consumption (ME3) represents the third indicator for material use efficiency category. Both were recently added as SDG indicators (SDG 12.3.1 a and b), with data published by the FAO and UNEP, respectively. Food loss and waste are defined as "a decrease, at all stages of the food chain from harvest to consumption, in mass, of food that was originally intended for human consumption, regardless of the cause" (HLPE, 2014). One-third of the global food production is estimated to be lost and wasted (UNFCCC, 2020; WWF, n.d.). There are two environmental issues linked to food loss and waste – the natural resources used to produce food and emissions released to produce and dispose (e.g., landfill, burn) it. About 70% of freshwater resources and 50% of habitable land are used for agriculture (Ritchie, 2019; World Bank, 2020). Reducing food loss and waste combined with adopting nature-positive production practices is estimated to reduce food-based GHG emissions by at least 30%, wildlife loss by up to 46%, and agricultural land-use by at least 41% (WWF, 2020). Reducing food loss and waste is a management and behavioral practice that improves resource use efficiency for land and water (Cattaneo et al., 2021). It is linked to material use efficiency, where food loss and waste affect efficiency in material input and output flows (Amicarelli et al., 2021). The estimated 8% GHG emissions from food loss and waste is almost equivalent to global transport emissions (EC, 2012 as cited in FAO, 2011; UNFCCC, 2020) Food loss and waste have also implications on food security and nutrition and the sustainability of food systems (HLPE, 2014). The 1.3 billion tons of food lost and wasted could "feed every undernourished person on the planet" (WWF, n.d.). The urgency of reducing food loss and waste is underlined by the fact that currently almost 690 million people (8.9% of global population) are hungry and, in five years, additional 60 million will become hungry under the pandemic situation (FAO et al., 2020).

The prevalence of undernourishment has steadily declined during 2005-2014 and became relatively unchanged until 2019 (FAO et al., 2020). But the combined impacts of the COVID-related economic disruptions, climate change, and ongoing conflict have intensified global food insecurity since 2020 (Oxfam, 2021), and the number of undernourished people is estimated to increase by 153.6 million from 2019 to 2030 (FAO et al., 2020). Millions of families are forced to "skip meals skip meals, opt for cheaper and less nutritious food, or go without food altogether" as they lost their jobs or received lower incomes (WVI, 2021). Climate change affects food production due increase in temperature, decrease in water resources, spread of pests and diseases, etc. (Williamson et al., 2021) and conflict is driving hunger in many countries (WFP USA, 2017). As access to food and nutrition is posing significant threat to sustainable development, the SDG 2.1.1 indicator on prevalence

of undernourishment is included as the second indicator (AB2) for access to basic services and resources in social inclusion dimension. The prevalence of undernourishment is defined as the "proportion of the population whose habitual food consumption is insufficient to provide the dietary energy levels that are required to maintain a normal active and healthy life" (UNSTATS, 2021b). The data for this indicator is published by the FAO (n.d.-b) The previous AB2 indicator on population with access to electricity and clean fuels/technology was combined with other indicators in AB1.

The detailed descriptions of the 40 green growth indicators including their definition, sources, policy relevance, and limitations are available in Metadata: Green Growth Index 2021 (Eugenio et al., 2021).

Figure 3 Updated Indicator Framework for the 2021 Green Growth Index

	Dimensions [Goals]	Indicator categories [Pillars]		Indicators [metrics]
Green Growth Index	Efficient and sustainable resource use	Efficient and sustainable energy	EE1	Ratio of total primary energy supply to GDP (MJ per $2017 PPP GDP)
			EE2	Share renewable to total final energy consumption (Percent)
			EE3	Efficiency in sustainable transport (Score)
		Efficient and sustainable water use	EW1	Water use efficiency (USD per m^3)
			EW2	Share of freshwater withdrawal to available freshwater resources (Percent)
			EW3	Sustainable fisheries as a proportion of GDP (Percent)
		Sustainable land use	SL1	Soil nutrient budget (Nitrogen kilogram per hectare)
			SL2	Share agriculture organic to total agriculture land area (Percent)
			SL3	Share of ruminant livestock population to agricultural area (Percent)
		Material use efficiency	ME1	Total domestic material consumption (DMC) per unit of GDP (Kilogram per GDP)
			ME2	Total material footprint (MF) per capita population (Tons per capita)
			ME3	Share of food loss to production and food waste to food consumption (Percent)
	Natural capital protection	Environmental quality	EQ1	PM2.5 air pollution, mean annual population-weighted exposure (Micrograms per m3)
			EQ2	DALY rate due to unsafe water sources (DALY lost per 100,000 persons)
			EQ3	Municipal solid waste (MSW) generation per capita (Tons per year per capita)
		Greenhouse gas emissions reductions	GE1	Ratio of CO_2 emissions to population, including AFOLU (Tons per capita)
			GE2	Ratio non-CO_2 emissions (CH_4, N_2O and F-gas) excluding AFOLU to population (CO_2eq tons per capita)
			GE3	Ratio non-CO_2 emissions (CH_4 , N_2O and F-gas) in Agriculture and LUCF to population (CO_2eq tons per capita)
		Biodiversity and ecosystem protection	BE1	Average proportion of Key Biodiversity Areas covered by protected areas (Percent)
			BE2	Share forest area to total land area (Percent)
			BE3	Above-ground biomass stock in forest (Tons per hectare)
		Cultural and social value	CV1	Red list index (Score)
			CV2	Tourism and recreation in coastal and marine areas (Score)
			CV3	Share of terrestrial and marine protected areas to total territorial areas (Percent)
	Green economic opportunities	Green investment	GV1	Ratio of adjusted net savings to GNI, including particulate emission damange (5 yrs moving ave.)
		Green trade	GT1	Share export of environmental goods (OECD and APEC class.) to total export (Percent)
		Green employment	GJ1	Share of green employment in total manufacturing employment (Percent)
		Green innovation	GN1	Share of patent publications in environmental technology to total patents (7 yrs moving ave.)
	Social inclusion	Access to basic services and resources	AB1	Population with access to basic services, i.e. Water, sanitation, electricity, and clean fuels (Percent)
			AB2	Prevalence of undernourishment (Percent)
			AB3	Universal access to sustainable transport (Score)
		Gender balance	GB1	Proportion of seats held by women in national parliaments (Percent)
			GB2	Gender ratio of an account at a financial institution or mobile-money-service provider (Ratio)
			GB3	Getting paid, laws and regulations for equal gender pay (Score)
		Social equity	SE1	Inequality in income based Palma ratio (Ratio)
			SE2	Population with access to basic services by urban/rural, i.e. electricity (Ratio)
			SE3	Share of youth (aged 15-24 years) not in education, employment or training (Percent)
		Social protection	SP1	Proportion population above statutory pensionable age receiving a pension (Percent)
			SP2	Universal health coverage (UHC) service coverage index (Score)
			SP3	Proportion of urban population living in slums (Percent)

1.2.3 Link to the SDGs

Three of the six new indicators in the updated indicator framework for the 2021 Green Growth Index are SDG indicators (Figure 4A):

- EW3: Sustainable fisheries as a proportion of GDP (Percent) is indicator SDG 14.7.1 under Goal 14 Life below water
- ME3: Share of food loss to production and food waste to food consumption (Percent) are indicators SDG 12.3.1 (a and b) under Goal 12 Responsible consumption and production
- AB2: Prevalence of undernourishment (Percent) is indicator SDG 2.1.1 under Goal 2 Zero hunger

With these changes in indicators in 2021, 29 (or 72%) out of the 40 indicators in the Green Growth Index are SDG indicators. But because ME3, BE1, and AB1 indicators combined different SDG indicators in one green growth indicator (i.e., composite indicators), the total number of SDG indicators included in the Index is 37 (Figure 4A). The natural capital protection dimension has the most number of SDG indicators, while green economic opportunities dimension has the least number. SDG 9 Industry, innovation and infrastructure includes SDG 9.2.2 on manufacturing employment as a proportion of total employment. The indicator GJ1 Share of green employment in total manufacturing (Percent) is thus represented in SDG 9.2.2, albeit focusing on green aspect of manufacturing employment.

The other green growth indicators listed in Figure 4B are not SDG indicators but they directly support the achievement of the SDG goals. Moreover, as UN Member Countries continue to review and international organizations are committed to improve SDG databases, some of these green growth indicators may become part of the SDG indicators in the near future. For example, there are ongoing debates on the inclusion of Palma Ratio as a measure of income inequality in SDG 10 (IISD, 2019). Gini index is currently used as indicator to measure income inequality in SDG 10, specifically SDG 10.4.2 redistributive impact of fiscal policy. But experts recognize the limitations of the Gini index in measuring income inequality and that complementary indicators will be needed to achieve Goal 10 of reducing inequality within and among countries. For transport, indicators in the UNSTATS database are currently limited to SDG 9.1.2 passenger and freight volumes, by mode of transport (i.e., freight volume, passenger volume, maritime container port traffic). These SDG indicators are combined with many other WB's LPI indicators in efficiency in sustainable transport (EE3).

In addition to policy relevance, the added value of using SDG indicators in the Green Growth Index is the availability of targets against which to benchmark the green growth indicators. But for some SDG indicators, including GHG emissions reduction, there are no globally agreed climate targets. National targets are determined by governments in their National Determined Contributions (NDCs). To allow for cross-country comparisons, national targets are not used. To come up with sustainability targets for all of the green growth indicators, the following criteria were adopted:

1. For SDG indicators, the SDG targets, both explicit and implicit, which were suggested in the Organisation for Economic Co-operation and Development (OECD, 2019a, 2019b) and UN Sustainable Development Solutions Network (SDSN) (Lafortune et al., 2018; Sachs et al., 2019; Sachs et al., 2018) reports, were used. If the interpretation of implicit targets is different, the SDSN values, which are applied in a global context, were adopted.
2. For non-SDG indicators, the targets suggested in scientific literature and reports from international organizations were used.
3. For SDG indicators not included in the OECD and SDSN reports, the mean of the top five performers was used.
4. For non-SDG indicators with no available information from the literature and reports, the mean of the top five performers was used.

Criteria 3 and 4 follow methods that were used in other global indices such as SDSN's SDG Index (Sachs et al., 2019; Sachs et al., 2018) and UNEP's Green Economy Progress (GEP) (PAGE, 2017b, 2017a). The details on the sustainability targets used to benchmark the indicators of the 2020 Green Growth Index are discussed in Chapter 5.3.3 Sustainability targets.

Figure 4 Links of Green Growth Index to Sustainable Development Goals

A Sustainable Development Goals (SDG) indicators used in the Green Growth Index

Dimensions		Indicators	Sustainable Development Goals (SDGs)*		
			Goal	Target	Indicator
Efficient and sustainable resource use	EE1	Ratio of total primary energy supply to GDP	Affordable and clean energy	7.3	7.3.1
	EE2	Share of renewable to total final energy consumption	Affordable and clean energy	7.2	7.2.1
	EW1	Water use efficiency	Clean water and sanitation	6.4	6.4.1
	EW2	Share freshwater withdrawal to available freshwater resources	Clean water and sanitation	6.4	6.4.2
	EW3	Sustainable fisheries as a proportion of GDP	Life below water	14.7	14.7.1
	ME1	Total domestic material consumption per unit of GDP	Decent work and economic growth	8.4	8.4.2
			Responsible consumption and production	12.2	12.2.2
	ME2	Total material footprint per capita population	Decent work and economic growth	8.4	8.4.2
			Responsible consumption and production	12.2	12.2.2
	ME3	Share of food loss to production and food waste to food consumption	Responsible consumption and production	12.3.1	12.3.1 (a) 12.3.1 (b)
Natural capital	EQ1	PM2.5 air pollution, mean annual population-weighted exposure	Sustainable cities and communities	11.6	11.6.2
	EQ2	DALY rate due to unsafe water sources	Good health and well-being	3.9	3.9.2
	EQ3	Municipal solid waste generation per capita	Responsible consumption and production	12.4	12.4.2
	GE1	Ratio of CO2 emissions to population, including AFOLU	Industry, innovation and infrastructure	9.4	9.4.1
	GE2	Ratio non-CO2 emissions excluding AFOLU to population	Climate action	13.2	13.2.2
	GE3	Ratio non-CO2 emissions in Agriculture and LUCF to population	Climate action	13.2	13.2.2
	BE1	Proportion of KBAs covered by protected areas	Life below water	14.5	14.5.1
			Life on land	15.1 15.4	15.1.2 15.4.1
	BE2	Share of forest area to total land area	Life on land	15.1	15.1.1
	BE3	Above-ground biomass stock in forest	Life on land	15.2	15.2.1
	CV1	Red list index	Life on land	15.5	15.5.1
	CV3	Share of marine protected areas to total territorial areas	Life below water	14.5	14.5.1
Green economic opportunities	GJ1	Share of green employment in total manufacturing	Industry, innovation and infrastructure	9.2.2	6.4

Figure 4 Links of Green Growth Index to Sustainable Development Goals (continued)

Social inclusion	AB1	Population with access to basic services	Clean water and sanitation	6.1 6.2	6.1.1 6.2.1
			Affordable and clean energy	7.1	7.1.1 7.1.2
	AB2	Prevalence of undernourishment	Zero Hunger	2.1	2.1.1
	GB1	Proportion of seats held by women in national parliaments	Gender equality	5.5	5.5.1
	GB2	Gender ratio of account at a financial institution or mobile-money-service	Decent work and economic growth	8.10	8.10.2
	SE2	Ratio of urban-rural access to basic services, i.e. electricity	Affordable and clean energy	17.1	7.1.1
	SE3	Share of youth not in education, employment or training	Decent work and economic growth	8.6	8.6.1
	SP1	Proportion population above statutory pensionable age receiving a pension	No poverty	1.3	1.3.1
	SP2	Universal health coverage service coverage index	Good health and well-being	3.8	3.8.1
	SP3	Proportion of urban population living in slums	Sustainable cities and communities	11.1	11.1.1

* Details on SDG targets and indicators are available on these links: https://unstats.un.org/sdgs/indicators/database/; https://unstats.un.org/sdgs/metadata/

B Link of green growth indicators to SDGs and other sustainability targets

Dimensions	Indicators		Link to SDGs and other targets		
			Sustainable Development Goals (SDGs)*		Other targets
Efficient and sustainable resource use	EE3	Efficiency in sustainable transport	Industry, innovation and infrastructure	9.1	
	SL1	Soil nutrient budget	Life on land	15.3.1	Aichi
	SL2	Share of organic agriculture to total agricultural land area	Zero hunger	2	Aichi
	SL3	Share of ruminant livestock population to agricultural area	Climate action	13.2	Climate
Natural capital Protection	CV2	Tourism and recreation in coastal and marine areas	Responsible consumption and production	12.B	
	CV3	Share of terrestrial protected areas to total territorial areas	Life on land	15.1	Aichi
Green economic opportunities	GV1	Ratio of adjusted net savings to GNI, including particulate emission damange	Responsible consumption and production	12	
	GT1	Share of environmental goods to total export	Responsible consumption and production	12	
	GN1	Share of patent publications in environmental technology to total patents	Responsible consumption and production	12	
Social inclusion	AB3	Universal access to sustainable transport	Industry, innovation and infrastructure	9.1	
	GB3	Laws and regulations for equal gender pay	Gender equality	5.c	
			Reduced inequality	10.2	
	SE1	Inequality in income based on Palma ratio	No poverty	1.1.1 1.2.1	
			Reduced inequality	10.1.1	

* Details on SDG targets and indicators are available on these links: https://unstats.un.org/sdgs/indicators/database/; https://unstats.un.org/sdgs/metadata/

1.2.4 Weights of the indicators

No weights were assigned to the indicators in the 2019 and 2020 Green Growth Index because the number of indicators across dimensions were relatively unequal. But in the 2021 Green Growth Index, all green growth dimensions have equal number of indicators, except for the green economic opportunities. With this dimension only having four indicators while the other three dimensions have 12 indicators, the former will automatically receive significant weights during the aggregation of the Index. Monte Carlo analysis was conducted to assess the implications of not assigning equal weights on the indicators of the Green Growth Index. The analysis was based on two scenarios, where "unweighted" refers to aggregating the 40 green growth indicators without assigning any weights and "weighted" refers to assigning weights that will give equal weights to the 40 indicators when computing the Green Growth Index (see Nzimenyera et al., 2021 for details). The former was the method applied in the previous computation of the Green Growth Index in 2019 and 2021. The latter was proposed to be applied for the Green Growth Index in 2021 considering the results of the Monte Carlo analysis, which generally showed that weighted indicators offer better Index scores than unweighted indicators. The details on applying weights on the green growth indicators are discussed in Chapter 5.2.2 Applying weights on indicators.

1.2.5 Index trend and confidence level

The trend in the scores is presented for the period 2010-2020. Earlier years were excluded because two of the green growth indicators (i.e., municipal solid waste [MSW] generation per capita and universal access to sustainable transport) only have only data for one year and assuming the values to hold for more than a decade will add too much uncertainty in the Index. Another reason is that many of the indicators added to the Index this year have data gaps for many countries before 2010. To recognize the impacts of the remaining data gaps from 2010 to 2020, confidence levels are attached to the Index trend. The details on estimating the confidence level are discussed in Chapter 5.3.2 Data availability and confidence level.

1.2.6 Country performance at a glance

In this year's edition of the Green Growth Index, country factsheets are added to the report to provide information on the individual performance of the 119 ranked countries. The country factsheet provides information on the Green Growth Index score and trend, ranks by groups of countries (i.e., region, subregion, income, and Human Development Index [HDI]), distance to target by indicators and indicator categories, and performance dashboard. Another important information in the factsheet is the data availability for the indicators by categories from 2010 to 2020. The information on data availability is important because it (i) indicates the level of confidence when interpreting the scores and ranks, i.e., the higher the available data, the higher the confidence level, (ii) offers transparency on the level of data imputation conducted for the indicators, which was a necessary step to avoid erratic changes on the trend due to data gaps, and (iii) informs about the data gaps to encourage improvement of database for the indicators. The statistical tables are still included to allow presentation of results at the indicator and dimension levels for countries which were not ranked due to lack of data.

1.3 Purpose and structure of the report

Considering the significant updates on the 2021 Green Growth Index with the addition of five indicators (i.e., EE3, EW3, SL3, ME3, AB2) and replacement of one indicator (AB3), the country performances from last year's Index report cannot be compared to those from this year. This is a common practice for global indices such as HDI (UNDP, 2019; UNDP, 2018; p. 1), SDG Index (Sachs et al., 2018), and Environmental Performance Index [EPI] (Wendling et al., 2018), particularly when the development process evolved over years (Acosta, et al., 2020a).

To allow comparison of scores and ranks over time, the Green Growth Index is computed for all the years covered in the report. The 2021 Green Growth Index presents the results for 119 countries from 2010 to 2020, including key highlights on differences in green growth performance among countries and regions and across dimensions and indicators. Details on the concept and methods for developing the Green Growth Index were already discussed in the previous report and will not be included here anymore. Only the summary of the methods is presented to enable readers and users of this report to understand the context for developing the Index (Appendix 1). The structure of the report is as follows:

Chapter 1 briefly describes the concept of the Green Growth Index and explains the improvements made on its indicator framework. This chapter also briefly mentions the experts who contributed to the review of the indicator framework.

Chapter 2 provides a global overview of the Green Growth Index and its dimensions using maps to present a bird's eye view of the countries' green growth performance. This chapter also presents country and subregional dashboards on the Index, dimensions, and indicators to provide contexts to the geographical differences in performance.

Chapter 3 presents the regional outlook of the Green Growth Index with a special focus on the performance of regions on the four green growth dimensions and the trend in performance from 2010 to 2020.

Chapter 4 presents the pattern of distribution of the Green Growth Index scores by region and discusses the performance of top performing countries in each region.

Chapter 5 provides details of the expert consultations that were conducted to review the green growth indicators for the 2021 Green Growth Index. This chapter describes the online survey and the feedback collected from the experts from this survey as well as the challenges that need attention in the next steps forward.

Chapter 6 presents the projects at GGGI which applied the Green Growth Index and its Simulation Tool to support GGGI Member Countries and its Regional Partners to support greening of National Development Plans and Framework and assess co-benefits from COVID Green Recovery Plans.

Chapter 7 provides country factsheets on the Green Growth Index and performance on green growth dimensions, categories, and indicators for the 119 countries which data availability allowed computation of overall scores and ranks. This chapter also compares the green growth performance of a country with its peer countries in region, sub-region, income, and HDI groups.

Chapter 8 presents the statistical tables that provide detailed results of the Green Growth Index for each country, including those which cannot be ranked due to lack of data for some green growth indicators. These tables show the Index, dimensions, indicator categories, and normalized indicators for all countries and classified by regions.

2 Global Overview

2.1 Maps

The scores for the four green growth dimensions for 2020 are presented in maps in Figure 5. Social inclusion has the most number of countries with very high scores, 40 (23%) of the 175 countries with scores for this dimension. These 40 countries represent 32.90 million m^2 land area and 1,126.37 million people. Many of these countries are found in Europe and North America. Minority of the countries (38%) have high scores for social inclusion. Twenty-nine countries with low scores and three countries with very low scores are mainly found in the African region.

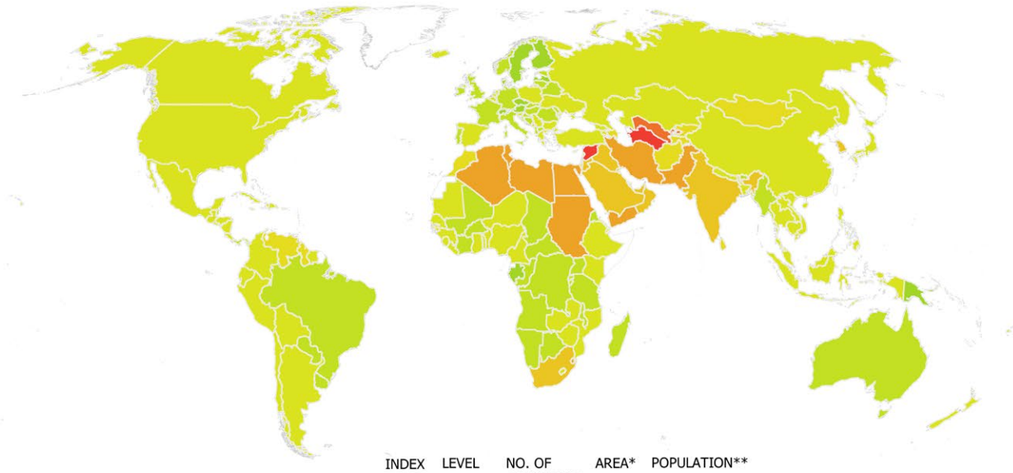
In contrast to social inclusion, green economic opportunities dimension has the most number of countries with very low scores, 42 (35%) of the 119 countries with scores for this dimension. These countries are found across all regions. Almost half of the countries, which represent 76.18 million m^2 land area and 3,862.71 million people, have low scores for green economic opportunities. No country has reached high or very high scores for this dimension. Moreover, among the four dimensions, green economic opportunities dimension has the least number of countries with scores. The scores for only 119 countries can be computed due to lack of data for the indicators in this dimension.

The maps of scores for efficient and sustainable resource use and natural capital protection dimensions have some similarities, with most countries having high and moderate scores (Figure 5). However, there are more countries with very high scores in natural capital protection than in efficient and sustainable resource use. The nine countries with very high scores for the former dimension are all found in Europe and cover only small land area of about 1 million m^2. Majority of the countries have high scores for natural capital protection, 117 (60%) of the 195 countries with scores for this dimension. These countries represent a significant amount of land area, 59.19 million m^2, with increasing level of protection of natural resources. The countries with high scores in natural capital protection are found across all regions. In contrast to natural capital protection, there are more countries with moderate rather than high scores for efficient and sustainable resource use dimension. Out of 165 countries with scores for this dimension, 90 (54%) countries have moderate scores and only 59 (36%) countries have high scores. These countries cover a combined land area of 111.99 million m^2 where 6,501.47 million people are living. The three countries with very low scores for efficient and sustainable resource use are found in Asia.

For 2020, there are 119 countries with scores for the Green Growth Index, with 25 countries in Africa, 20 countries in the Americas, 35 countries in Asia, 36 countries in Europe, and only three in Oceania (Figure 6). About 61% of the countries are in the middle range, between 40 and 60 (moderate performance), covering about 59.17 million m^2 land area and 3,953.98 million people. Forty-one countries reached a high score between 60 and 80 in 2020, mostly in Europe. There are only six countries with low scores, which are mainly from Africa and Asia. While there are no countries with very low scores in 2020, none has also received a very high score. Sweden, located in Northern Europe, has the highest Green Growth Index with a score of 78.87, which is still further away from reaching the sustainability target of 100. The lowest score of 35.72 is attributed to Niger in Western Africa. Despite no score reaching a very high level, the Green Growth Index generally increased worldwide from 2010 to 2020. Out of 119 ranked countries, 85 experienced a moderate increase in Index scores of about 10% from 2010 to 2020. They represent 77.41 million m^2 land area and 5,940.75 million people. Only 12 countries showed a high increase in scores between 10% and 20% during the same period. A decline in green growth performance was experienced by 20 countries with scores of up to -10%. Only one country showed a score below -10%, which is Panama in Central America (Chapter 2.2 Dashboards).

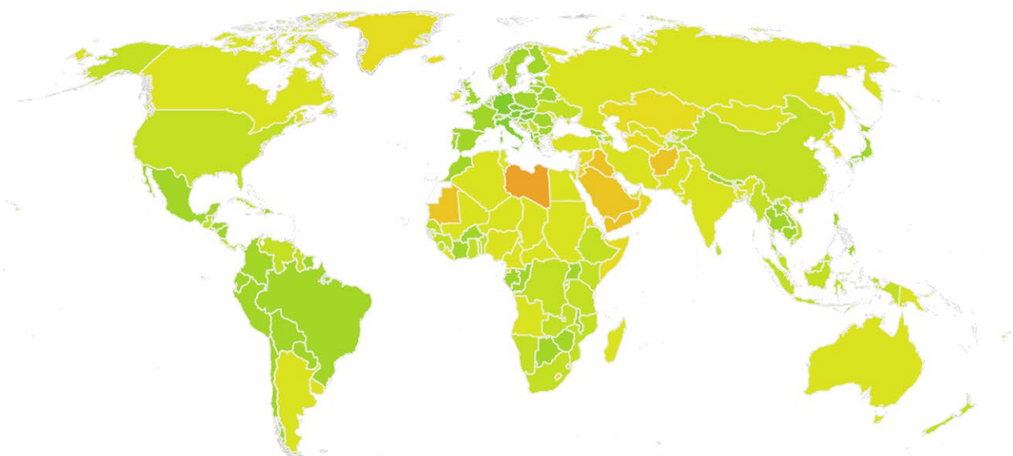
Figure 5 Sub-indices of the green growth dimensions for different countries in 2020

Efficient and Sustainable Resource Use



INDEX	LEVEL	NO. OF COUNTRIES	AREA*	POPULATION**
	Very high	1	0.003	0.19
	High	57	33.33	1090.28
	Moderate	91	78.64	4251.04
	Low	23	17.89	2083.01
	Very low	3	1.11	55.98

Natural Capital Protection

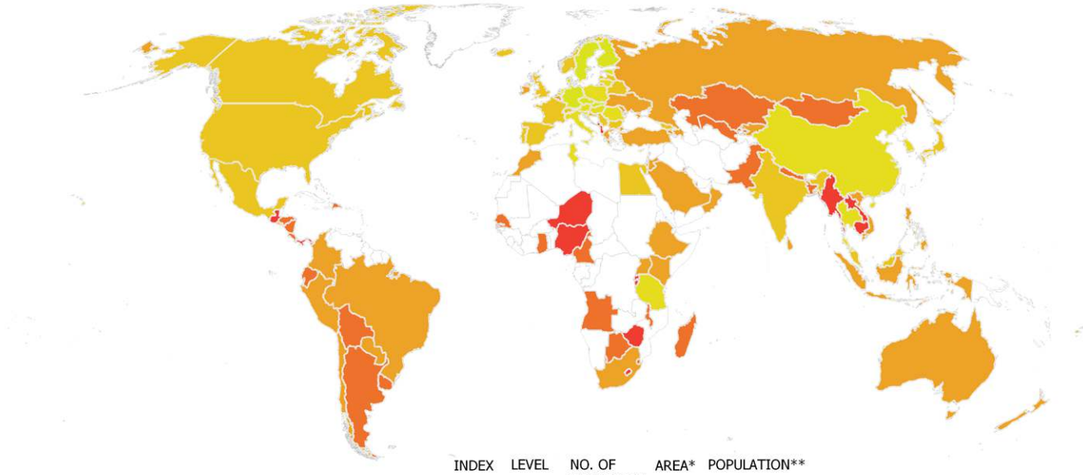


INDEX	LEVEL	NO. OF COUNTRIES	AREA*	POPULATION
	Very high	9	1.05	185.44
	High	117	59.19	4254.26
	Moderate	58	67.55	2927.07
	Low	10	6.15	152.64
	Very low	2	0.01	0.20

* Million sq. km
** Million persons

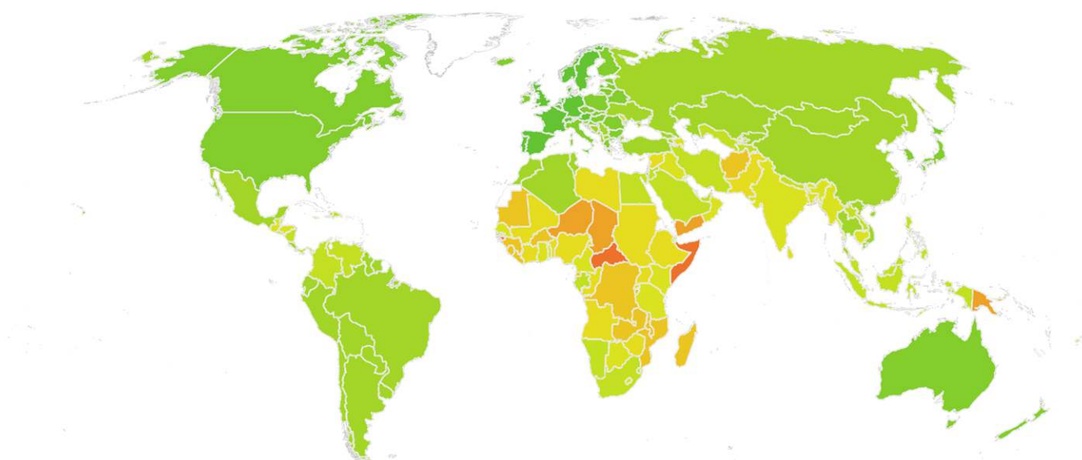
Figure 5 Sub-indices of the green growth dimensions for different countries in 2020 (continued)

Green Economic Opportunities



INDEX	LEVEL	NO. OF COUNTRIES	AREA*	POPULATION**
	Very high	0	0.00	0
	High	0	0.00	0
	Moderate	20	13.58	1871.75
	Low	58	76.18	3862.71
	Very low	42	17.90	1074.66

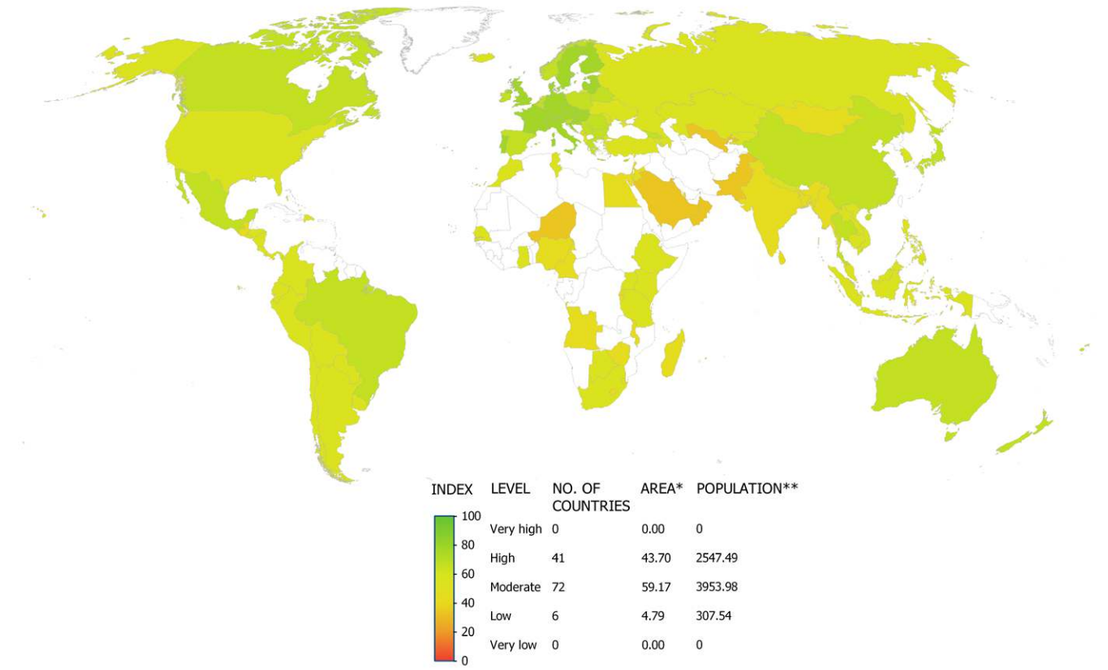
Social Inclusion



INDEX	LEVEL	NO. OF COUNTRIES	AREA*	POPULATION**
	Very high	40	32.90	1126.37
	High	67	66.73	3344.86
	Moderate	44	19.61	2623.92
	Low	21	10.40	356.29
	Very low	3	1.29	21.28

*Million sq. km
**Million people

Figure 6 Performance Green Growth Index in 2020 (top) and change in Index scores from 2010 to 2020 (bottom)



2.2 Dashboards

Table 2 presents the country dashboard for the Green Growth Index by region and compares the changes in the scores of the Index for 119 countries between 2010 and 2020. Only countries with scores for the four green growth dimensions were included in the regional ranks, which include 25 countries in Africa, 20 countries in the Americas, 35 countries in Asia, 36 countries in Europe, and only three countries in Oceania. In 2020, Tanzania in Africa, Mexico in the Americas, Japan in Asia, Sweden in Europe, and New Zealand in Oceania were the top performing countries by region. Among these countries, only New Zealand held the regional top-ranking position in 2010. Niger in Africa, Guatemala in the Americas, Pakistan in Asia, Montenegro in Europe, and Fiji in Oceania were the least performing countries by region. These countries were also at the bottom of the list in their respective regions in 2010, except for Pakistan in Asia. In Table 2, multi-directional arrows are used to show the performance of countries over time:

- ↑ pointing straight up represents increasing performance, above 5% increase in scores
- ↗ slightly slanting upward represents modest performance, between <5% and >=1% increase in scores
- → pointing horizontally represents stable or almost no change in performance, between <1 and >=0% change in scores
- ↘ slightly slanting downward represents slight decline in performance, between <0% and >= -5% decrease in scores
- ↓ pointing straight down represents worsening performance, below -5% decrease in scores

A ±5% interval was used to measure the performance because the data points gather around this value. Among the top performing countries, Tanzania in Africa showed the biggest improvement in performance from 2010 to 2020 at 13% as compared to those in other regions with increase in scores only between 2% and 5%. The number of countries with percentage change in scores above 5% was highest in Asia (16) and Europe (11). Moreover, at least half of the 10 countries at the bottom ranks showed over 5% changes in scores in both regions. While showing big percentage increases in scores, these countries did not show significant jump in their regional ranks between 2010 and 2020. El Salvador in the Americas showed the biggest improvement in ranks, from rank 18 in 2010 to 8 in 2020, an increase of 10 points. This was followed by Croatia in Europe, improving from rank 26 to 17 in the same period. The number of countries that maintained their ranks in the last 10 years are seven in Africa, four in the Americas, four in Asia, nine in Europe, and three in Oceania.

The best performance in Europe compared to other regions can be attributed to the relatively high scores for green economic opportunities dimension in many European countries (Table 2). Only Albania and Montenegro in Europe showed very low scores for this dimension. Between these two countries, Montenegro showed a significant increase in performance by 16% over the last decade. In contrast, more than half of the countries in Africa, the Americas, and Asia have scores below 20 for green economic opportunities. In Asia, Thailand, South Korea, and China are taking the lead in creating green economic opportunities. In Africa, these include developing countries like Tanzania and Tunisia. If appropriate amounts of green investments and innovation would be made to enhance green employment and trade, many developing countries in the Asian and African regions would be expected to experience increasing performance in the future. In the Americas, the performances of creating green economic opportunities in the United States and Canada are not on par with their peer developed countries in Europe.

The subregional performance for the different indicators is presented in Figure . It shows that the scores for the three among the four indicators for green economic opportunities are predominantly low and very low. On average, the scores for green trade (GT) are also low for all subregions in Europe. The scores for green investment (GV) are moderate for most subregions. After green economic opportunities, scores for efficient and sustainable resource use indicators are least impressive for most subregions, except for material use efficiency (ME). While efficient and sustainable use of energy (EE), water (EW), and land (SL) have low and moderate scores, the latter indicator shows scores from high to very high.

For the indicators of natural capital protection, the scores for environmental quality (EQ) and GHG emissions reduction (GE) also range from high to very high with few exceptions. For example, Northern America as well as Australia and New Zealand have scores of only around 43 and 33, respectively, for the reduction of emissions. In contrast, the scores for the indicators on biodiversity and ecosystem protection (BE) and cultural and social value (CV) are lower than the other two previous indicators in most subregions. In the case of the former indicator, subregions like Northern Africa, Central Asia, and Western Asia have very low scores for the protection of biodiversity and ecosystem. Scores are mostly low and moderate for cultural and social value (CV) with the exceptions of Southern and Western Europe with high and very high scores, respectively.

For social inclusion, the scores are rather divergent for the different indicators and across the subregions. Social equity (SE) indicator has the most number of subregions with high or very high scores, except for most subregions in Africa. Social equity in Northern Africa is on par with the rest of the subregions of the world. Except for gender balance (GB) with high scores in Eastern and Southern Africa, the rest of the indicators in this region have mainly low cores. The Eastern, Middle, and Southern subregions in Africa have low scores for both access to basic services and resources (AB) and social protection (SP). Although a bit better than Africa, many subregions in Oceania have also low scores for social inclusion indicators, except for social equity.

Table 2 Country dashboard for dimensions and Green Growth Index performance, by region

		Dimension scores (2020)				2010		2020		
Country	**Sub-region**	**ESRU**	**NCP**	**GEO**	**SI**	**Index**	**Rank**	**Index**	**Rank**	**Performance**
AFRICA										
Tanzania	Eastern Africa	63.32	66.28	49.46	50.82	51.74	6	58.63	1	↑
Morocco	Northern Africa	47.11	71.24	21.51	71.00	54.12	2	55.77	2	↗
Botswana	Southern Africa	66.96	72.41	11.70	57.77	53.83	3	55.08	3	↗
Cabo Verde	Western Africa	55.94	63.33	15.98	67.81	58.55	1	54.27	4	↓
Mauritius	Eastern Africa	57.29	52.42	14.21	77.87	53.67	5	53.21	5	↘
Uganda	Eastern Africa	61.66	70.85	24.69	44.00	50.36	9	53.02	6	↑
Kenya	Eastern Africa	55.61	61.22	23.03	55.48	50.15	11	52.37	7	↗
Senegal	Western Africa	55.99	64.61	19.14	55.29	51.36	7	52.30	8	↗
Ghana	Western Africa	59.67	66.55	13.61	53.49	50.44	8	51.47	9	↗
Ethiopia	Eastern Africa	55.19	67.49	27.20	45.27	47.32	13	51.46	10	↑
South Africa	Southern Africa	39.14	62.95	23.97	67.88	53.80	4	50.70	11	↓
Tunisia	Northern Africa	29.20	59.31	42.92	76.81	47.05	14	50.17	12	↑
Malawi	Eastern Africa	61.19	74.28	14.70	38.00	50.18	10	48.74	13	↘
Cameroon	Middle Africa	59.10	56.54	13.33	53.21	46.56	15	48.70	14	↗
Zimbabwe	Eastern Africa	52.37	77.86	9.89	46.39	48.38	12	48.15	15	↘
Rwanda	Eastern Africa	64.89	67.50	5.67	48.69	44.97	16	47.21	16	↗
Angola	Middle Africa	67.43	57.21	11.97	40.17	43.29	19	46.23	17	↑
Gambia	Western Africa	63.88	66.01	5.01	47.40	43.53	17	45.73	18	↗
Madagascar	Eastern Africa	60.35	56.80	15.44	32.81	43.42	18	43.07	19	↘
Burundi	Eastern Africa	59.41	64.99	6.12	39.43	37.54	24	42.99	20	↑
Lesotho	Southern Africa	51.82	42.68	8.61	59.81	42.58	20	42.65	21	→
Eswatini	Southern Africa	26.76	61.69	15.27	60.23	39.57	22	41.46	22	↗
Egypt	Northern Africa	21.63	54.67	35.93	62.03	38.16	23	41.23	23	↑
Nigeria	Western Africa	56.68	59.87	4.07	44.23	41.73	21	41.10	24	↘
Niger	Western Africa	59.34	51.26	5.25	28.39	33.24	25	35.72	25	↑
AMERICAS										
Mexico	Central America	52.04	72.73	34.52	78.81	59.80	3	62.55	1	↗
Brazil	South America	60.58	71.77	23.80	72.28	60.41	2	61.21	2	↗
Canada	Northern America	56.72	57.04	32.59	86.85	60.54	1	61.08	3	→
United States	Northern America	52.19	61.58	30.18	83.64	59.06	4	59.81	4	↗
Paraguay	South America	60.88	70.82	20.81	70.22	55.61	12	59.72	5	↑
Peru	South America	57.05	72.20	23.00	70.26	55.82	11	59.51	6	↑
Chile	South America	52.70	73.16	20.08	74.71	54.71	14	58.63	7	↑
El Salvador	Central America	54.72	64.07	30.04	69.32	51.94	18	58.00	8	↑
Dominican Republic	Caribbean	55.30	74.94	18.14	69.01	59.00	5	57.91	9	↘
Ecuador	South America	53.49	71.52	16.99	76.30	56.28	8	57.89	10	↗

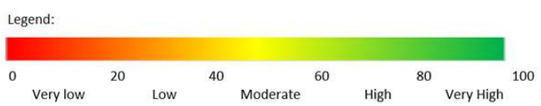
Legend:

↑ >5% ↗ <=5% & >1 → <=1% & >0 ↘ <=-1% & >-5% ↓ <-5%

Table 2 Country dashboard for dimensions and Green Growth Index performance, by region (continued)

		Dimension scores (2020)				2010		2020		
Country	**Sub-region**	**ESRU**	**NCP**	**GEO**	**SI**	**Index**	**Rank**	**Index**	**Rank**	**Performance**
Colombia	South America	57.46	71.84	21.64	63.34	52.86	17	57.38	11	↑
Bolivia	South America	51.68	75.15	14.80	76.40	55.92	10	57.38	12	↗
Costa Rica	Central America	55.16	69.55	15.89	70.65	56.50	7	56.24	13	↘
Nicaragua	Central America	57.48	73.25	13.60	65.05	56.27	9	55.54	14	↘
Bahamas	Caribbean	52.21	67.13	24.88	61.64	49.61	19	54.95	15	↑
Uruguay	South America	63.34	59.01	10.12	77.75	53.01	16	54.89	16	↗
Argentina	South America	52.90	58.73	16.89	76.78	55.46	13	54.46	17	↘
Honduras	Central America	57.05	72.24	13.03	55.70	54.09	15	52.45	18	↘
Panama	Central America	61.19	66.81	6.47	66.87	57.73	6	51.54	19	↓
Guatemala	Central America	56.59	66.07	6.77	56.27	47.86	20	47.86	20	↘
ASIA										
Japan	Eastern Asia	58.05	70.84	34.11	80.71	62.19	2	64.50	1	↗
Thailand	South-eastern Asia	56.17	73.82	46.29	70.73	62.98	1	64.08	2	↗
Cyprus	Western Asia	54.89	68.17	34.20	80.08	62.03	3	62.58	3	→
Georgia	Western Asia	53.27	72.17	30.84	72.25	56.16	9	60.54	4	↑
China	Eastern Asia	50.93	63.48	43.18	74.63	57.13	6	60.02	5	↗
Philippines	South-eastern Asia	56.48	73.94	29.27	64.06	58.44	4	59.55	6	↗
Singapore	South-eastern Asia	50.06	59.47	36.23	80.73	57.57	5	58.91	7	↗
Vietnam	South-eastern Asia	55.08	61.84	27.62	72.57	53.83	13	57.82	8	↑
Indonesia	South-eastern Asia	55.43	64.86	26.62	66.68	55.74	11	57.08	9	↗
Turkey	Western Asia	54.73	53.44	30.00	76.92	56.31	8	56.67	10	→
Malaysia	South-eastern Asia	51.35	67.96	31.07	63.65	55.74	10	56.65	11	↗
Nepal	Southern Asia	57.53	72.08	19.05	62.72	56.35	7	56.56	12	→
Brunei Darussalam	South-eastern Asia	51.81	59.07	28.67	72.08	53.21	14	56.08	13	↑
Kyrgyz Republic	Central Asia	47.59	62.98	29.53	70.86	55.26	12	55.61	14	→
Armenia	Western Asia	43.51	70.10	24.37	73.81	53.11	15	55.51	15	↗
South Korea	Eastern Asia	35.18	55.54	43.55	80.82	49.85	19	52.90	16	↑
Laos	South-eastern Asia	53.94	75.75	9.77	61.30	48.98	20	52.32	17	↑
Israel	Western Asia	47.58	46.95	20.16	81.37	51.34	17	51.09	18	↘
Cambodia	South-eastern Asia	56.99	78.31	6.28	59.59	45.88	22	50.96	19	↑
Kazakhstan	Central Asia	51.67	44.04	19.69	77.26	46.17	21	50.46	20	↑
Azerbaijan	Western Asia	44.68	64.58	21.25	58.84	52.88	16	50.32	21	↓
Mongolia	Eastern Asia	47.07	58.14	12.71	70.49	42.69	29	49.66	22	↑
Sri Lanka	Southern Asia	40.66	64.11	26.35	56.88	44.88	24	49.36	23	↑
Myanmar	South-eastern Asia	60.09	61.66	8.89	54.81	43.83	27	48.66	24	↑
Lebanon	Western Asia	44.33	59.73	23.67	54.33	51.33	18	48.39	25	↓
India	Southern Asia	38.11	54.92	33.69	54.70	44.89	23	46.82	26	↗
Bangladesh	Southern Asia	50.54	55.11	14.25	54.32	42.74	28	46.70	27	↑

Legend:



↑ >5% ↗ <=5% & >1 → <=1% & >0 ↘ <=-1% & >-5% ↓ <-5%

Table 2 Country dashboard for dimensions and Green Growth Index performance, by region (continued)

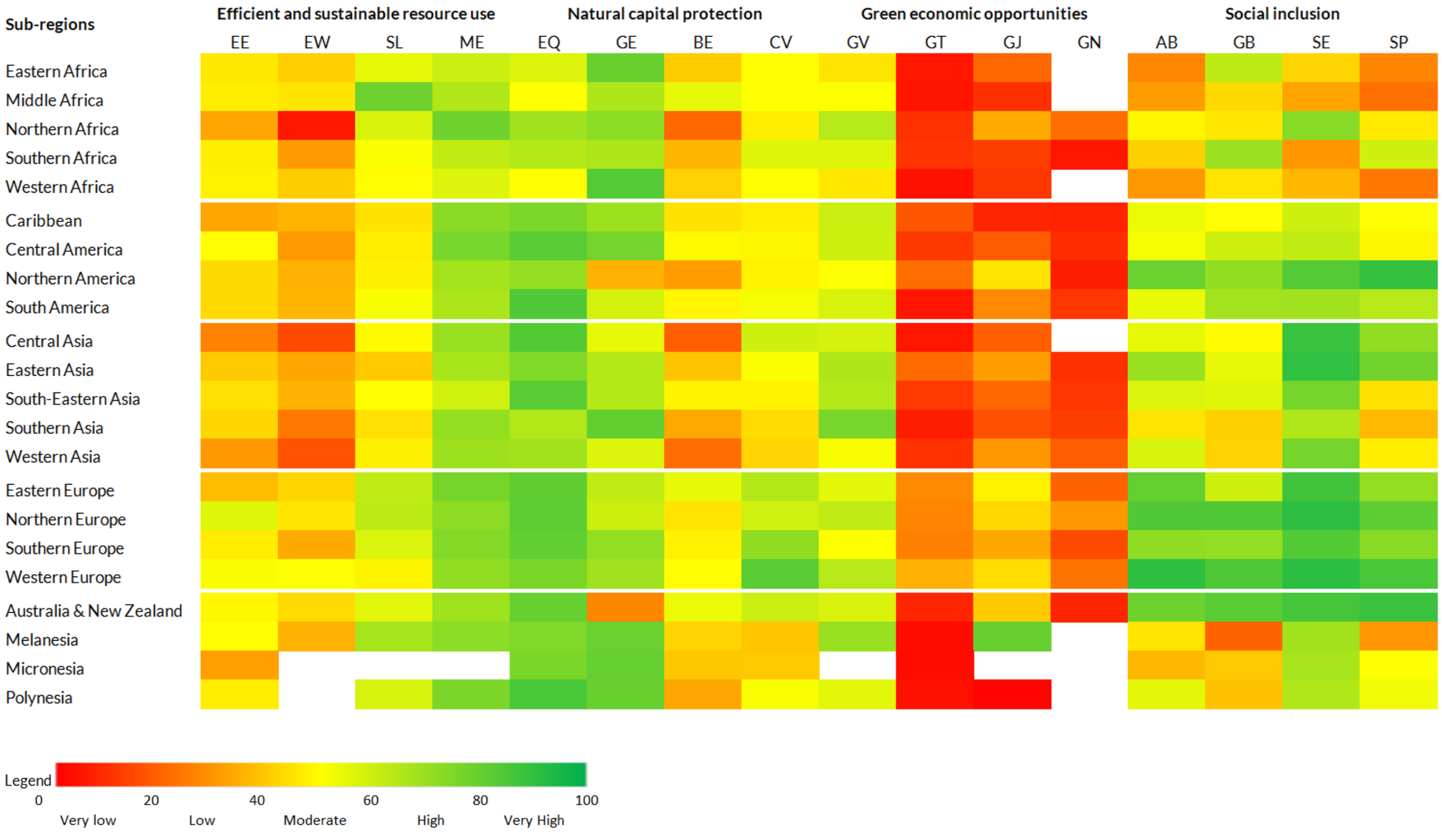
		Dimension scores (2020)				2010		2020		
Country	**Sub-region**	**ESRU**	**NCP**	**GEO**	**SI**	**Index**	**Rank**	**Index**	**Rank**	**Performance**
Maldives	Southern Asia	58.32	51.90	4.35	64.14	44.55	25	44.69	28	→
Jordan	Western Asia	33.76	46.62	29.47	62.54	44.16	26	44.15	29	↘
Qatar	Western Asia	50.04	39.49	12.25	53.09	37.90	30	41.21	30	↑
Saudi Arabia	Western Asia	31.68	34.74	28.58	64.38	33.77	33	39.88	31	↑
Oman	Western Asia	31.68	40.32	27.06	52.50	35.48	31	39.01	32	↑
Uzbekistan	Central Asia	18.12	55.18	16.25	63.52	32.32	35	36.47	33	↑
Kuwait	Western Asia	32.00	41.24	13.76	50.66	33.39	34	36.42	34	↑
Pakistan	Southern Asia	25.59	52.57	16.59	44.45	34.14	32	35.89	35	↗
EUROPE										
Sweden	Northern Europe	75.92	77.84	52.70	94.94	75.95	2	78.87	1	↗
Austria	Western Europe	76.45	80.11	46.42	91.16	77.07	1	77.76	2	→
Czech Republic	Eastern Europe	72.23	81.44	55.38	85.76	73.90	5	76.77	3	↗
Denmark	Northern Europe	75.08	73.55	51.43	91.19	74.05	4	76.16	4	↗
Switzerland	Western Europe	76.38	77.86	36.64	91.81	74.94	3	75.43	5	→
Slovakia	Eastern Europe	68.68	84.18	51.49	81.59	71.42	6	74.69	6	↗
Germany	Western Europe	62.91	82.34	50.94	90.50	70.67	8	74.47	7	↑
Finland	Northern Europe	70.51	73.23	51.41	89.95	71.14	7	74.34	8	↗
United Kingdom	Northern Europe	63.70	78.83	38.64	90.32	68.39	15	71.73	9	↗
Italy	Southern Europe	63.74	80.37	41.79	86.24	69.78	11	71.73	10	↗
Hungary	Eastern Europe	63.99	80.87	48.63	80.98	70.57	9	71.68	11	↗
Estonia	Northern Europe	62.20	76.12	51.66	86.65	68.57	12	71.65	12	↗
Latvia	Northern Europe	71.30	78.38	35.56	82.47	70.54	10	71.48	13	↗
Lithuania	Northern Europe	67.37	75.15	43.46	84.41	67.09	18	71.29	14	↑
Portugal	Southern Europe	61.93	78.43	39.68	90.14	68.37	16	71.16	15	↗
France	Western Europe	62.08	78.09	36.97	91.00	68.51	13	70.82	16	↗
Croatia	Southern Europe	63.54	83.03	39.40	81.43	62.93	26	70.71	17	↑
Romania	Eastern Europe	62.44	77.22	46.62	81.29	66.05	19	69.96	18	↑
Slovenia	Southern Europe	58.97	78.80	41.34	87.25	67.89	17	69.83	19	↗
Spain	Southern Europe	57.97	75.77	38.70	91.58	65.78	20	69.20	20	↗
Norway	Northern Europe	64.61	68.66	34.16	93.45	68.48	14	68.97	21	→
Poland	Eastern Europe	55.12	75.74	46.97	88.98	65.07	22	68.89	22	↑
Netherlands	Western Europe	54.23	73.54	42.04	93.62	64.45	24	68.23	23	↑
Belarus	Eastern Europe	60.37	71.96	39.40	84.32	65.36	21	67.41	24	↗
Luxembourg	Western Europe	60.25	75.92	29.37	87.71	64.57	23	67.27	25	↗
Greece	Southern Europe	59.17	76.77	27.98	85.78	63.59	25	66.36	26	↗
Bulgaria	Eastern Europe	50.95	78.05	39.43	81.04	61.06	27	64.87	27	↑
Belgium	Western Europe	50.33	76.84	29.12	90.35	56.87	33	64.48	28	↑
Serbia	Southern Europe	59.63	69.03	30.30	78.07	61.05	28	63.13	29	↗

Table 2 Country dashboard for dimensions and Green Growth Index performance, by region (continued)

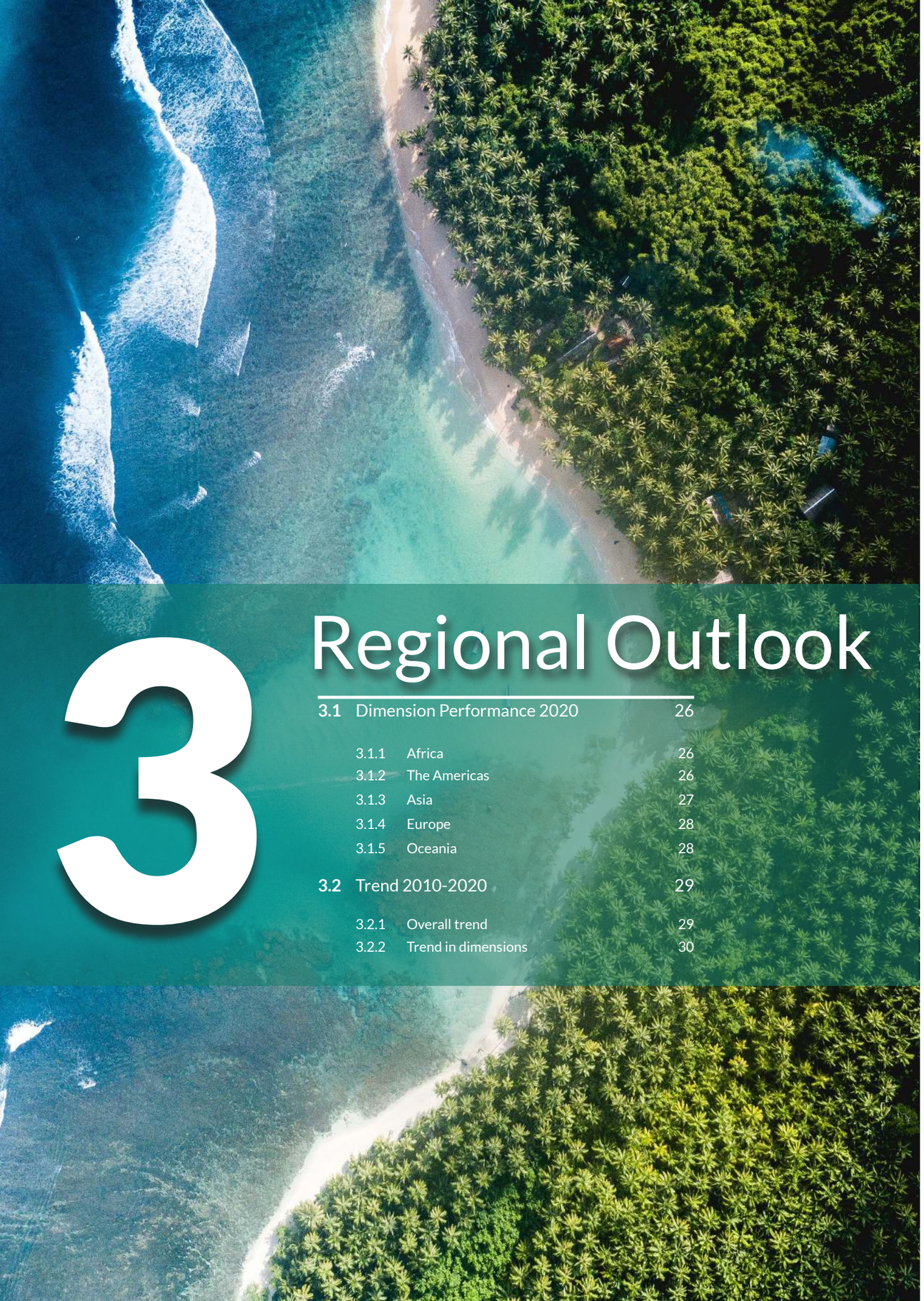
		Dimension scores (2020)				2010		2020		
Country	**Sub-region**	**ESRU**	**NCP**	**GEO**	**SI**	**Index**	**Rank**	**Index**	**Rank**	**Performance**
Ireland	Northern Europe	60.13	58.56	24.44	86.85	57.40	30	60.88	30	↑
Albania	Southern Europe	63.02	82.40	8.86	72.86	57.18	31	58.63	31	↗
Ukraine	Eastern Europe	54.54	62.11	27.29	70.58	57.96	29	57.17	32	↘
Iceland	Northern Europe	58.18	44.25	34.55	85.63	52.76	35	57.12	33	↑
Russia	Eastern Europe	54.47	55.73	27.10	77.20	56.88	32	56.79	34	↘
Moldova	Eastern Europe	60.25	57.02	23.68	66.64	55.83	34	55.63	35	↘
Montenegro	Southern Europe	33.05	62.44	9.22	71.06	38.14	36	44.29	36	↑
OCEANIA										
New Zealand	Australia and New Zealand	55.04	67.29	21.21	87.65	59.80	1	61.10	1	↘
Australia	Australia and New Zealand	67.70	52.58	23.43	87.97	58.01	2	61.05	2	↘
Fiji	Melanesia	64.33	68.07	29.01	64.10	55.58	3	60.35	3	↑

*Based on the sub-region and intermediate region on UNSTATS (https://unstats.un.org/unsd/methodology/m49/overview/)

Figure 7 Dashboard of indicator categories in each green growth dimension, by sub-regions in 2020



Definitions: EE – Efficient and sustainable resource use, EW – Efficient and sustainable water use, SL – Sustainable land use, ME – Material use efficiency, EQ – Environmental Quality, GE – GHG emissions reduction, BE – Biodiversity and ecosystem protection, CV – Cultural and social value, GV – Green investment, GT – Green trade, GJ – Green employment, GN – Green innovation, AB – Access to basic services and resources, GB – Gender balance, SE – Social equality, SP – Social protection



3 Regional Outlook

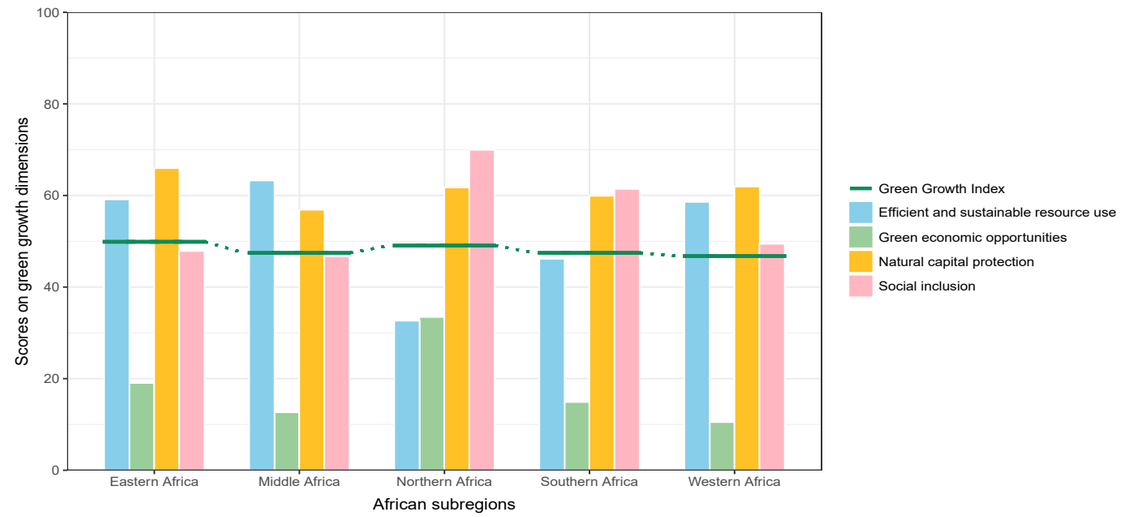
3.1 Dimension performance 2020

The Green Growth Index rankings are provided for countries within five geographic regions – Africa, the Americas, Asia, Europe, and Oceania. An in-depth analysis of each region was conducted to evaluate the scores of the efficient and sustainable resource use, green economic opportunities, natural capital protection, and social inclusion dimensions at the subregional level.

3.1.1 Africa

There are five subregions in Africa – Eastern, Middle, Northern, Southern, and Western. The Green Growth Index scores are similar across all subregions with moderate performance ranging between 47.49 and 49.88 (Figure). Eastern Africa has the highest score as a result of having the highest performance in natural capital protection dimension as well as moderate scores in efficient and sustainable resource use and social inclusion dimensions. The lower scores observed in efficient and sustainable resource use in Northern Africa caused this subregion to be in the second highest rank in Africa. Green economic opportunities scores are very low in four out of the five subregions, except for Northern Africa which had the highest score of 33.45, due to very high performance in green investment from Algeria and Libya as well as the contribution of Egypt, Tunisia, and Morocco to green innovation. Northern Africa also scored the highest in social inclusion due to very high progress in social equity and moderate performance in access to basic services (Figure). Performance in efficient and sustainable resource use is the most variable among the dimensions (Figure), from large variation in efficient and sustainable water use, which is scored very low for a number of countries in Northern Africa due to water scarcity challenges (UNICEF, 2021). Higher performance in efficient and sustainable resource use within Middle Africa can be attributed to very high scores in sustainable land use, while for Eastern and Western Africa this can be due to moderate to high performance in efficient and sustainable energy use.

Figure 8 Green Growth Index and dimension subindices in the African subregions, 2020

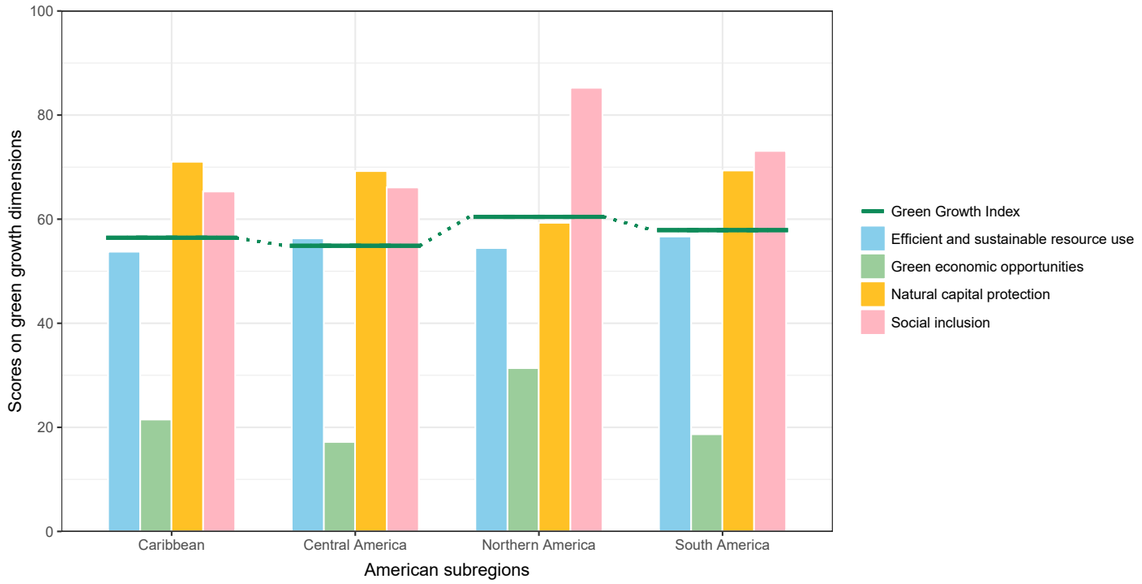


3.1.2 The Americas

The Americas consists of four subregions – the Caribbean, Central America, Northern America, and South America. The Green Growth Index scores across the region range between 54.88 to 60.44. Northern America has the highest score due to very high performance in the social inclusion dimension (Figure 9), especially in the indicator categories of social protection and social equity from Canada and the United States. The very high scores in these countries can be attributed to prioritizing social inclusion policies and spending on social programs. These countries have also performed moderately well in the areas of green jobs and green investment, explaining the higher subregional scores for the green economic opportunities dimension. The other subregions perform better within the natural capital protection and efficient and sustainable resource use dimensions. This is supported as Latin America and the Caribbean hold most of the global terrestrial biodiversity, placing a high value on natural capital and ecosystem services to sustain livelihoods (Hernández-Blanco et al., 2020). This has led to high performance in biodiversity and ecosystem protection as well as cultural and social value indicator categories, resulting in high natural capital protection scores.

Moreover, the performance in reducing GHG emissions (GE) is high in the Caribbean and Central America (Figure 7). Efficient and sustainable resource use has moderate performance and displays the lowest variability among the subregions (Figure 9). This is due to most countries displaying moderate to high scores in material use efficiency progress and growth in renewable energy markets (IRENA, 2016).

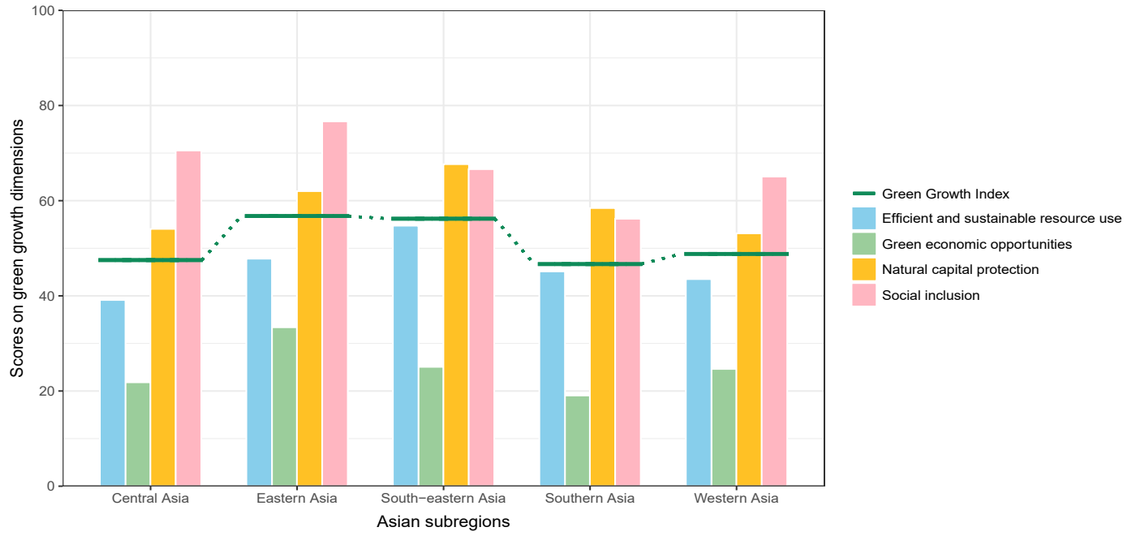
Figure 9 Green Growth Index and dimension subindices in the Americas subregions, 2020



3.1.3 Asia

The subregions of Asia include Central, Eastern, South-eastern, Southern, and Western. Social inclusion has the highest scores among the dimensions (Figure 10). Eastern Asia leads the progress with countries such as South Korea and Japan having very high scores of 80 (Table 2). Central Asia also has high performance in social inclusion due to very high scores in social equity and social protection (Figure 7). Natural capital protection also shows moderate to high performance for most subregions, with South-eastern Asia showing the highest score for this dimension. The high performance in natural capital protection in this subregion can be attributed to very high scores in environmental quality. While South-eastern Asia has also the best performance for biodiversity and ecosystem protection in Asia, the score is only moderate. The subregion of South-eastern Asia is a global hotspot of biodiversity and indigenous species, but at the same time the most biotically threatened due to very high rates of deforestation and mining, high number of hydropower dams, and high consumption of species for indigenous medicines (Hughes, 2017). Eastern Asia and Southern Asia have also performed strongly in GHG emission reduction and environmental quality, which may be linked to addressing the air pollution issues within these regions (Krishna et al., 2017; Larkin et al., 2016). However, Southern Asia also has the lowest Green Growth Index score because of very low performance in green economic opportunities dimension. This can be explained by the poor scores in green employment as well as only having one country, India, with data on green innovation. For the other subregions, the weakest dimension is still green economic opportunities, with the highest score from Eastern Asia with 33.38 (Figure 10), indicating more progress needed throughout the region. The same is the case for the subregions in other regions like Africa and the Americas. Finally, the performance in efficient and sustainable resource use is only moderate in Eastern, South-eastern, Southern, and Western Asia, which can be attributed to the low scores in efficient and sustainable water use. The score for this dimension is even lower in Central Asia because it has very low score in efficient and sustainable use not only of water but also energy (Figure 7).

Figure 10 Green Growth Index and dimension subindices in the Asian subregions, 2020



3.1.4 Europe

Europe is the strongest performer in green growth across all regions, with most of its subregions having high green growth index scores. Its four subregions include Eastern, Northern, Southern, and Western Europe. The high scores are attributable to high performance across both social inclusion and natural capital protection dimensions as well as moderate to high performance in efficient and sustainable resource use dimension (Figure 11). Western Europe has the highest score of 71.20, closely followed by Northern Europe which relatively lower score can be traced from the influence of natural capital protection. Northern Europe has the lowest score in natural capital protection in the region due to only moderate performance in Ireland and Iceland (Figure 7). Ireland performance is lowest in reducing in non-CO2 emissions in agriculture and land use sector. Unlike other European Union (EU) countries, GHG emissions from agriculture account for much larger share of total emissions in Ireland (SEAI, 2018). In Iceland, performance is lowest in protecting biodiversity and ecosystem. Land degradation and soil erosion are big concerns in the country, where soil is needy of carbon but does not have capacity to remove it from the atmosphere (Climate Change Post, 2021). Social inclusion is the highest performing dimension within Europe, with most countries scoring very high in social equity and high in social protection. Natural capital protection is also a high performing dimension, explained by strong progress in GHG emission reduction from most European countries. Northern Europe performs the best in terms of green economic opportunities, having a score above 40. In Northern Europe, this is due to countries such as Denmark, Norway, and Sweden having very high scores in green investment and green jobs. These countries also assist Northern Europe to perform the best in efficient and sustainable resource use, particularly in the categories of sustainable land use and efficient and sustainable energy use. However, similar to the American region, moderate scores in efficient and sustainable resource use are observed for each subregion, explained by high values across countries for material use efficiency.

3.1.5 Oceania

Oceania has four subregions – Australia and New Zealand, Melanesia, Micronesia, and Polynesia. However, due to data limitations within this region, only a country analysis was performed to analyze the dimension performance between Australia, New Zealand, and Fiji (Figure 12). Moderate Green Growth Index scores are observed between all countries, with Australia and New Zealand performing slightly better due to higher values for the social inclusion dimension. Whereas in Fiji, the social inclusion score was lower due to poorer performance in gender balance compared to the other countries (Figure 7). However, Fiji has performed better in natural capital protection and green economic opportunities from very high scores in environmental quality, GHG emission reductions, and green jobs. Australia has moderate performance in natural capital protection, as the dimension score is affected by low performance in GHG emission reductions. The country has one of the highest per capita GHG emissions in the world. A recent report of the Australian Academy of Science recommended that Australia would need to join global leaders in increasing climate mitigations actions as it “lags far behind the best practice demonstrated by many countries” (Australian Academy of Science, 2021). For efficient and sustainable resource use, Australia has the highest value, due to very high scores in sustainable land use. This is the opposite for New Zealand, which has the lowest score within the resource use efficiency dimension. Similar with other regions, green economic opportunities dimension has the lowest score with green jobs and green investment being the major indicator categories influencing the dimension performance.

Figure 11 Green Growth Index and dimension subindices in the European subregions, 2020

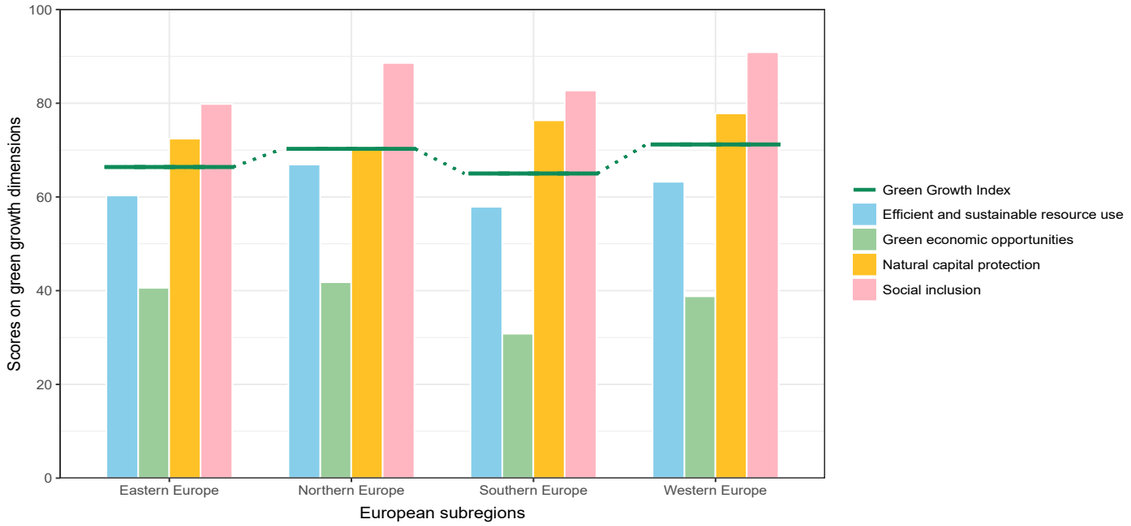
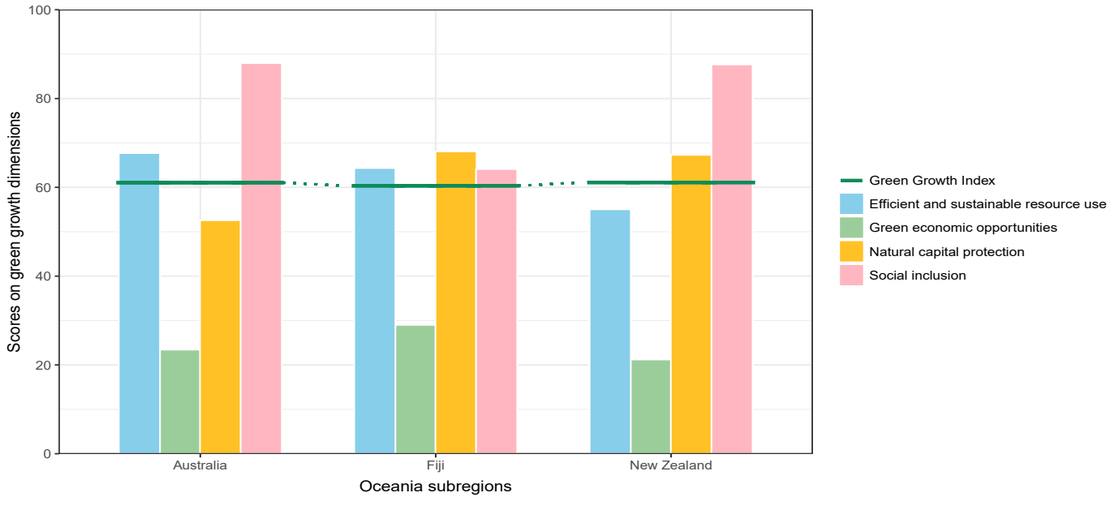


Figure 12 Green Growth Index and dimension subindices in the Oceania subregions, 2020



3.2 Trend 2010-2020

3.2.1 Overall trend

The analysis of trends provides useful information on green growth performance over time. Understanding the reasons for the upward and downward trends in the Index and its dimensions allows policymakers to gain insight into which areas of green growth require more attention. Figure 13 presents the trends in the Green Growth Index by region over a decade from 2010 to 2020. Europe consistently showed the global highest score in Green Growth Index during this period, albeit not reaching a very high level of performance at 68 in 2020. Moreover, the 5% increase in scores from 65 to 68 between 2010 and 2020 in Europe is about as high as in Oceania (from 58 to 61) and slightly lower than in Asia (from 48 to 51). In the past decade, the European Union introduced stringent laws protecting reserved areas, attempting to reduce pollution in cities through implementing strict low emissions zones and pushing for greater use of renewable energy. The trend shows that Europe will have to double down on its climate and environmental actions to continue to lead the green growth transition globally.

Oceania showed higher performance than the Americas mainly because of the lack of country coverage in the former region, with lack of scores for many developing countries. In contrast, the score for the Americas does not adequately reflect the performance of the United States and Canada which individually score well above the average for the Americas as a whole, at 61 and 60, respectively. The overall score in the Americas was pulled down by only moderate scores mainly in Central American countries. But the trend shows that both the United States and Canada experienced an increase in score of only 1% from 2010 to 2020 (Table 2), while the Americas increased on the average by 2% from 55.62 in 2010 to 56.95 in Figure 13). In comparison, Oceania showed an increase of 5%. Finally, Africa remains as the region with the lowest scores over time, but Asia's score is not significantly higher. African countries have scores mostly distributed in the middle range (40-60), while Asian countries have scores from low to high range (35-65). There are still improvements in performance for these countries, particularly for the social inclusion dimension in Africa and efficient and sustainable resource use dimension in Asia, as discussed below.

Figure 13 Trend in Green Growth Index by region, 2020

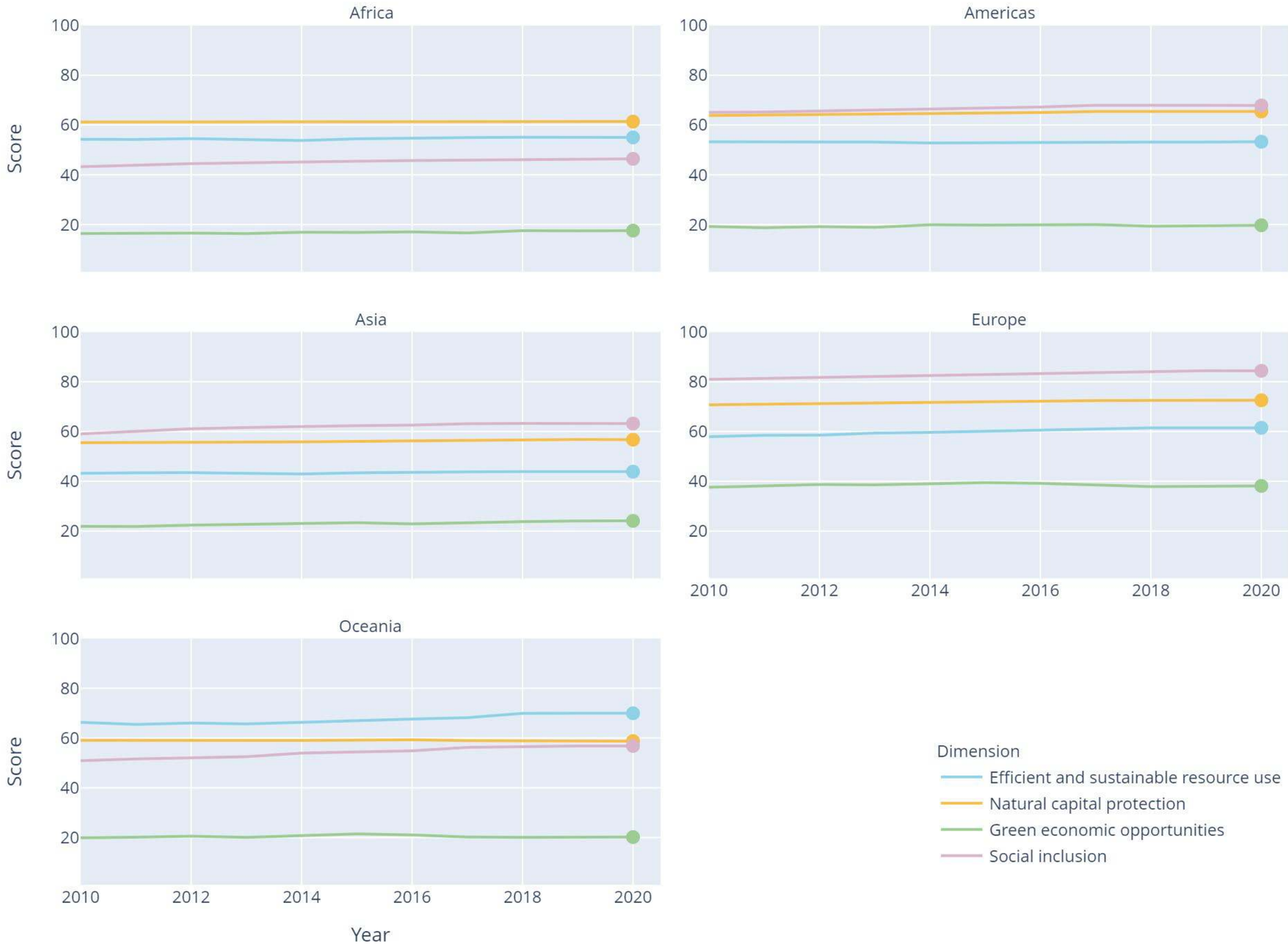
3.2.2 Trend in dimensions

Figure 14 presents the regional trend in the four green growth dimensions including efficient and sustainable resource use, natural capital protection, green economic opportunities, and social inclusion from 2010 to 2020. Social inclusion dominated the trend in scores in the Americas, Asia, and Europe. Meanwhile, the trends for natural capital protection and efficient and sustainable resource use stood out for Africa and Oceania, respectively. Except for Africa, natural capital protection is the second green growth dimension that dominated the trend in all regions in the last decade. This indicates that protection of natural capital has been one of the main contributors as far as enhancing green growth performances across regions.

In contrast, creating green economic opportunities continued to be an important bottleneck to green growth transition in all regions. The trend in this dimension showed not only the lowest score but also almost no improvement from 2010 to 2020, except for Asia. A positive trend to note is that across all regions, social inclusion scores have risen systematically over the past 10 years. This is especially true in regions with many developing countries like Asia and Africa. The increase in social inclusion scores can largely be attributed to the wide-ranging efforts at poverty reduction including the inflow of foreign aid, government welfare programs, and efforts by international organizations including the UN (Ravallion, 2020).

Certain interesting comparative trends can also be noted (Figure 14). For instance, the African region is on par with the Americas in the efficient and sustainable resource use dimension. This seems to be partly due to the indicator on share renewable to total final energy consumption, where many African nations have a score of 100, indicating that they have reached or exceeded the sustainability target. The high scores for this indicator are due to the lower total consumption of energy in many African nations as well as the increase in investments in renewable energy. Moreover, this trend may continue in the future as the continent has many renewable energy resources to exploit, including geothermal and solar energy (IEA, 2019). It can also be observed that Africa scores slightly better on natural capital protection dimension than Asia. This is because the Asian developing countries have usually prioritized industrialization over conservation, while Africa has only produced 2% of energy-related global carbon-dioxide (IEA, 2019). This can be expected to change in the coming years as African nations also emerge on a path of industrial development (Oxford Business Group, 2021; UNIDO, 2016).

Figure 14 Trend in green growth dimensions by region, 2020



Africa

Africa has a sustained increase in the social inclusion dimension score, increasing by 7% from 43.25 in 2010 to 46.41 in 2020 (Figure 14). Northern Africa had a significant contribution to this performance with an increase in score for gender balance by 21% from 46.05 to 55.59 during this period. For example, Guinea-Bissau (56%) and Guinea (22%) are amongst the Northern African countries that contributed to this positive trend as a result of initiatives to improve gender balance. In Guinea-Bissau, the Parliament implemented a minimum quota of 36% of women's representation in national and local governments in 2018 (UNIOGBIS, 2018). In Guinea, a law on parity requires 50% share of women candidates for national and local positions (UN Women, 2019).

Although Africa showed the highest score in natural capital protection, the trend for this dimension remained relatively stable at 61 in the last decade. There was only a slight increase in scores for this dimension for many countries and some were even showing a decline. In particular, the scores for environmental quality declined by an average of 5% in Western Africa and 2% in Eastern Africa. In Western Africa, the decline was attributed to Niger and Burkina Faso with percentage change in scores for environmental quality of -16% and -15%, respectively, from 2010 and 2020. In the case of Burkina Faso, the scores for Disability-Adjusted Life Year (DALY) rate due to unsafe water sources have significantly decreased over time. World Bank data showed that mortality rate attributed to unsafe water, unsafe sanitation, and lack of hygiene (per 100,000 population) was as high as 50 in Burkina Faso in 2016 (World Bank, n.d.-b). The water-related health crisis in the country is caused by water scarcity and, since 2018, people displacement from political violence. Almost 94% of the 800,000 displaced people are hosted by communities who are poor and food insecure, causing water scarcity for both displaced and vulnerable hosts (Oxfam, n.d.). Moreover, responding to COVID-19 through strict hygiene practices is a challenge due to water crisis (Mulvihill, 2021). In Niger, deaths from unsafe water resources are caused by water scarcity due to intense droughts and lack of sanitation. Over 12.8 million and 20.6 million people do not have clean water and decent toilet, respectively (WaterAid, n.d.).

The trend in efficient and sustainable resource use remained almost unchanged in Africa from 2010 to 2020. There were improvements in efficient and sustainable use of water, land, and materials across the region, but these were offset by the decline in efficient and sustainable energy particularly in Northern Africa (-14%) and Middle Africa (-10%). Libya in Northern Africa with -34% and Equatorial Guinea in Middle Africa with -21% contributed much to this decline. The indicator responsible for the decline was the lack of efficiency in sustainable transport in Libya and high ratio of total primary energy supply to GDP in Equatorial Guinea. The transport infrastructure in Libya is very poor, thus, contributing to inefficiencies in the transport sector (Elmansouri et al., 2020). Equatorial Guinea graduated from Least Developed Country (LDC) category on income criterion in 2017 (UN ECA, 2019) and endowed with large oil and gas reserves. Energy intensity is increasing in the country with its large reserves of natural gas (1.5 trillion cubic feet) and crude oil (1.1 billion barrels) (African Energy Week, 2021).

Like many other regions, Africa struggles to improve its performance in green economic opportunities. The trend for this dimension is not only very low, but also remained at this level throughout the period from 2010 to 2020. But trends are difficult to ascertain in many cases because there were only few data available.

Americas

The Americas performed best in both social inclusion and natural capital protection dimensions with scores of 67.86 and 65.43, respectively, in 2020 and experienced an increase of 4% and 3%, respectively, from 2010 (Figure 16). While social inclusion generally increased across the region, the improvement in gender balance by 13% in Central America dominated this change. Mexico and Nicaragua accounted for the largest increase by 19% and 21%, respectively, in 2020. Mexico faces challenges in gender equality and women empowerment but has taken important steps to promote equality and close gender gaps. For example, they introduced series of legislature on gender quotas in 2002, 2008, and 2014 and a national program for gender equality (i.e., PROIGUALDAD) in 2015 (Gurría, 2020). In the case of Nicaragua, the improvement in gender balance has been revealed by the World Economic Forum's Global Gender Gap with the country occupying the 5th rank in global gender parity for three consecutive years (Wade, 2020). Women occupies 48.4% of seats in parliament in Nicaragua as of February 2021 (UN Women, n.d.-a), which can be attributed to 2012 electoral law on gender quotas requiring 45% of seats in the legislature and 42.5% of mayoral offices to be allocated to women (Wade, 2020).

The relatively slower progress in natural capital protection is linked to the lack of improvement in efficient and sustainable resource use. There was a decline in reduction of GHG emissions and efficient and sustainable energy in the Americas in the last decade. The largest decline in the latter green growth indicator by 10% was experienced in South America. A decline in the score in efficient and sustainable energy in Venezuela by 42% contributed largely to this decline. The drop of scores in efficiency in sustainable transport from 37 in 2010 to 10 in 2020 is responsible for this trend. The challenges in transport logistics in Venezuela include economic instability because of the short-term policies on the economy, limitations in the infrastructures, and lack of human resources (Matalobos & Costela, 2002; p. 3). A recent study showed that public transport in Venezuela remains "insufficient and negative" due to lack of urban planning and holistic integration (Padrón, 2021; p. 240). Other South American countries that contributed to the slow improvement in sustainable transport include Bolivia and Guyana (Tirachini, 2019).

The trend in green economic opportunities in the Americas is not much different from Africa, with scores relatively unchanged at about 20 throughout the last decade. The sluggish improvement in this dimension is mainly due to the decline in green innovation in almost the entire region, except for South America. Peru recorded the highest improvement in green innovation in South America. With support from the World Bank and in partnership with the Inter-American Development Bank, Peru's National Agricultural Innovation (PNIA) Project, which was implemented from 2015 and 2021, has strengthened the National Institute for Agricultural Innovation, consolidated national agriculture innovation system, financed demand-driven innovation, trained the next generation of innovators, and raised awareness on the innovation agenda (World Bank, 2021b). Successful efforts on green innovations were also evident in other sectors including the mining sector (Aron & Molina, 2020).

Asia

The 7% rise in the score for social inclusion dimension allowed Asia to shift from moderate to high performance from 2010 to 2020 (Figure 14). This trend in social inclusion has been driven by an increase in access to basic services and social protection categories, as well as modest improvements in gender balance indicators across most countries. The scores for social protection in Southern Asia increased by 18% and for gender balance in Western Asia by 19%. The increased in scores is due to large investments made since the beginning of the 21st century in welfare programs, with the aim of reducing absolute poverty. Some examples are sanitation and healthcare programs in Bangladesh and Sri Lanka, workfare programs in India, and the popularity of cash transfer programs throughout many developing countries (Berg et al., 2018; UNICEF & WHO, 2019). In Western Asia, Saudi Arabia showed a significant increase in scores for gender balance. Women occupied about 20% of the Parliament Seats as of February 2021 (UN Women, n.d.-b). Despite the lack of representation in government, there was still a progress on women's empowerment, which includes creating laws eradicating women's discrimination, protecting them against violence, and encouraging their full and active participation in development (Akeel, 2021).

Asia's green growth performance in natural capital protection remained at a moderate level in the last decade, reaching a score of only 56.72 in 2020. This trend is caused by a slight decline in reducing GHG emissions across almost all subregions in Asia. Moreover, big Asian countries failed to curb air pollution. India and China have cities that frequently appear in the top lists of the most polluted nations. Similarly, cities in Bangladesh, Pakistan, and Mongolia often have dangerous levels of particulate matter (PM) 2.5 levels (UNEP, 2019). In other natural capital protection indicators including the biodiversity indicators, DALY rate due to unsafe water sources, and tourism in marine and coastal areas, there are mixed results with most countries recording stable trends across time. Biodiversity rich countries in South-eastern Asia are challenged by very high rates of deforestation and mining (Hughes, 2017).

Similar to natural capital protection, the trend for Asia did not show much progress in efficient and sustainable resource use. The favorable performance in efficient and sustainable use of water and land was offset by the negative performance in energy. Except for Easter region which showed a 5% increase in efficient and sustainable energy, all other Asian regions showed a decline of between 8% and 12%. The countries confronted with political unrest and violence like Syria and Yemen were largely responsible for this declining trend, contributing -65% and -45% to this indicator, respectively. But many other Asian countries also contributed to the decline in efficient and sustainable energy with scores going down by 20%, including Turkmenistan, Brunei Darussalam, Laos, Azerbaijan, Kuwait, and Lebanon. These countries were confronted by different challenges with some struggling to maintain progress in renewable energy while others in sustainable transport.

Among the different regions, Asia showed the largest increase in scores for green economic opportunities by 10%. But its performance remained at relatively low level with a score reaching 24.11 in 2020. Green trade accounted for the biggest improvement in performance with an increase of 37% in South-eastern Asia and 31% in Western Asia. In contrast, the developed countries in Eastern Asia only showed a 17% increase in green trade.

Europe

Europe is the only region which consistently achieved a very high performance for social inclusion dimension with a score above 80, but the change is not very significant at 4% from 2010 to 2020 (Figure 14). The gender balance indicators across most countries have been very close to the target levels since the enactment of policies for equality, such as mandating equal pay and treatment of women in the workplace (EIGE, 2020). But the favorable trend was largely contributed by the improvement in performance on gender balance in Eastern Europe (14%) and Southern Europe (15%) over this period. Poland in Eastern Europe and Montenegro in Southern Europe were the largest contributors to this trend. The score for the indicator on getting paid, laws and regulations for equal gender pay has improved significantly in Poland, reaching the sustainability target in 2020. Gender pay gap was already one of the lowest in the OECD as early as 2011 and women had good opportunities to work as permanent employees and in professional occupations (OECD, 2012). As of 2020, Poland had the 5th lowest gender pay gap in the EU and it is expected to continue to decline after introducing legislation to reduce further the gap (Equileap, 2020; Koschalka, 2020). In the case of Montenegro, the government introduced the Action Plan for Achieving Gender Equality 2017-2021 (Komar, 2019), but the gender pay gap did not decline significantly as in Poland. Moreover, in contrast to Poland, better educated women often work in low-paid occupations (Avlijaš et al., 2013). Some improvements on the scores for proportion of seats held by women in national parliaments have also been observed for Montenegro. But this performance remained lower than other countries in Western Balkans and more so than other EU countries (Brnović, 2016).

The trend for natural capital protection remained relatively steady with an increase of only 3%, while efficient and sustainable resource use showed more upward trend with 6% increase from 2010 to 2020. The latter dimension reached high level performance in Europe in 2020, although the performance in the former dimension continued to be the second highest after social inclusion. Almost all European countries contributed to the slight growth in the scores for natural capital protection, whereas few countries dominated the increased in trend in efficient and sustainable resources use. For example, Western European countries contributed to efficient and sustainable use in water and land with an increase of 10% and 30%, respectively. Belgium led the improvement in scores in both indicators. For efficient and sustainable water use, the country showed improvement in share of freshwater withdrawal to available freshwater resources. Water is not scarce in Belgium, but due to high population density, the water available per capita is less than the other European countries (Quesada & Aubin, 2018). Water scarcity has been a challenge in Belgium and efforts have been made to address this problem. As EU member, it has to adopt EU directives that aim to solve issues on water availability. But Belgium had also been implementing solutions at the subnational level including the mandatory rainwater collection in new-build buildings in Flanders that allows saving of around 10% of freshwater consumption (Outhuijse et al., 2020). For efficient and sustainable land use, Belgium recorded an increasing trend in two indicators including share agriculture organic to total agriculture land area and share of ruminant livestock population to agricultural area. Last year alone, Belgium increased the share of organic farms by 4.9%. With organic farming accounting for 7% of the country's total agricultural land, it is now quite close to the EU average of 8.5% of total EU agricultural land areas (Brussel Times, 2019). The decrease in livestock production has contributed to the decline in GHG emissions from the agricultural sector, which accounts for 8% of total emissions (OECD, 2021).

Europe has the highest score in green economic opportunities and this cross-regional trend has been maintained in the last decade. However, within the region, a slight decline of 3% was observed from 2015 to 2020. The decline in trend can be attributed to the drop in green innovation that occurred in all European subregions except for Northern Europe.

Oceania

Oceania is the only region which performance for the efficient and sustainable resource use dimension has been consistently high between 2010 and 2020 (Figure 14). The change in scores is comparable to that in Europe at 6% during this period. This favorable trend was mainly contributed by the increase in scores for efficient and sustainable land use in Australia and New Zealand as well as Melanesian countries. Half of the 72.3 million hectares of global organic agricultural land is in Oceania, with Australia accounting for 35.7 million hectares (Willer et al., 2021). Fiji and Vanuatu were the largest contributors to organic farming in Melanesia. In both countries, youth are widely engaged in promoting organic agriculture (UNDP, n.d.). The Fijian government is ensuring that their local produce is organic and their youth are engaged due to their future role in the economy (Nasiko, 2021). Moreover, organic farming remains to be a way of life in Fiji and support is extended to have organic farms certified (Fiji TV, 2019). In Oceania, Australia has the second highest share of organic agriculture to total agricultural area (9.9%), followed by Fiji (5.5%) and Vanuatu (4.5%) (Willer et al., 2021).

However, the region's performance in natural capital protection dimension remained unchanged at a moderate level in the last decade. This is because the slight increase in one subregion was offset by the slight decrease in scores in other subregions. Most countries across subregions have little or no improvements in biodiversity and ecosystem protection despite the urgency of this issue in Oceania. Oceania, on the one hand, owns six of the world's 39 biodiversity hotspots (Kingsford et al., 2009) and, on the other hand, is "the continent of biological extinctions" for various reasons including ecosystem degradation, invasive species, overexploitation, pollution, etc. (Jupiter et al., 2014; Payri & Vidal, 2019; p.14). A recent report by the World Wide Fund for Nature identified Australia as among 24 global deforestation fronts (Pacheco et al., 2021). It is the only developed country included in this list.

Oceania experienced the most significant improvement in social inclusion dimension, increasing by 12% in the last decade. The biggest increases were observed for gender balance in Micronesia and Polynesia as well as social protection in Melanesia and again Polynesia. Samoa accounted for the largest contribution to the improvement in both gender balance and social protection in Polynesia. In the case of gender balance, equal gender pay garnered the highest change in Samoa during the period 2010-2020. Men are dominating the labor sector in Samoa, but women are receiving higher pay (RNZ, 2019). In terms of political representation, however, progress is very limited because parliamentary gender quota is low at 10% (Baker, 2021). Similarly, equal gender pay contributed to the progress in gender balance scores in Kiribati in Micronesia, albeit magnitude of change was not as much as in Samoa. Significant improvement in social protection, particularly for the proportion population above statutory pensionable age receiving a pension, was observed in Fiji in the last ten years. Pension and income security policies have been continuously amended by the Fijian government to support poor elderly (The Borgen Project, 2020).

Data remain sparse in the dimension of green economic opportunities but indicate that both Australia and New Zealand have had declining scores in share of export of environmental goods to total export and share of green employment in total manufacturing employment. Fiji has shown a steep increase in green employment with a score of 84.72 in 2020 (up from 68.86 in 2010) due to an increase in jobs at tourism resorts and jobs which are energy and water efficient and sustainable (GGGI, 2019).

4 Country Performance

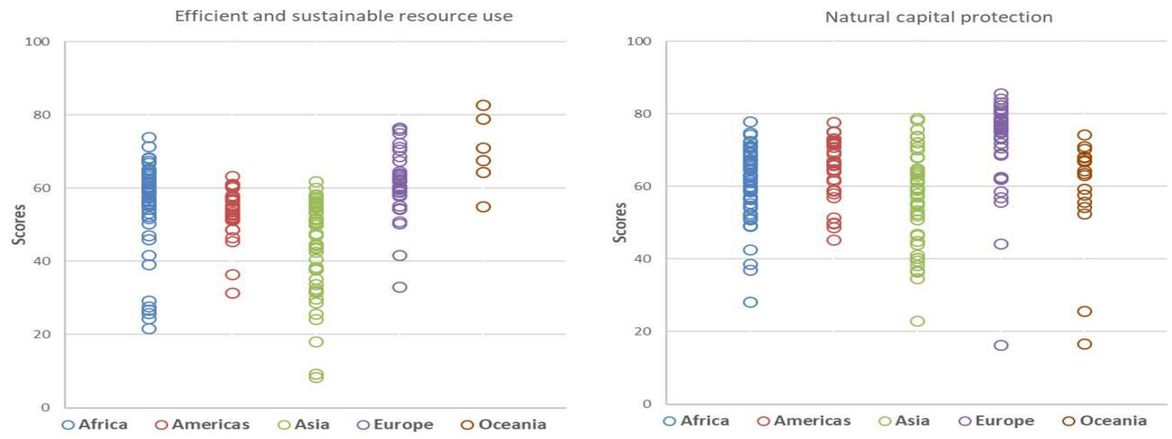
4.1 Country distribution

The scatter diagram in Figure 15 provides a different perspective on the countries' green growth performance by region. While the distribution of scores across regions tends to be similar in range, their positions on the Y-plane reveal that many countries in Europe have high scores for the Green Growth Index, with values between 60 and 80. In contrast, the countries in Africa, the Americas, and Asia gather around scores between 40 and 60, which correspond to moderate green growth performance. However, the distribution of scores for Asia has wider spread so that some countries are reaching high and others low. Among the ranked countries, there are even more countries with low scores in Asia than Africa. Those countries with low scores include Niger in Africa and Saudi Arabia, Oman, Uzbekistan, Kuwait, and Pakistan in Asia. Oceania has only three countries with Green Growth Index, namely, New Zealand, Australia, and Australia. These countries have high green growth performances.

Figure 16 presents the distribution of country scores for the four green growth dimensions and reveals more information on the green growth performance for other countries in Oceania. The lack of data for green economic opportunities in Oceania prevented the computation of the Green Growth Index for many countries in this region. While country performance in Oceania for social inclusion and natural capital protection dimensions approaches those in other regions, it tends to follow the distribution of countries in Europe as far as efficient and sustainable resource use is concerned. Generally, the countries in Europe performed better in natural capital protection than those in other countries, albeit there is one outlier which is Monaco with a very low score of only 16.23. This is almost as low as the lowest value of 16.65 for Guam in Oceania. It is noteworthy that while many countries in Europe have better scores on green economic opportunities, many European countries have also low and very low scores, similar to most countries in other regions. The countries in Europe excelled in social inclusion where their scores are all high and very high, without any country outliers. This region is approaching the sustainability goal of leaving no one behind. On the other hand, this remains a big challenge in many countries in Africa as many of them remain to have low and few others even very low performance in social inclusion. The three African countries with very low scores for social inclusion include Guinea-Bissau, Somalia, and Central African Republic. The distribution of scores is promising for natural capital protection where countries across regions including Africa tend to gather at the upper end of the scatter diagram, which implies that they are all racing to reach the targets for this dimension.

Figure 15 Distribution pattern of country scores for the Green Growth Index by region, 2020

Figure 16 Distribution pattern of country scores for the green growth dimensions by region, 2020



4.2 Best performers by region in 2020

The top-ranking countries by region are Sweden in Europe with an index score of 78.87, Japan in Asia with an index score of 64.50, Mexico in the Americas with an index score of 62.55, New Zealand in Oceania with an index score of 61.10, and Tanzania in Africa with an index score of 58.63. More details on these countries' green growth performances are available in Chapter 7 Country factsheets. Figure 19 shows the scores of the indicator categories used to compute the Green Growth Index for these five countries. The indicators were benchmarked against the sustainability targets; hence, the circular diagrams show the distance to targets for these indicator categories. A score of 100 indicates that a target was reached.

Sweden has a good green growth performance as it progresses very close to achieving all of its targets in the social inclusion pillar (Figure 17), reflected by a dimension score of 94.94 (Table 2). This makes Sweden both the regional and global top performer for this dimension, followed by the Netherlands with 93.62, and then Norway with 93.45. Sweden's performances in efficient and sustainable resource use and natural capital protection dimensions tend to converge at 75.92 and 77.84, respectively. Although it has the third highest score in Europe for the former dimension, it only ranks 17th with respect to the latter dimension. Improving its score for biodiversity and ecosystem protection (BE), which is currently only at 60.62 (Figure 17), will help Sweden to increase its score in natural capital protection. With a score of 52.7, Sweden has the second highest performance in green economic opportunities dimension. Nonetheless, big opportunities are available for Sweden to further improve its performance in this dimension, particularly in green trade (GT) and green innovation (GN) where scores are only about 40. As top global performer in the Index score, its performances are quite low for green innovation at only rank 6 and even lower for green trade at only rank 16 globally. In Europe, its performance is not much better with 5th rank in green innovation and 10th rank in green trade.

Japan performs best in social inclusion, reaching the target for social equity (SE) with a score of 95.71 (Figure 17). Although the performances in both access to basic services and resources (AB) and social protection (SP) are also very high, Japan has only moderate score in gender balance (GB). Thus, its overall performance in social inclusion with a score of 80.71 is lower than the three other countries in Asia, namely, Israel, South Korea, and Singapore (Table 2). The score for environmental quality (EQ) is also quite close to reaching the sustainability target at 91.3. But opportunities are available to improve the performance in natural capital protection by increasing the scores for cultural and social value (CV) and biodiversity and ecosystem protection (BE). Currently, Japan only occupies the 8th highest score for natural capital protection in Asia. The same can be said for green economic opportunities where it only ranks 6th in the region, where opportunities exist in improving the score for green innovation (GN) which scores very low (Figure). Japan's performance in efficient and sustainable resource use looks less promising than natural capital protection, but it nonetheless occupies a higher rank (4th) in Asia.

Mexico performs well in social inclusion and natural capital protection dimensions. Access to basic services and resources (AB) and biodiversity and ecosystem protection (BE) are the areas where it can further improve its performance in these two green growth dimensions (Figure 17). Mexico has the 3rd highest score (78.81) in social inclusion and 6th highest score (72.73) in natural capital protection in the Americas (Table 2). But the opportunities to further improve its overall green growth performance will come from the improvements in both efficient and sustainable resource use and green economic opportunities. With a score of 52.04 in efficient and sustainable resource use, it occupies one of the lowest ranks (23rd) in the region. In this dimension, the two indicators that require attention are efficient and sustainable water use (EW) with a score of 30.56 and efficient and sustainable energy (EE) with a score of 47.14 (Figure). Despite the relatively small progress in Mexico's performance in green economic opportunities particularly in green innovation (GN) with a score of only 9.35, the country still has the highest score in this dimension in the Americas.

New Zealand has an impressive performance in all indicators for social inclusion, although it is only second to Australia as far as the overall score for this dimension is concerned. While New Zealand performs better than Australia in natural capital protection, it only ranks 2nd in Oceania after Fiji (Table 2). The opportunities for New Zealand to improve its score in natural capital protection are available in reducing GHG emissions (GE), with a score of 45.33 (Figure). In the case of green economic opportunities, there are even more opportunities for improvement because it lags behind Australia and Fiji with a score of only 21.21. Like Sweden, green trade (GT) and green innovation (GN) offer New Zealand the opportunities to improve its scores for green economic opportunities. In efficient and sustainable resource use, New Zealand will also have the opportunity to catch up with Australia and Fiji by increasing scores for efficient and sustainable use of water and land (EW and SL).

Tanzania has an overall Index score that is only few points away from New Zealand's due to its relatively good performance in several indicators in almost all green growth dimensions, except for green economic opportunities. Tanzania has very high scores in gender balance (GB) in social inclusion dimension and GHG emissions reduction (GE) in natural capital protection dimension. With a score of 63.32 in efficient and sustainable resource use, it outperforms other top performing countries in other regions, except for Europe (Table 2). Nonetheless, there are opportunities to improve performance in Tanzania in this dimension, particularly in efficient and sustainable water use (EW) with a score of 51.86 (Figure 17). Like in other regions, creating green economic opportunities will help to further improve the green growth performance in the country. Unfortunately, Tanzania lacks data on green innovation (GN), which hinders a more accurate comparison of its performance vis-à-vis other regions.

Figure 17 Distance to targets of green growth indicators in top performing countries by region

5 Expert Consultations

For the annual reports of the Green Growth Index, GGGI continue to place significant value on consultations with experts from different fields and institutions from different parts of the world. The aims of these consultations include increasing policy relevance of the green growth indicators, creating awareness on the utility and enhancing uptake of the Index, and encouraging collaboration on its application. When the Index was first published in 2019, over 300 experts from about 40 countries were consulted. Many of these experts remain involved in the annual review of the Index, but GGGI continues to invite more experts to make the review as comprehensive and global as possible. This section discusses the approach and results of the expert review on the 2021 Green Growth Index.

5.1 Online survey

5.1.1 Questionnaire design

The expert consultation was conducted through an online survey from November 11 to December 24, 2021. The questionnaire was semi-structured consisting of five parts:

- Involvement in the review – whether experts have participated in the previous reviews
- Personal information – name, gender, organization, and country
- Work qualification – field of expertise, relevance of work to indicators or composite index as well as to green growth
- Expert opinion on the new indicators – EE3, EW3, SL3, ME3, AB2, and AB3. GV1 was not included because the updates only refer to other units of measurement.
- Applying weights on the indicators – to reduce the impact of green economic opportunities indicators on the Index

5.1.2 Response rate

Table 3 presents a summary of the response rates to the online survey by a group of experts. The overall response rate is 50%, with the expert group and scientists accounting for the highest response rate within the types (77%). Both GGGI experts and scientists have the highest response rate (14%) over the total number of experts. The scientists who were invited to participate in the review are mainly those currently engaged in the Task Forces on scenarios and models, knowledge and data, and policy tools of the IPBES and authors in the Working Group II of the Sixth Assessment Report of the IPCC. In the case of policymakers, the invitees are mainly those who participated in the four regional workshops in 2018. The reasons for the low response rate among them are either due to their busy schedules or retirement from their offices. The experts who were invited in 2020 but did not respond to the invite were invited again this year. Many of them were able to participate in the review this year. However, participation from the NGOs and private sector continue to be the lowest despite the additional invite sent to the experts from these institutions this year. The response rate is only 35% out of the 20 experts invited from this group. However, this does not include the five experts from the NGOs and private sector who are members of the international expert group.

Table 3 Number of experts who were invited and responded to the survey

Types of experts	Number of invited experts	Number of experts complete survey	Response rate	
			Within Types	Total
GGGI experts	40	28	70%	14%
Expert group	35	27	77%	13%
Policymakers	25	12	48%	6%
Scientists	50	28	56%	14%
NGOs, private sector	20	7	35%	3%
Total	**205**	**102**	**50%**	

5.1.3 Respondents' characteristics

Table 4 describes the characteristics of the experts from the different organizations who participated in the review in 2021. Majority of the experts (45%) come from international organizations, followed by academic/research organizations (27%). While gender balance was considered when sending invites for the online survey, the response rate was higher among male experts, particularly from international organizations and NGOs/private sector. The gender ratio was highest among the experts from academic and government institutions with values close to 0.90, where relatively more female experts participated in the review as compared to other organizations. About 31% of the experts have participated in the review in 2019 and 2020, particularly those from the NGOs, private sector, and government. There are more experts from the academic and international organizations joining the review of the Green Growth Index this year. Most of those who participated in 2020 but not in 2021 were hindered by other tasks. Although only 79% of the experts work on indicators and composite indices, a high percentage of them (93%) are working on issues related to green growth. All experts from NGOs, private sector, and government have work related to green growth. Only 79% of the experts from academic and research institutions indicated that their work has to do with green growth but almost all of them are supporting the IPBES and IPCC

initiatives, which are both relevant to the green growth dimensions on efficient and sustainable resource use and natural capital protection. The discrepancy can be explained by the terminologies used in different fields of work, i.e., while green growth is recognized as an important policy agenda in international organizations and government institutions, it is not yet a popular term in scientific communities.

Table 4 Characteristics of experts who participated in the review, by type of organizations

Characteristics of experts	Types of organizations				Total
	Academic, research	International organization	Non-government, private sector	Public, government	
Number of experts	28	46	13	15	102
Gender (female-male) ratio	0.87	0.53	0.63	0.88	0.67
Participated in 2019 review	0%	17%	23%	27%	15%
Participated in 2020 review	54%	20%	15%	20%	28%
Participated in both reviews	21%	26%	54%	47%	31%
Work related to indicators	75%	83%	54%	100%	79%
Work related to green growth	79%	98%	100%	100%	93%

5.2 Expert feedback

5.2.1 New green growth indicators

Figure 18 presents the responses of the experts to the questions related to the indicators added in the 2021 Green Growth Index. More than half of all the experts agree to add the six new green growth indicators. The highest approval (85%) was given to the share of food loss to production and food waste to food consumption (ME3), followed by efficiency in sustainable transport (EE3) (77%). The lowest approval was observed for share of ruminant livestock population to agricultural area (SL3) and sustainable fisheries as a proportion of GDP (EW3). Those who think that these indicators are not appropriate for their respective categories are relatively significant at 14%, albeit for different reasons (e.g., GDP is not a useful baseline, indicator is for life under water, agricultural area is not an accurate measure, etc.). Many of the reasons were explained to the experts as limitations of these new indicators. Thus, it will be important to review these indicators again as alternative until SDG database becomes available. The main reason, however, for low approval was due to lack of expertise on these indicators. It is expected that not all experts will have expertise on all indicators because they represent a wide range of topics. For example, the experts on social inclusion are usually not knowledgeable on natural systems such as land and water, and vice versa. So, if the experts who answered "I do not know" due to lack of expertise will be excluded from the responses, then the share of ruminant livestock population to agricultural area (SL3) and sustainable fisheries as a proportion of GDP (EW3) will also have significant level of approval from the relevant experts. The same will be the case for the indicators on social inclusion including prevalence of undernourishment (AB2) and universal access to sustainable transport (AB3).

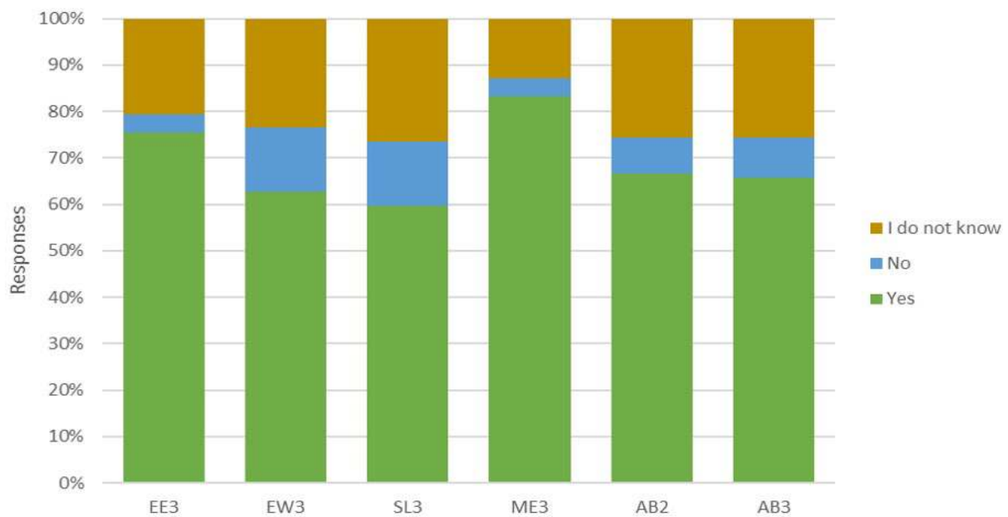
5.2.2 Applying weights on indicators

The last question raised to the reviewers is their feedback to apply weights on the indicators to prevent the four indicators for green economic opportunities to have higher weights than the remaining 36 indicators. As explained in Chapter 1.2.4 Weights of the indicators, while efficient and sustainable resource use, natural capital protection, and social inclusion had reached the ideal number of 12 indicators, the lack of indicators and data continue to be an issue for green economic opportunities. Monte Carlo analysis was conducted to compare the impacts of weighted and unweighted indicators on the Index. The results showed that:

- Globally, the variance from using weighted indicators is less than unweighted indicators (Figure 19); and
- For selected countries, the normal distributions for weighted indicators have less spread than unweighted indicators (Figure 20).

During the expert review of the 2021 Green Growth Index, the results of the Monte Carlo analysis were presented to the experts. Moreover, they were asked to answer the following question: Do you agree to assign weights to all indicators in such a way that GEO indicators will have as much weight as the indicators in other dimensions (i.e., efficient and sustainable resource use, natural capital protection, and social inclusion)? About 70% of the 102 experts agreed to assign weights to the indicators. For this reason, weights were used based on the number of indicators in each dimension in the aggregation of the 2021 Green Growth Index (see Appendix 1 for details). Further information on the feedback of the experts in assigning weights to the green growth indicators are provided in section 5.2.2 Aggregation method. The use of these weights will be assessed in the next years as the indicators in the green economic opportunities dimension will be continued to be reviewed and updated.

Figure 18 Responses of the experts to the questions related to the new green growth indicators



Legend: Efficiency in sustainable transport (EE3), Sustainable fisheries as a proportion of GDP (EW3), Share of ruminant livestock population to agricultural area (SL3), Share of food loss to production and food waste to food consumption (ME3), Prevalence of undernourishment (AB2), Universal access to sustainable transport (AB3)

Figure 19 Monte Carlo analysis of weighted and unweighted Green Growth Index, global

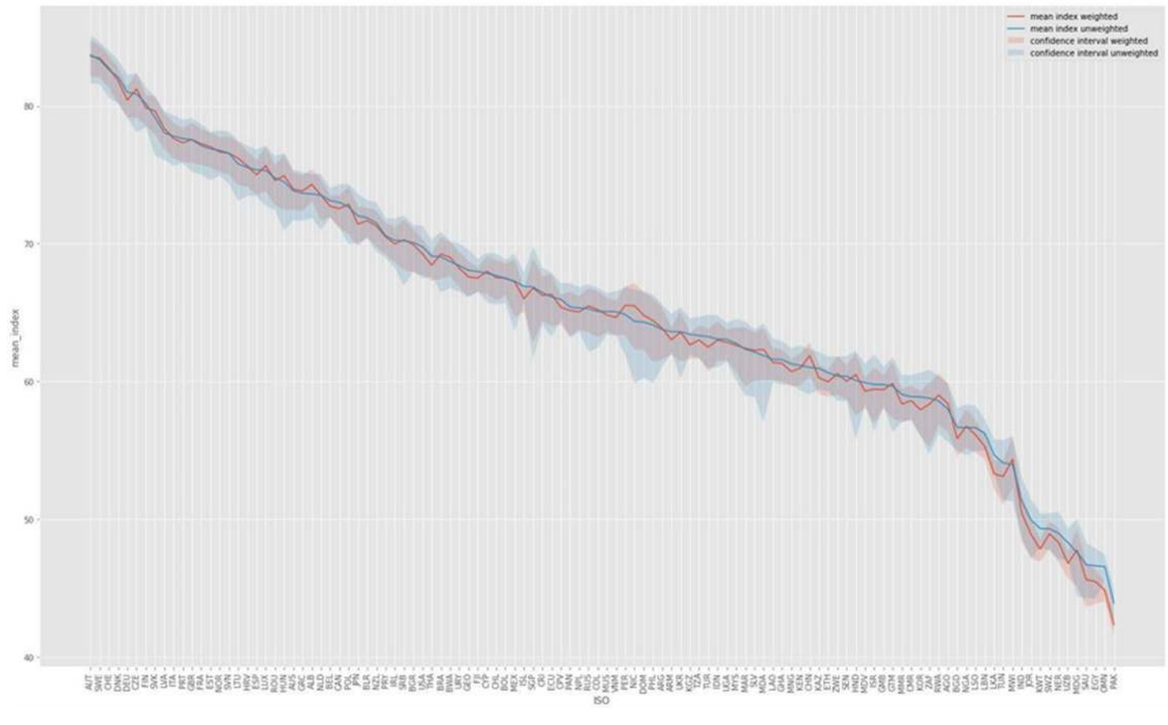
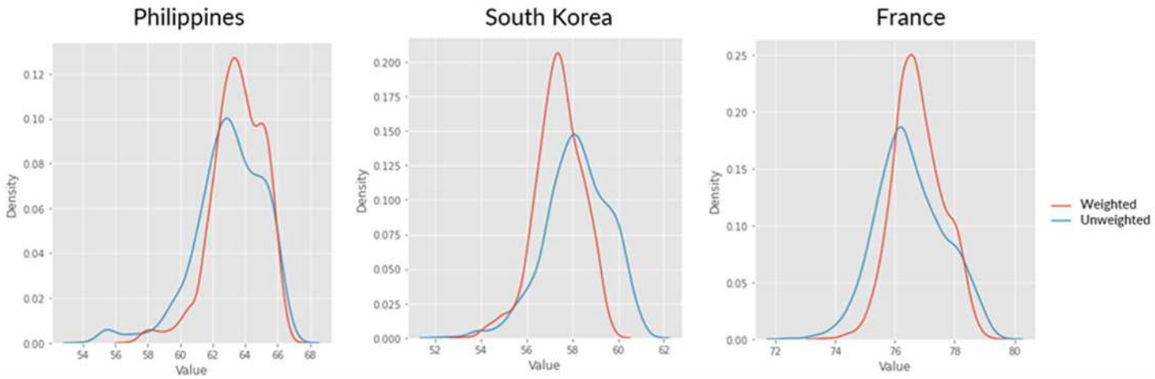
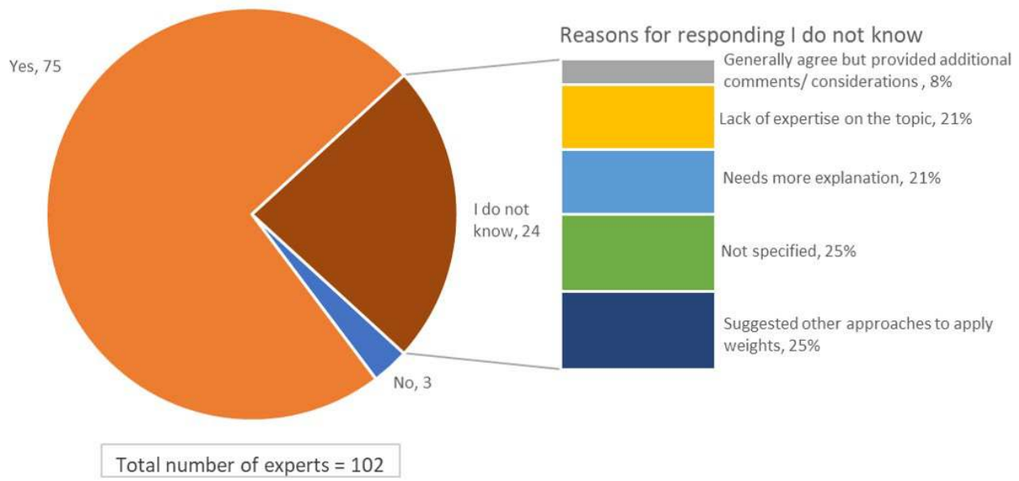


Figure 20 Normal distributions of weighted and unweighted Green Growth Index, selected countries



The experts were asked to choose one of the possible three answers: Yes, No, and I do not know. They were also asked to provide an explanation for their choices. Figure 21 presents the responses of the experts to the questions. Seventy-five of the 102 experts (74%) agreed to apply weights to the Green Growth Index so that each indicator will have equal weights. But 24 experts responded "I do not know" for various reasons, including lack of expertise which accounts for 21% (five experts). Another 25% (six experts) did not give any particular reasons for the answer, which can also be interpreted as lack of expertise on the topic. The other 21% required more explanations to be able to provide their feedback on the questions. It is assumed that the experts somehow lack practical expertise on how equal weights can be applied to the indicators. Thus, he practical application of equal weights on the indicators of the Green Growth Index is provided in Appendix 1. Six experts (25%) suggested other approaches to apply weights including expert-based and Principal Component Analysis (PCA). A relevant expert-based approach is Analytic Hierarchy Process (AHP), which GGGI conducted for the Green Growth Index in 2019 (Acosta, 2019a).However, the results showed that the opinions of experts diverge a lot so that no consensus was reached in terms of appropriate weights for the green growth indicators. The use of PCA was also explored in the same report, but the weight estimates were not used because the properties of the data influence the weights, which are expected to change when a new dataset with different structures is added to the composite index. Another reason is that the weight construction method is not valid and can be misleading for policy-guiding indicators (OECD & JRC, 2008). Finally, about 8% (two of the 24 experts who respondent "I do not know") agree on applying weights but provided few comments for consideration, albeit will not affect the use of equal weights. Thus, these can be considered as part of "Yes" answer.

Figure 21 Responses of the experts to the question on applying weights on the green growth indicators



5.3 Next steps forward

5.3.1 Indicators and proxy variables

One improvement to be made next year is the addition of relevant indicators to the green economic opportunities, which is the only dimension not meeting the target number of indicators. While the other dimensions include 12 indicators each, the green economic opportunities have only four (Table 5). Less than half of its indicators have high level of relevance to green growth. Moreover, a number of indicators still lack data for many countries and years, affecting not only the number of countries with Index scores but also the level of confidence for the Index trend. The indicators with limited time-series data include share of freshwater withdrawal to available freshwater resources (EW2), share of organic agriculture to total agricultural land area (SL2), municipal solid waste (MSW) generation per capita (EQ3), share of patent publications in environmental technology to total patents (GN1), share of youth (aged 15–24 years) not in education, employment, or training (SE3), and proportion of population above statutory pensionable age receiving a pension (SP1). Thus, GGGI will continue to collaborate with experts in reviewing the indicators for all dimensions in the next years. In particular, collaboration with other international organizations could provide a solution in developing additional indicators for green economic opportunities, which are not covered in the UNSTATS SDG database.

Table 5 Relevance of indicators for the Green Growth Index and desired improvements for proxy variables

Codes	Baseline indicators	Relevance	Desired improvement and remarks
EE1	Ratio of total primary energy supply to GDP (MJ per $2017 PPP GDP)	High	
EE2	Share of renewable to total final energy consumption (Percent)	High	
EE3	Efficiency in sustainable transport (Index)	Proxy	Can be replaced with indicator from SDG database when it becomes available.
EW1	Water use efficiency (USD per m^3)	High	
EW2	Share of freshwater withdrawal to available freshwater resources (Percent)	Moderate	Improvement of time series data
EW3	Sustainable fisheries as a proportion of GDP (Percent)	High	
SL1	Soil nutrient budget (Kilogram nitrogen per hectare)	High	
SL2	Share of organic agriculture to total agricultural land area (Percent)	Moderate	Improvement of time series data
SL3	Livestock per agricultural area (include only ruminant livestock)	Moderate	Can be replaced with indicator with ratio to total livestock area.
ME1	Total domestic material consumption (DMC) per unit of GDP (Kilogram per GDP)	High	
ME2	Total material footprint (MF) per capita (Tons per capita)	High	
ME3	Share of food loss to production and food waste to food consumption (Percent)	High	
EQ1	PM2.5 air pollution, mean annual population-weighted exposure (Micrograms per m^3)	Moderate	To be combined with PM10 as data availability improves.
EQ2	DALY rate due to unsafe water sources (DALY lost per 100,000 persons)	Proxy	Can be replaced with water pollution; no identified sources yet
EQ3	Municipal solid waste (MSW) generation per capita (Tons per year per capita)	Moderate	Improvement of time series data
GE1	Ratio of CO_2 emissions to population, including AFOLU (Tons per capita)	High	
GE2	Ratio of non-CO_2 emissions to population, excluding AFOLU (CO_2eq tons per capita)	High	
GE3	Ratio of non-CO_2 emissions in agriculture to population (CO_2eq tons per capita)	High	
BE1	Average proportion of key biodiversity areas covered by protected areas (Percent)	High	
BE2	Share of forest area to total land area (Percent)	Proxy	Can be replaced with indicator on SDG indicator 15.2.1 Forest area annual net change rate when time-series data and country coverage improve
BE3	Above-ground biomass stock in forest (Tons per hectare)	High	
CV1	Red list index (Index)	Proxy	Can be replaced by species of relevance to tourism, local, and indigenous communities
CV2	Tourism and recreation in coastal and marine areas (Score)	Proxy	Can be replaced by sustainable eco-tourism in different ecosystems; no identified sources yet
CV3	Share of terrestrial and marine protected areas to total territorial areas (Percent)	Proxy	Can be replaced by protected areas managed by indigenous and local communities

Table 5 Relevance of indicators for the Green Growth Index and desired improvements for proxy variables (continued)

Codes	Baseline indicators	Relevance	Desired improvement and remarks
GV1	Ratio of adjusted net savings to GNI, including particulate emission damage (5 yrs moving ave.)	Proxy	Can be replaced by investment in renewable energy or green technology
GV2	-	-	Additional indicator to measure investment in Key Biodiversity Areas or protected areas; no identified sources yet
GV3	-	-	Additional indicator to measure investment in human skills in green jobs; no identified sources yet
GT1	Share of export of environmental goods (OECD and APEC class.) to total export (Percent)	Moderate	Improvement in the classification of environmental goods
GT2	-	-	Additional indicator to measure sustainable trade in certified products, to be made available by certification organization; data currently scanty
GT3	-	-	Additional indicator to measure trade in waste materials; no identified sources yet
GJ1	Share of green employment in total manufacturing employment (Percent)	Moderate	Improvement in the indicator to measure green employment in a different economic sector
GJ2	-	-	Additional indicator to measure skills generated in green employment; no identified sources yet
GJ3	-	-	Additional indicator to measure wage gap in green and standard employment; no identified sources yet
GN1	Share of patent publications in environmental technology to total patents (7 yrs moving ave.)	Moderate	Improvement in data availability for more countries
GN2	-	-	Additional indicator to measure green innovation in entrepreneurships; no identified sources yet.
GN3	-	-	Additional indicator to measure green innovation
AB1	Population with access to basic services, i.e., Water, sanitation, electricity, and clean fuels (Percent)	High	
AB2	Prevalence of undernourishment (Percent)	High	
AB3	Universal access to sustainable transport (Index)	Moderate	Can be replaced with indicator from SDG database when it becomes available.
GB1	Proportion of seats held by women in national parliaments (Percent)	Moderate	Can be combined with an indicator on positions held by women in managerial positions; data currently scanty
GB2	Ratio female to male with an account at a financial institution or mobile-money-service provider, age 15+ (Ratio)	High	
GB3	Getting paid, covering laws and regulations for equal gender pay (Score)	Proxy	Can be replaced by an indicator measuring gender parity in salary and benefits
SE1	Inequality in income based on Palma ratio (Ratio)	High	
SE2	Population with access to basic services by urban/rural, i.e., electricity (Ratio)	Moderate	Improvement of the indicator to measure renewable electricity; to add safely managed drinking water and sanitation, which have scanty time-series data
SE3	Share of youth (aged 15–24 years) not in education, employment, or training (Percent)	Moderate	Improvement in time series data
SP1	Proportion of population above statutory pensionable age receiving a pension (Percent)	Moderate	Improvement in time series data
SP2	Universal health coverage (UHC) service coverage index (Index)	High	
SP3	Proportion of urban population living in slums (Percent)	Proxy	Can be replaced by indicator on inadequate housing, including homelessness; to be made available by UN-Habitat

The identification of appropriate sustainability targets for not only the additional indicators, but also for the existing indicators which are not part of the SDGs or other international sustainability goals, continues to be a challenge. As mentioned in the previous report, sustainability targets are critical information for the Green Growth Index because they are used to benchmark green growth performance. For indicators without available targets, the mean values of the top five performing countries are used in lieu of internationally agreed sustainability targets. A drawback of this method is that it allows countries to already reach the targets regardless of their performance on a given indicator. To address this, GGGI has been requesting the producer or publisher of the data to recommend targets for the indicator. This was done, for example, for the share of freshwater withdrawal to available freshwater resources and soil nutrient budget, which were published by FAO. Another approach planned for next year will be to conduct online workshops with the experts, who are participating in the annual review of the Green Growth Index, to agree on targets based on expert judgement.

5.3.2 Data availability and confidence level

Few of the indicators continue to have limited country coverage including share of patent publications in environmental technology to total patents (GN1) in green economic opportunities dimension, and share of youth (aged 15-24 years) not in education, employment, or training (SE3), and the proportion of urban population living in slums (SP3) in social inclusion dimension. The indicators for social inclusion, however, are expected to improve in the coming years because they are SDG indicators. Two indicators, which currently have data for only one year including municipal solid waste (MSW) generation per capita (EQ3) and universal access to sustainable transport (AB3) (Table 6), were assumed to have constant trend over time. Both are proxy variables and expected to be replaced by more desired data in the next few years. Data for all the indicators included in the Green Growth Index are publicly available online, except for the share of green employment in total manufacturing employment (GJ1). The data were mainly collected from international organizations, which offers important advantages for measuring performance across countries. For example, collecting data from national agencies for more than 100 countries will be cumbersome, whereas the data from international organizations were already collected from national agencies and had already undergone consistency checks.

Data availability is an important challenge that affects interpretability of any global index and thus needs transparency. In case of the 2021 Green Growth Index, there are two issues to consider. First, some indicators have data only for limited number of countries. The completeness of indicators or lack of data for indicators influences the scores for the Green Growth Index. For example, a country with complete data for all indicators for green economic opportunities will have lower scores if one of the four indicators has a value of zero, thus pulling down the values of other indicators. In contrast, another country with incomplete data will have a higher score because the fourth indicator, which may also have a value of zero but missing and unknown, will be excluded by default. Thus, the lack of data causes some level of uncertainty in the results of the Green Growth Index. Allowing missing values is, however, necessary to allow substitutability of indicators that represent the same concept as represented by the indicator category and maintain a larger number of countries until the last level of aggregation. Not allowing for substitutability at the first and second levels of aggregation will exclude countries with missing values. As a rule, 25% of the missing data were allowed for the aggregation of indicators (see Appendix 1, Acosta, 2019a). If there were no missing values, the index could be computed for about 243 countries globally. Due to data gaps, however, the current index was computed only for 119 countries.

Second, the most recent available data vary across indicators (Table 6). To enable computation of the Green Growth Index for the year 2020, the most recent data were used as baseline and values were assumed to hold until 2020. For example, 17 of the 40 green growth indicators used 2018 data for 2019 and 2020. For few others, 2015 and 2017 data were used to fill in the succeeding years. This approach is commonly used in other global indices.

Third, for the missing data between the time-series from 2010, the adjacent data were used to represent data for the missing years (i.e., imputed data). Imputation is important to avoid drastic drop or discontinuity in Index trend from 2010 and 2020 due to missing data, which could be misinterpreted as decline in performance. To highlight uncertainty that can be caused by the missing data, the level of confidence is attached to the Index trend. The level of confidence is based on data availability. Figure 22 presents the distribution of 119 countries with Index scores based on their data availability. Generally, data availability is around 75% because 25% was the missing data allowed in the aggregation rule. The mean for the data availability is 70%. Based on these statistics, the confidence levels were assigned as follows: Data availability of 70% and above has high confidence level, between 60% and 70% has moderate confidence level, and below 60% has low confidence level. Figure 23 presents the level of confidence for the Index trend by region and globally. The Index trend in at least 85% of the ranked countries in the Americas and Europe can be interpreted with high level of confidence. In Asia and Oceania, larger share of the countries have high level of confidence but lower than the other two regions. In Africa, the Index trend is dominated by moderate level of confidence. But Asia has the largest share of countries with low level of confidence for the Index trend. Data availability for 2010-2020 and confidence level for the Index trend for each country are presented in Chapter 7.

Table 6 Characteristics of the indicators in terms of data availability and required imputation

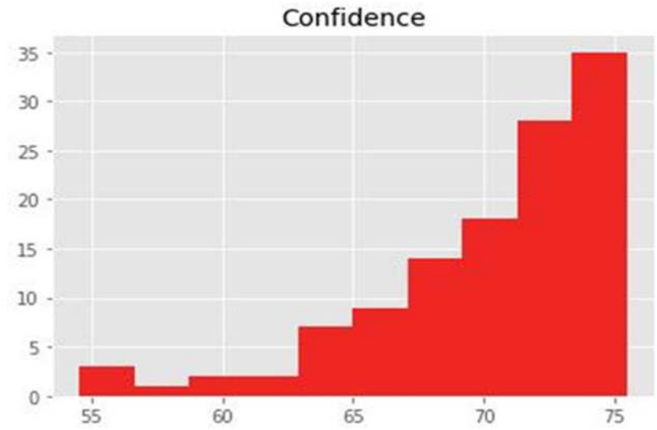
Codes	Available data	Baseline data	Data downloaded source	Website	Year(s) imputed for 2021 Index
EE1	2000 - 2018	2018	UNSTATS	https://unstats.un.org/sdgs/indicators/database/	2019, 2020
EE2	2000 - 2018	2018	UNSTATS	-Same-	2019, 2020
EE3	2005 - 2018	2018	WB data	https://lpi.worldbank.org/	2019, 2020
EW1	2000 - 2018	2018	UNSTATS	https://unstats.un.org/sdgs/indicators/database/	2019, 2020
EW2	2000 - 2018	2018	UNSTATS	-Same-	2019, 2020
EW3	2011 - 2018 (2 years interval)	2018	UNSTATS	-Same-	2019, 2020
SL1	1961 - 2018	2018	FAO	http://fenix.fao.org/faostat/internal/en/#data/ESB	2019, 2020
SL2	2004- 2018	2018	FAOSTAT	http://www.fao.org/faostat/en/#data/EL	2019, 2020

Table 6 Characteristics of the indicators in terms of data availability and required imputation (continued)

Codes	Available data	Baseline data	Data downloaded source	Website	Year(s) imputed for 2021 Index
SL3	1961 - 2019	2019	FAO	http://www.fao.org/faostat/en/?fbclid=IwAR0dEJjoD-4nMZkIqQehBdP04CfE2noGLbSUI7CHh_VfRbn4ug-cAqEgAWgSc#data/EK	2020
ME1	1970 - 2019	2019	OECD _AND_ WB data	https://www.oecd-ilibrary.org/environment/material-consumption/indicator/english_84971620-en	2020
ME2	1990 - 2015	2015	UNEP-IRP	https://www.resourcepanel.org/global-material-flows-database	2016-2020
ME3	2014 - 2018	2018	FAOSTAT	http://www.fao.org/faostat/en/#data/SCL	2019, 2020
EQ1	1990 - 2017 (5 years interval until 2010)	2017	WB data	https://data.worldbank.org/indicator	2018-2020
EQ2	1990 - 2019	2019	GHDx	http://ghdx.healthdata.org/gbd-results-tool?params=gbd-api-2017-permalink/b6989accc192c6a5f121a8204b88f819	2020
EQ3	2018	2018	WB Waste	https://datacatalog.worldbank.org/dataset/what-waste-global-database	Constant
GE1	1990 - 2018	2020	ClimateWatch _AND_ WB data	https://www.climatewatchdata.org/ghg-emissions	2019, 2020
GE2	1990 - 2018	2020	ClimateWatch _AND_ WB data	-Same-	2019, 2020
GE3	1990 - 2018	2020	ClimateWatch _AND_ WB data	-Same-	2019, 2020
BE1	2000 - 2020	2020	UNSTATS	https://unstats.un.org/sdgs/indicators/database/	-
BE2	1990 - 2018	2018	WB data	https://data.worldbank.org/indicator	2019, 2020
BE3	2000-2020 (5 years interval until 2015)	2020	UNSTATS	https://unstats.un.org/sdgs/indicators/database/	-
CV1	1993 - 2020	2020	UNSTATS	-Same-	-
CV2	2012- 2020	2020	OHI	http://ohi-science.org/ohi-global/download	2010, 2011
CV3	2016-2018	2018	WB data	https://data.worldbank.org/indicator	2010-2015, 2019, 2020
GJ1	2000 - 2018	2018	UNIDO	Not Available online,data computed and shared by the author	2019, 2020
GN1	1980 - 2019	2019	WIPO	https://www3.wipo.int/ipstats/index.htm?tab=patent	2020
GT1	2000 - 2019	2019	UNCOMTRADE data and OECD and APEC classifications of environmental goods	https://comtrade.un.org/data/	2020
GV1	1990 - 2019	2019	WB data	https://data.worldbank.org/indicator	2020
AB1	2000 - 2020	2020	UNSTATS	https://unstats.un.org/sdgs/indicators/database/	-
AB2	2000 - 2019	2019	UNSTATS	-Same-	2020
AB3	2020	2020	Sum4all	https://www.sum4all.org/gra-tool/country-performance/global	Constant
GB1	2000 - 2020	2020	UNSTATS	-Same-	-
GB2	2004 - 2020	2020	UNSTATS	-Same-	-
GB3	1971 - 2020	2020	WB WBL	http://wbl.worldbank.org/en/reports	-
SE1	1967 - 2020	2020	WB data	https://data.worldbank.org/indicator	-
SE2	2000 - 2020	2020	UNSTATS	https://unstats.un.org/sdgs/indicators/database/	-
SE3	2000 - 2019	2019	UNSTATS	-Same-	2020
SP1	1996 - 2020	2020	UNSTATS	https://unstats.un.org/sdgs/indicators/database/	-
SP2	2000 - 2017 (5 years interval)	2017	UNSTATS	-Same-	2018-2020
SP3	1990 - 2018 (5 years interval until 2010)	2018	UNSTATS	-Same-	2019, 2020

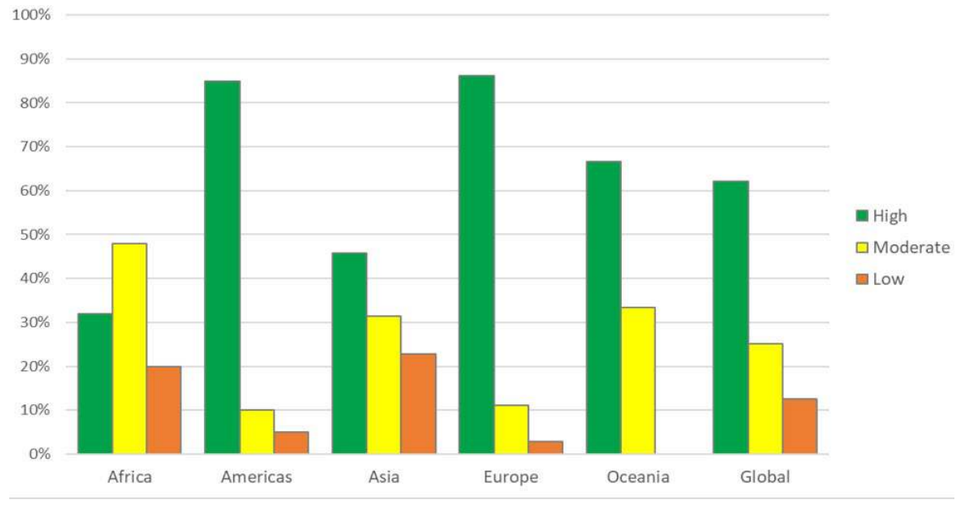
*Note: *Those with asterisks refer to indicators computed by the GGPM team using data downloaded from the indicated sources in this table. The data for population or GDP are from the World Bank database, and land area from the FAOSTAT database.*

Figure 22 Confidence level based on data availability for 119 countries, 2010-2020



	Confidence
count	119.000000
mean	70.259740
std	4.667871
min	54.545455
25%	68.181818
50%	71.590909
75%	74.318182
max	75.454545

Figure 23 Distribution of confidence levels based on data availability per region, 2010-2020



5.3.3 Sustainability targets

Because the sustainability targets are benchmarked against the Green Growth Index, the policy relevance of the scores to measure the distance to internationally agreed goals depends on the reliability of these targets. The targets were grouped into three types (Table 8), namely, SDG targets, other targets whose sources are not from the SDG indicators, and the mean of the top five performers. If the targets are not available from the SDG indicators and other reliable literature, they were computed based on the average values of the top five performing countries (bottom five performing countries for negative relationship to green growth). About 30% of the targets of the 40 green growth indicators remained to be based on mean values of the top five performing countries, allowing countries to already reach the targets regardless of their performance on a given indicator. For example, the mean values of the top performers in the share of green employment in manufacturing to total employment (GJ1) is only 15%. This allows the countries to already have a score of 100 at this low level of green employment. Thus, an important step to improve the Green Growth Index is to have a valid and sufficient basis for the targets of the indicators which are currently not considered in any internationally agreed goals such as SDGs, Climate Paris Agreement, and Aichi Biodiversity Target. This holds particularly for the available indicators for green economic opportunities. GGGI will continue to request the producer or publisher of data to recommend targets for the indicator. If this will not be possible, the experts of the international group will be sought to come up with agreed targets for the purpose of the Green Growth Index.

The targets in the Green Growth Index were aligned as much as possible with the SDG targets, using the information on sustainability targets applied in relevant global indices such as the SDSN's SDG Index and OECD's SDG Indicators. The SDG targets are either explicit or implicit. Because implicit SDG targets leave room for interpretation, different targets were given to the same SDG indicator (Table 8). For the Green Growth Index, the GGPM team did not attempt to interpret the SDG targets but used the available interpretation, such as that suggested by OECD (OECD, 2019a, 2019b) and SDSN (Sachs et al., 2019; Sachs et al., 2018). Whenever the suggestions on the targets diverge, the team adopted the SDSN targets because, as with the Green Growth Index, the SDSN methodology was developed based on the global context. In the future, the alignment with the SDG targets will continue to be important to provide consistent policy recommendations to the countries.

Table 7 Details on the sustainability targets used to benchmark the indicators

Indicators	Link to Green Growth	Min Max	Unstat SDG Indicator	Targets	Countries Reaching Targets	Tpye of Targets	Source of Data	Source of Tagets
RESOURCE EFFICIENCY								
EE1: Ratio of total primary energy supply to GDP (MJ per $2017 PPP GDP)	negative	0.46 19.52	Yes	1,002 MJ per GDP	2	Mean top 5 performers	SE4ALL	Method based on Sachs et al. (2019)
EE2: Share of renewable to total final energy consumption (Percent)	positive	0.00 96.38	Yes	51.4 percent	47	Other targets	SE4ALL	Sachs et al. (2019)
EE3: Efficiency in sustainable transport (Index)	positive	1.95 4.20	No	5 index	0	Other targets	Sum4all	Sum4all
EW1: Water use efficiency (USD per m^3)	positive	0.20 1096.77	Yes	265.7579346 USD per m3	3	Other targets	FAO	OECD (2019)
EW2: Share of freshwater withdrawal to available freshwater resources (Percent)	negative	0.03 3850.50	Yes	25 and 75 percent	120	Other targets	FAO	FAO 2017
EW3: Sustainable fisheries as a proportion of GDP (Percent)	positive	0.00 13.60	Yes	5.08 percent	6	Mean top 5 performers	FAO	Method based on Sachs et al. (2019)
SL1: Soil nutrient budget (Kilogram nitrogen per hectare)	negative	0.42 321.64	No	0 and 5 kg N per hectare	13	Other targets	FAO	FAO
SL2: Share of organic agriculture to total agricultural land area (percent)	positive	0.00 36.59	No	11.90 percent	13	Other targets	FAO	OECD 2017b
SL3: Share of ruminant livestock population to agricultural area (Percent)	negative	0.01 3.97	No	0.018 percent	2	Mean top 5 performers	FAO	Method based on Sachs et al. (2019)
ME1: Total domestic material consumption (DMC) per unit of GDP (DMC kg per GDP)	negative	0.13 15.17	Yes	0.169685364 kg per USD	2	Other targets	IRP	OECD (2019)
ME2: Total material footprint (MF) per capita (MF tons per capita)	negative	0.40 116.73	Yes	5.0 MF tons per capita	60	Other targets	IRP	Stefan Bringezu (2015)
ME3: Share of food loss to production and food waste to food consumption (Percent)	negative	5.79 32.96	Yes	0 percent	0	SDG Target (implicit)	FAO (food loss) UNEP (food waste)	Normative

Table 7 Details on the sustainability targets used to benchmark the indicators (continued)

Indicators	Link to Green Growth	Min Max	Unstat SDG Indicator	Targets	Countries Reaching Targets	Tpye of Targets	Source of Data	Source of Tagets
NATURAL CAPITAL PROTECTION								
EQ1: PM2.5 air pollution. mean annual population-weighted exposure (Micrograms per m^3)	negative	5.86 99.73	Yes	10 micrograms per m^3	17	Other targets	Brauer et al. 2016	WHO 2005; OECD (2019)
EQ2: DALY rate due to unsafe water sources (DALY lost per 100,000 persons)	negative	1.41 8584.97	Yes	0 in every 100,000 population	0	SDG Target (explicit)	IHME	OECD (2019)
EQ3: Municipal solid waste (MSW) generation per capita (Tons per year per capita)	negative	0.04 1.38	Yes	0.001752675 ton per year per capita	1	Other targets	WB	Sachs et al. (2019)
GE1: Ratio of CO_2 emissions to population, including AFOLU (Tons per capita)	negative	0.03 32.15	Yes	0.0266 ton per capita	1	Mean top 5 performers	CAIT	Method based on Sachs et al. (2019)
GE2: Ratio of non-CO_2 emissions to population, excluding AFOLU (CO_2eq tons per capita)	negative	0.00 21.93	Yes	0 ton per capita	4	Mean top 5 performers	CAIT	Method based on Sachs et al. (2019)
GE3: Ratio of non-CO_2 emissions in agriculture to population (CO_2eq tons per capita)	negative	0.00 9.19	Yes	0 ton per capita	6	Mean top 5 performers	CAIT	Method based on Sachs et al. (2019)
BE1: Average proportion of Key Biodiversity Areas covered by protected areas (Percent)	positive	0.00 100.00	Yes	100 percent	2	SDG target (implicit)	IUCN, UNEP-WCMC	Sachs et al. (2019)
BE2: Share of forest area to total land area (Percent)	positive	0.00 97.57	Yes	17 percent	138	Other targets	FAO	OECD (2019)
BE3: Above-ground biomass stock in forest (Tons per hectare)	positive	0.00 500.39	Yes	428.69 tons per hectare	2	Mean top 5 performers	FAO	Method based on Sachs et al. (2019)
CV1: Red list index (Index)	positive	0.42 0.99	Yes	1 index	0	Other targets	BirdLife International and IUCN	OECD (2019); Sachs et al. (2019)
CV2: Tourism and recreation in coastal and marine areas (Score)	positive	2.02 100.00	No	100 score	20	Other targets	Ocean Health Index	Sachs et al. (2019)
CV3: Share of terrestrial and marine protected areas to total territorial areas (Percent)	positive	0.0004 99.46	Yes	13.5 percent for both terrestrial and marine	77	SDG Target (explicit) for marine; Other targets for terrestrial	UNEP-WCMC	(Leadly et. al., 2014)

Table 7 Details on the sustainability targets used to benchmark the indicators (continued)

Indicators	Link to Green Growth	Min Max	Unstat SDG Indicator	Targets	Countries Reaching Targets	Tpye of Targets	Source of Data	Source of Tagets
GREEN ECONOMIC OPPORTUNITES								
GV1: Adjusted net savings, including particulate emission damage (Percent GNI)	positive	-74.51 41.35	No	33.15 percent GNI	3	Mean top 5 performers	WB	Method based on Sachs et al. (2019)
GT1: Share of export of environmental goods (OECD and APEC class.) to total export (Percent)	positive	0.00 34.55	No	16.59 percent	1	Mean top 5 performers	UN-COMTRADE	Method based on Sachs et al. (2019)
GJ1: Share of green employment in total manufacturing employment (Percent)	positive	0.00 0.21	Yes	15 percent	1	Mean top 5 performers	Moll de Alba and Todorov 2018, 2019	Method based on Sachs et al. (2019)
GN1: Share of patent publications in environmental technology to total patents (7 yrs moving ave.)	positive	0.01 0.19	No	0.09 percent	2	Mean top 5 performers	WIPO	Method based on Sachs et al. (2019)
SOCIAL INCLUSION								
AB1: Population with access to basic services, i.e., water, sanitation, electricity, and clean fuels (Percent)	positive	5.25 100.00	Yes	100 percent for both water and sanitation	13	SDG Target (explicit)	WHO/ UNICEF	OECD (2019); Sachs et al. (2019)
AB2: Prevalence of undernourishment (Percent)	negative	0.00 59.50	Yes	0 percent	53	SDG Target (explicit)	FAO	Normative
Universal access to sustainable transport (Index)	positive	0.20 92.90	Yes	100 index	0	Other targets	Sum4all	Normative
GB1: Proportion of seats held by women in national parliaments (Percent)	positive	0.00 61.25	Yes	50 percent for parliament	2	SDG Target (explicit)	IPU	OECD (2019); Sachs et al. (2019)
GB2: Gender ratio of account at a financial institution or mobile-money-service provider (Ratio)	negative	1.00 6.82	Yes	1 equality ratio	0	Other targets	WB	Normative
GB3: Getting paid, covering laws and regulations for equal gender pay (Score)	positive	0.00 100.00	No	100 percent	52	Other targets	WB	Normative
SE1: Inequality in income based on Palma ratio (Ratio)	negative	0.82 7.01	No	0.86 ratio	2	Mean top 5 performers	WB	Method based on Sachs et al. (2019)

Table 7 Details on the sustainability targets used to benchmark the indicators (continued)

Indicators	Link to Green Growth	Min Max	Unstat SDG Indicator	Targets	Countries Reaching Targets	Tpye of Targets	Source of Data	Source of Tagets
SE2: Ratio of urban-rural access to basic services, i.e., electricity (Ratio)	negative	1.00 41.00	Yes	1 equality ratio	117	Other targets	SE4ALL	Normative
SE3: Share of youth (aged 15-24 years) not in education, employment or training (Percent)	negative	3.10 49.60	Yes	0 percent	0	SDG Target (explicit)	ILO	OECD (2019)
SP1: Proportion of population above statutory pensionable age receiving a pension (Percent)	positive	0.00 100.00	Yes	100 percent	51	SDG Target (explicit)	ILO	OECD (2019)
SP2: Universal health coverage (UHC) service coverage index (Index)	positive	25.00 89.00	Yes	100 percent	0	Other targets	WHO	Normative
SP3: Proportion of urban population living in slums (Percent)	negative	0.00 95.40	Yes	0 percent	0	Other targets	UN-Habitat	Normative

[i] Sustainable Energy for All (SE4ALL) database from the SE4ALL Global Tracking Framework led jointly by the World Bank, International Energy Agency, and the Energy Sector Management Assistance Program

[ii] Alternative target is 58.62368011 percent based on OECD report (2019)

[iii] Alternative targets are 10 percent and 12.5 percent based on OECD (2019) and Sachs et al. (2019), respectively

[iv] OECD (2017) metadata, based on Share of agricultural land area under certified organic farm management

[v] UN Environment: Secretariat of the International Resource Panel (IRP), website:resourcepanel@unep.org

[vi] Institute for Health Metrics and Evaluation (IHME)

[vii] WRI (2015) CAIT country greenhouse gas emissions: sources & methods. CAIT dataset of the World Resources Institute (WRI) is based on various sources including International Energy Agency (IEA), Carbon Dioxide Information Analysis Center (CDIAC) of the U.S. Dept. of Energy), Energy Information Administration (EIA) of the U.S. Dept. of Energy.

[viii] WRI (2015) CAIT country greenhouse gas emissions: sources & methods. CAIT dataset is based on United States Environmental Protection Agency (EPA).

[ix] Alternative targets are 92.69 and 37.73 percent for mountain and terrestrial/freshwater based on OECD (2019)

[x] Based on scores for other OHI indicators

[xi] World Database on Protected Areas (WDPA) where the compilation and management is carried out by United Nations Environment World Conservation Monitoring Centre (UNEP-WCMC) in collaboration with governments, non-governmental organizations, academia and industry. The data is available online through the Protected Planet website (protectedplanet.net).

[xii] Average value for 17 percent terrestrial and 10 percent marine

[xiii] World Intellectual Property Organization (WIPO)

[xiv] WHO/UNICEF Joint Monitoring Programme (JMP) for Water Supply, Sanitation and Hygiene (washdata.org).

[xv] Alternative targets are 100 percent for electricity and 95 percent for clean fuels based on OECD (2019)

[xvi] International Telecommunication Union (ITU), World Telecommunication/ICT Development Report and database

[xvii] Alternative targets are 40.37400055 percent for total fixed broadband subscriptions per 100 inhabitants and 100 percent for proportion of population covered by a mobile network, by technology, based on OECD (2019)

[xviii] Inter-Parliamentary Union (IPU)

[xix] Refers to the actual indicator and not to the ratio between female and male

[xx] Palma ratio was computed from the income data downloaded from the World Bank

[xxi] Refers to the actual indicator and not to the ratio between urban and rural

[xxii] Alternative target is 8.1 percent based on Sachs et al. (2019)

[xxiii] WHO (2019) The Global Health Observatory, https://www.who.int/data/gho/data/major-themes/universal-health-coverage-major

6 Applications of the Green Growth Index

In the previous report (Acosta et al., 2020a) three applications of the Green Growth Index were discussed including the development of regional and national indices as well as the assessment of SDG co-benefits using the Green Growth Simulation Tool. Further description of the Simulation Tool is available in (Acosta, 2020b) .In this chapter, only the highlights of the results of the completed projects in 2021 are presented. In addition, brief descriptions of the ongoing and upcoming projects are provided.

6.1 Completed projects 2021

6.1.1 OECS Green-Blue Growth Index

Collaborators: GGPM Team, OECS Commission, and GGGI Caribbean Team

Duration: January-December 2021

Objectives: The Eastern Caribbean countries have a very high ratio of sea to land space. The OECS Commission has established several regional frameworks related to the blue economy and ocean space to support these countries (e.g., OECS Blue/Green Economy Strategy, Eastern Caribbean Oceanscape Plan). Currently, there is no coherent measurement tool to track and monitor the goals and actions included in these frameworks and other related environmental sustainability frameworks (e.g., St Georges Declaration, Biodiversity Framework). As a result, the OECS Commission has expressed a desire to incorporate the indicators related to the blue economy into the Green Growth Index. The collaborative project includes the review of relevant regional frameworks and assessment of how blue economy indicators can be incorporated into the Green Growth Index, conduct of series of webinars to inform OECS members and gauge interest from the stakeholders on the use of the Index, assessment of data availability for the blue economy indicators, and computation of the index for blue economy dimension based on data availability in the OECS region.

Main Outputs:
- Three webinars co-organized with the OECS Commission
- Paper No. OECS/COMES/21/05/5.1D prepared for the OECS Commission's Eight Council of Ministers: Environmental Sustainability
- Interactive website for the OECS Green-Blue Growth Index https://greenblueindex.herokuapp.com/SimulationDashBoard/regional-outlouk
- Technical report on the OECS Green-Blue Growth Index published by Acosta et al. (2021) .Below are the highlights of the report.

The Green Growth Index presented in Figure 1 was adopted in developing the Green-Blue Growth Index for the OECS region. The assessment of the concepts on green growth/economy and blue economy revealed that they are two closely interlinked concepts. Thus, the blue economy indicators cannot be completely separated from the green growth indicators and vice versa. Nonetheless, it was useful to develop Green-Blue Growth Index that will consider the social, economic, and environment contexts that are specific to the OECS region. Moreover, data gaps for the region limit the application of the indicators in the global Green Growth Index to the OECS Member Countries. The report highlighted these data gaps.

While adopting the four green growth dimensions – efficient and sustainable resource use, natural capital protection, green economic opportunities, and social inclusion, the number and list of indicators have been modified in the Green-Blue Growth Index. The Green-Blue Growth Index consists of 35 indicators of which 13 indicators are unique to the blue economy. Out of the 12 global indicators for the sustainable and efficient resource use dimension of the Green Growth Index, eight were included in the Green-Blue Growth Index. Out of those indicators, two were newly added for the Caribbean context, namely services water use efficiency and total agricultural water managed area. The 12 indicators for natural capital protection were adopted from the Green Growth Index without any changes in measurement. The indicators for the social inclusion dimension have been reduced by four, with only eight indicators included in the Green-Blue Growth Index. Moreover, due to data gaps, the Palma ratio was replaced with gross national income per capita in the Green-Blue Growth Index. The biggest changes on the indicators were made on the green economic opportunities dimension where eight indicators were included in the Green-Blue Growth Index. From the four indicators in the Green Growth Index, only the share export of environmental goods to total export was adopted in the Green-Blue Growth Index. The green employment indicators provide emphasis on decent employment, which is an important issue in the OECS region, which include vulnerable employment and unemployment with advanced education.

To allow comparison with the countries in other subregions, Green-Blue Growth Index was computed for all countries with sufficient data with the exception of landlocked countries. Figure 24 shows the regional trends between the years 2015 and 2020 of the Green-Blue Growth Index. The Caribbean, which includes the OECS Member Countries, is positioned amongst the moderately well-performing regions. It outperforms Central, West, and South Asia as well as all of Africa. With the fifth-highest score at 52.47 in 2020, the Caribbean closely follows the performance of the Eastern and South-Eastern Asia region. The global top performers are in Europe and Northern America with an average index score of 69.77. Looking at the green growth trends over time, an upward trend can be generally seen across all regions. Whilst the Caribbean generally has room for improvement, some overall achievements and challenges of the region, especially of St. Lucia, Grenada and St. Vincent and the Grenadines, need to be highlighted.

Figure 24 Subregional comparison of Green-Blue Growth Index, 2015-2020

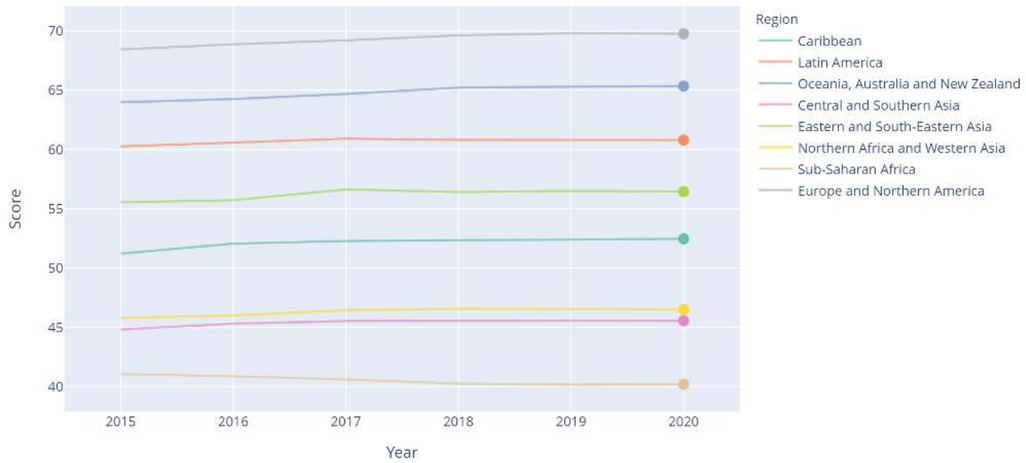
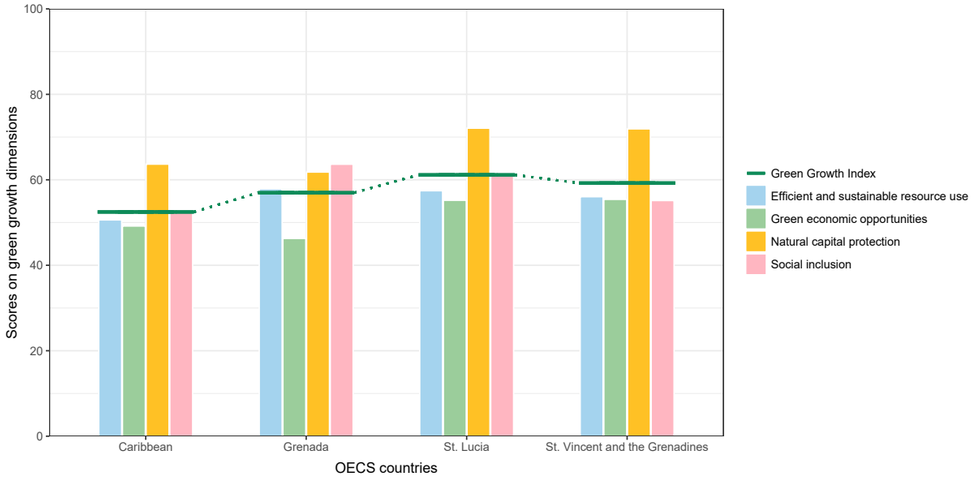


Figure 25 presents scores for the Green-Blue Growth Index and dimensions for the three OECS countries and the Caribbean. The Index scores can be computed only for Grenada, St. Lucia, and St. Vincent and the Grenadines due to lack of data in other OECS Member Countries. Overall, natural capital protection is the strongest dimension across all the Caribbean due to high scores in environmental quality and GHG emissions reduction. St. Lucia, whilst scoring the highest green growth performance, has comparable values to St. Vincent and the Grenadines in terms of natural capital protection and efficient and sustainable resource use. However, it does have a higher score for social inclusion. Nonetheless, Grenada's performance in the social inclusion dimension is the strongest in the region, especially when it comes to gender balance. With 33% of the parliament and 100% of the judiciary being female in 2013, the government of Grenada has achieved increased participation in political and public life as well as increased its efforts to eradicate all forms of violence against women (Canton, 2021). Furthermore, all three countries perform above average in the efficient and sustainable resource use dimension, which are driven by the very high scores in sustainable land use. However, these high scores are offset by the low values in material use efficiency, which remains a weak spot in the region. Green economic opportunities scores are the lowest across the Caribbean, which can be primarily attributed to the lack of green innovation. Specifically, the investment in and installation of renewable energy capacity remain small, as most of the island states remain energy dependent on fuel imports (Timilsina & Shah, 2016).

Figure 25 Cross-country comparison of Green-Blue Growth Index selected OECS countries, 2020



6.1.2 GGGI Green Recovery Index

Collaborators: CAID Team, Vivid Economics, and GGGI Country Teams

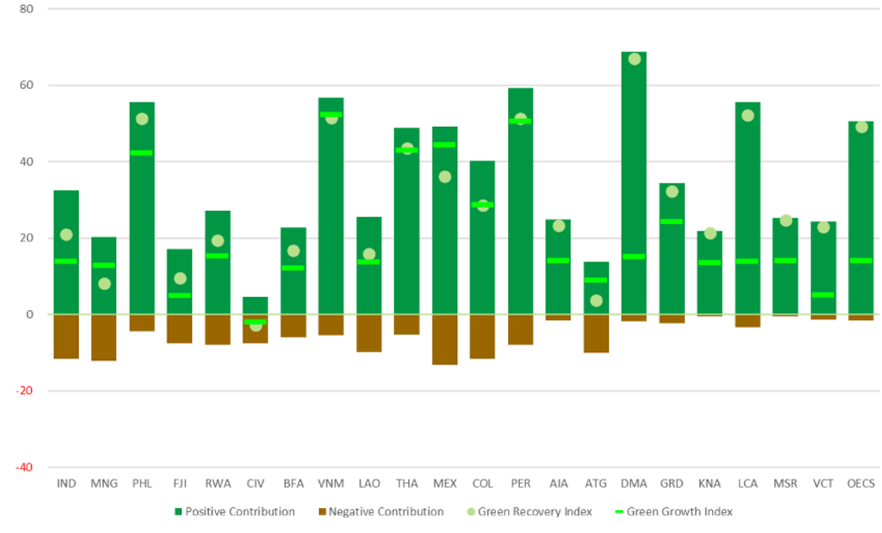
Duration: April-December 2021

Objectives: The impacts of the COVID-19 pandemic continue to persist and governments are racing not only to provide short-term relief for health, food, and job security but also implement long-term economic recovery packages. "[T]here is a crucial choice between designing economic recoveries to restart the brown economy or seizing the opportunity to accelerate the transition to a green economy" (Rijsberman et al., 2020; p.3), where the latter could provide an opportunity to build back better by following a green growth development approach. The collaborative project aimed to assess the greenness of the green recovery measures in 21 GGGI Member Countries including eight selected OECS Member States. In partnership with the Vivid Economics, GGGI adapted the Greenness of Stimulus Index (Vivid Economics & Finance for Biodiversity Initiative, 2021) to develop the Green Recovery Index and assess the green recovery measures in developing countries. The Green Recovery Index applied the indicators of the Green Growth Index to baseline the green growth performance of the countries. The indicator framework of the Green Growth Index offered several advantages including (i) consideration of the social inclusion dimension of the green recovery measures in addition to climate and nature dimensions, (ii) inclusion of short-term relief measures that are mostly focused on social and welfare support but provide enabling environment to the long-term recovery measures; (iii) differentiation between climate mitigation and adaptation where the latter considers building not only the ecosystem but also social resilience; and (iv) addition of other sectors that are impacted by the pandemic including health and tourism.

Main Outputs:
- Presentations in conference and webinar
- Technical report on the Green Recover Index to be published in 2022, but some highlights of the results are given below.

Based on Figure 26, many countries included in the analysis have positive scores for the Green Recovery Index. These scores can be attributed to the large number (722) of socially relevant policies that have a positive impact on the country scores (Figure 27). A large portion of these policies are intended to provide short-term relief for the general population, which is generally seen to be a priority for developing and least developed countries. These policies such as food provisions, cash transfers, temporary employment and health spending would help mitigate the direct impacts of the pandemic and would set-up the economy for long-term recovery packages. The Green Growth Index plays an important role in assessing green recovery since it would provide an estimate of the current green growth performance of the countries, i.e., capturing a portion of the accumulated effects of the previous policies implemented. For example, countries like Dominica (DMA) and Sta Lucia (LCA) have low Green Growth Index scores, since these countries have implemented policies that have high positive contributions and only a few negative policies, resulting in higher Green Recovery Index scores than the baseline. On the other hand, there are also countries such as Mongolia (MNG) and Antigua and Barbuda (ATG) which implemented several policies that have negative impacts but retained a positive Green Recovery Index scores because of relatively high Green Growth Index scores. Lastly, there are also instances like Cote d'Ivoire (CIV) where low Green Growth Index score and negative recovery policies pull down the overall Green Recovery Index scores.

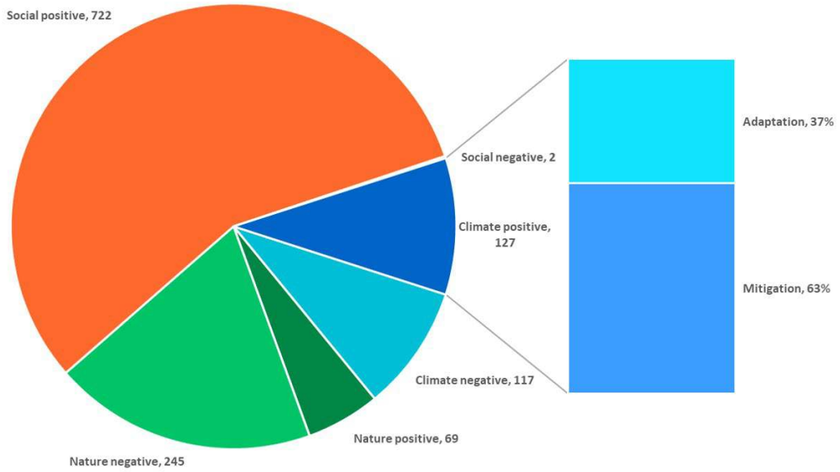
Figure 26 Cross-country comparison of Green Recovery Index and baseline green growth performance based on the Green Growth Index, 2020



Legend: India (IND), Mongolia (MNG), Philippines (PHL), Fiji (FJI), Rwanda (RWA), Cote d'Ivoire (CIV), Burkina Faso (BFA), Vietnam (VNM), Laos (LAO), Thailand (THA), Mexico (MEX), Colombia (COL), Peru (PER), Anguilla (AIA), Antigua and Barbuda (ATG), Dominica (DMA), Grenada (GRD), St. Kitts and Nevis (KNA), St. Lucia (LCA), Montserrat (MSR), St. Vincent and the Grenadines (VCT), and Organisation of Eastern Caribbean States (OECS)

After recovery measures with positive social impacts, those with negative effects on nature have the second largest number (245) of recovery measures (Figure 27). These recovery measures mainly consist of providing support to small and medium-sized enterprises and tourism sector without green strings attached. In other words, this is a missed opportunity for greener recovery since most of these incentives did not include additional requirements or considerations regarding sustainable production/green supply chains and tourism before providing necessary funds. Recovery measures with positive effects on climate were subdivided into two groups: Mitigation (63%) and Adaptation (37%). Climate mitigation policies include recovery measures that reduce GHG emissions such as promoting the use of renewable energy and phasing out or placing penalties on the use of non-renewable energy. Whereas climate adaptation measures include policies that increase the population's climate resiliency such as adoption of disaster risk mitigation plans and construction of more climate resilient infrastructure. In terms of sectors, investments through recovery measures were mostly given to agriculture, energy, and health. ll Green Recovery Index scores.

Figure 27 Distribution of recovery measures according to dimensions for all countries in 2020



6.1.3 SDG co-benefits of climate actions in Saint Lucia

Collaborators: GGPM Team, Organisation of Eastern Caribbean States (OECS) Commission, and GGGI Caribbean Team

Duration: January 2021 – December 2021

Objectives: Saint Lucia faces a highly uncertain future as a consequence of both the emerging and anticipated impacts of global climate change on all aspects of its development. Therefore, Saint Lucia recognises the need to adopt proper adaptation and mitigation measures, while promoting sustainable development such as implementing efforts to maintain its watershed, forest area, agriculture, infrastructure as well as improvements in socio-economics status. The report focuses on applying the Green Growth Simulation Tool to assist St. Lucia in assessing SDG co-benefits of climate actions in Agriculture, Forestry, and Other Land Use (AFOLU) and water sectors. Using the Simulation Tool, the project aimed to further assess and show the alignment of SDG co-benefits with climate adaptation strategies. It is focused on policy options related to the sectors of AFOLU and water in St. Lucia (Government of Saint Lucia, 2018). that are impacted by the pandemic including health and tourism.

Main Outputs:
- Three webinars co-organized with the OECS Commission
- Technical paper on SDG co-benefits of climate actions in Saint Lucia has been published (Gerrard et al., 2021).Some highlights of the results are given below.

Four scenarios were developed to analyze various levels of sectoral policy implementation, green investment, global collaboration, and prioritization of achieving climate action and mitigation plans: BAU, Cautious, Ambitious, and Transformative. The BAU scenario follows the current trends across all sectors without any further additions to the policy strategies. The cautious scenario assumes that policies and actions aim to perform better than the BAU pathway, while careful to avoid investment that cannot be supported without collaboration. The ambitious scenario aims to address climate issues and achieve ambitious adaptation and mitigation targets with access to climate finance. Although potential trade-offs ensuing from the structural and technical change are not given due attention. Finally, the transformative scenario assumes that the policies and actions

are ambitious to achieve the climate targets/commitments, while prioritising a sustainable transition. It further assumes that any climate and nature investments are available to support the changes. The simulations were applied for two modules as follows:

Module 1 – Water sector
- Improvements in irrigation technology efficiency
- Changes in water tariff pricing
- Increasing access to sewage networks and wastewater treatment

Module 2 – AFOLU sector
- Reduction in food loss and waste
- Phase out of wood removals for firewood and construction
- Application of zero-grazing policy

Figure 28 presents the selected results from Module 1 of the model simulations, specifically SDGs 6.4.2 and 6.3.1. The indicator SDG 6.4.2 on the level of water stress (%) provides an estimate of the pressure of economic activities on a country's freshwater resources. In 2017, Saint Lucia withdrew approximately 16.3% of total available renewable freshwater resources. Under a BAU scenario, the level of water stress will increase to 19% by the end of 2050 driven by the increase in both municipal and agricultural water withdrawal. The cautious scenario also shows an increasing trend in water stress, although it can reduce water stress to 17.6% by 2050. Further improvements in maintaining freshwater resources are observed under the ambitious and transformative scenarios. For example, the ambitious scenario results in a decline in water stress to 12% and with a transformative scenario, SDG 6.4.2 falls to 8.3% by 2050. Although when considering the sustainability target for SDG 6.4.2, if the ratio of water withdrawal to water availability is greater or equal to 25%, then the level of water stress is considered potentially problematic and should be reduced (FAO & UN Water, 2021). As Saint Lucia is below this target, therefore, the sectoral water withdrawal is not placing significant pressure on water resources even under these scenarios.

Scenario analysis highlights that under all scenarios, the progression of SDG 6.3.1 on the proportion of municipal wastewater flows safely treated within Saint Lucia is relatively low. The BAU scenario indicates that without improvements in policy intervention or prioritization of climate change or green growth, St. Lucia will still lack behind in managing water quality for its population and environment. No change in the safe treatment of wastewater is further observed under a cautious scenario, while a slight increase in safely treated wastewater is seen under an ambitious scenario, reaching 5% by 2050. The transformative scenario shows moderate performance in SDG 6.3.1 with 30% increase by 2050. However, this is still insufficient to meet the 2030 target of SDG 6.3.1, which aims to halve the proportion of untreated wastewater and increase re-use and safe recycling globally (UN Habitat & WHO, 2021). This suggests that further policy intervention in improving wastewater treatment facilities is required within Saint Lucia to result in greater progress of SDG 6.3.1

Figure 28 Co-benefits on SDGs 6.4.2 and 6.3.1 due to climate actions for the water sector in Saint Lucia, 2017-2050

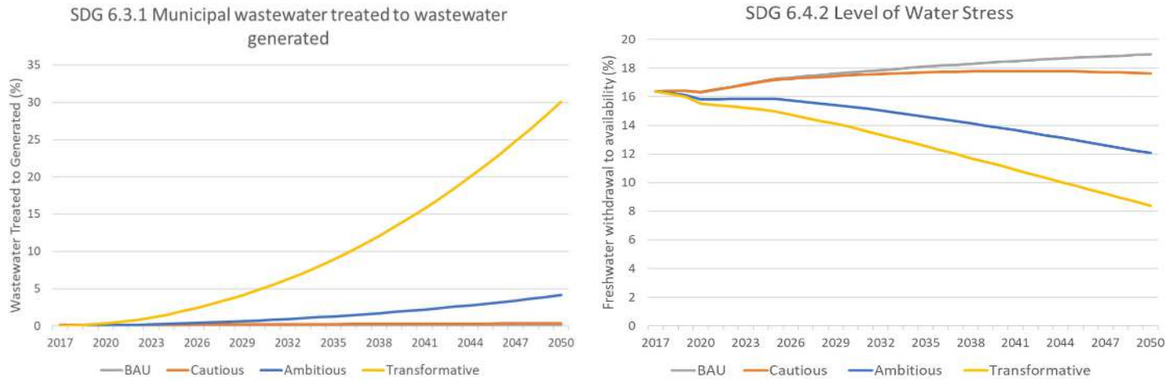
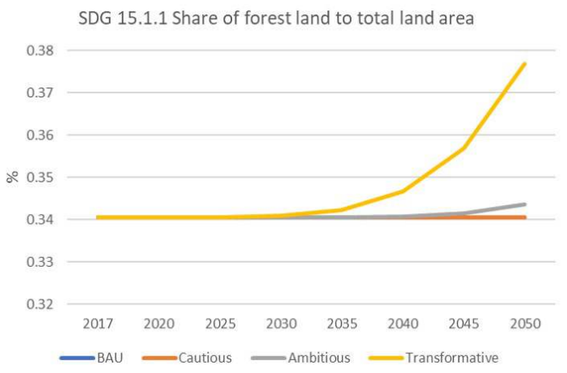
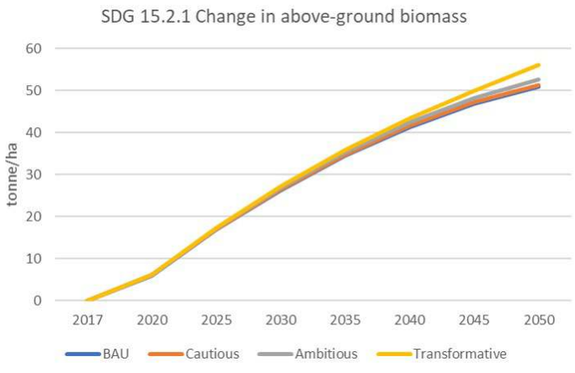


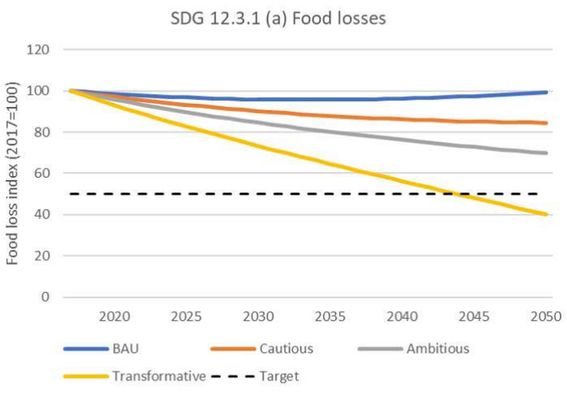
Figure 29 presents selected results from Module 2 of the model simulations, specifically SDGs 12.3.1 (a and b), 15.1.1, and 15.2.1. The narratives for AFOLU are based on the national adaptation plan (NAP) and Shared Socioeconomic Pathways scenarios, as well as SDG targets. The projected growth of animal-based food consumption, crop-based food consumption, and agricultural production are based on projections from the FAO (FAO, 2017). Post-harvest food loss reduction and consumer food waste reduction are linked to the SGD targets of a 50% reduction by 2050. This is in line with St. Lucia's NAP which states that waste from crop and livestock production is to be reduced. In the transformative scenario, it is assumed that a zero-grazing policy is applied. This indicates that no manure is left on pastural lands and it should be stored on farms and applied to cropland as a substitute for synthetic fertilizers. The wood removals for firewood and construction are phased out in the ambitious and transformative scenarios. It is assumed that extreme weather events occur across all scenarios in a similar way.

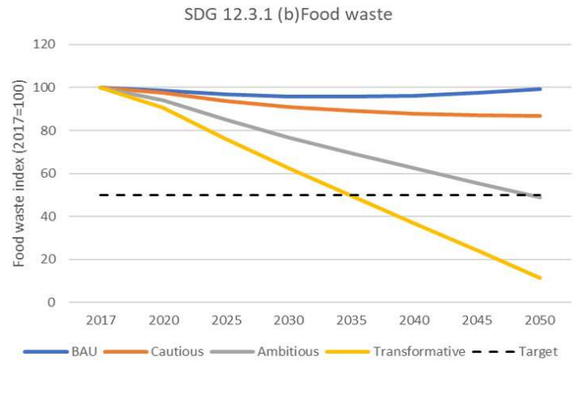
The scenario analysis shows that food waste is decreasing over time in all three scenarios. The target for SDG 12.3.1 (b) on food waste reduction by 50% is only met for the ambitious and transformative scenarios. A similar decreasing trend is observed for SDG 12.3.1 (b) on food losses in the cautious, ambitious, and transformative scenarios. It is only in the transformative scenario that a 50% reduction is reached. If there is agricultural land available for reforestation due to increasing agricultural productivity and decreasing crop consumption, this land might be reforested. This reforestation rate of freed up agricultural land is increasing across all scenarios and highest in the transformative scenario. Due to the freed up agricultural land, the transformative scenario shows a big increase in SDG 15.1.1 on the share of forest area to total land area. The changes are quite insignificant for the other scenarios. In contrast, the impact on SDG 15.2.1 on above-ground biomass is only slightly higher in transformative scenarios vis-à-vis other scenarios.

Figure 29 Co-benefits on SDGs 12.3.1 (a and b), 15.1.1, and 15.2.1 due to climate actions for the AFOLU sector in Saint Lucia, 2017-2050









6.1.4 SDG co-benefits of Green Recovery Measures in Hungary

Collaborators: GGPM Team, Ministry for Innovation and Technology in Hungary, and GGGI Hungary Country Team

Duration: January-December 2021

Objectives: The COVID-19 pandemic has negatively affected all economies in the world, including the EU. The crisis has deeply impacted employment, with about 2.6 million workers losing their jobs in the EU (ages 15 to 64) in the first three quarters of 2019 to the first three of 2020 (Eurostat, n.d.). In response to the economic crisis, the EU is providing massive economic stimulus while placing the European Green Deal (EGD) at the heart of the economic recovery. The EGD is EU's new growth strategy, setting the blueprint for itEU's climate neutrality by 2050. In the context of the EGD and Hungary's national climate neutrality commitment, GGGI has delivered various low-carbon scenarios, such as the Late Action (LA) and Early Action (EA) climate neutrality scenarios, using the Green Economy Model (Box 1). According to these scenarios, significant climate action has positive impacts on the GDP and green employment. Using the Green Growth Simulation Tool, the collaborative project aimed to further assess and show the alignment of SDG co-benefits with the climate neutrality goals. It focused on policy options related to vehicle electrification and fuel economy in the transport sector, which accounted for Hungary's largest emissions in 2018. Within the transport sector, road transport is the largest emitter with emissions increasing by almost 40% in the last five years (Innovációs és Technológiai Minisztérium, 2021).

Main Outputs:

• Working paper on SDG co-benefits of Green Recovery Measures in Hungary published by Adams et al. (2021) . Some highlights of the results are given below.

The National Clean Development Strategy 2020–2050 highlights the pathways for transition of Hungary into a green economy (Innovációs és Technológiai Minisztérium, 2021). The report focuses on various sectors adapting clean energy pathways and technologies to reduce emissions and increase the socio-economic benefits in Hungary. The long-term strategy put forth in the report assesses a 30-year transformation pathway to achieve climate neutrality under three scenarios, namely, Business-as-usual (BAU), Late Action (LA), Early Action (EA). The BAU scenario follows the current trends across all sectors without any further additions to the policy strategies. The LA scenario concentrates on the energy sector where an increased effort is implied after 2045 to reduce emissions. The EA scenario is expected to achieve climate neutrality by 2050 by implementing ambitious targets across all sectors from 2020 as baseline year.

The Green Growth Simulation Tool was applied to assess the environmental and social impacts caused by the implementation of solar photovoltaic (PV) systems for electrification and the increase in the bioenergy demand for transportation sector and electrification of transportation sector. The following sustainability issues were included in the model simulations:

• Emissions avoided due to the transition from conventional to non-conventional sources of electricity generation
• Land use emissions from the implemented utility-scale PV systems
• Clean energy jobs generated as a result of increase in the capacity additions of solar PV and bioenergy
• Emission reduction caused by the electrification of transportation sector
• Land use changes with the increase in bioenergy demand for transportation sector
• Water footprint for transition to biofuel in the transportation sector
• Changes in soil nutrient content

The results for the BAU and EA scenarios, which are summarized in Table 8, show that there are many trade-offs between different SDGs. The significant increase in solar PV will have huge impact on land required for installing solar PV capacity. If the land will use up forest areas, it will have implications for SDG 15.1.1 forest area as a proportion of total land area and SDG 15.2.1 above-ground biomass stock in forest area. But achieving the 56 TWh electricity from solar PV will also contribute to the creation of direct jobs in the solar PV value chain of about 53,324 and total avoided emissions from electricity generation from fossil fuels of about 100.88 Mt CO_2 under EA scenario in 2050. Relative to the BAU, there will be significant increase in estimated solar capacity required for transport sector in EA scenarios in 2050. Achieving the solar capacity of 28.34 GW for the transport sector will contribute to reduction in CO_2, CH_4, and N_2O emissions by half between BAU and EA scenarios. Supporting the reduction of GHG emissions by the same amount will require significant increase in cropland demand for bioethanol and biodiesel.

Table 8 SDG co-benefits from implementing green recovery measures in the transport sector in Hungary

Green Growth Indicators	Relevant SDGs	Scenarios and Projected Years							
		BAU 2020	Change from BAU 2020			EA 2020	Change from EA 2020		
			2030	2040	2050		2030	2040	2050
Electricity generation, clean energy jobs, and emission reduction as a result of installing utility-scale PV									
Electricity generated from solar PV, reference values in TWh	7.b.1 and 12.a.1	2	7	13	9	2	11	15	56
Land required for installing solar PV capacity (M ha)	15.1.1 and 15.2.1	0.03	+2.50%	+5.00%	+3.50%	0.03	+4.00%	+6.00%	+24.50%
Total number of direct jobs created in the solar PV value chain	9.2.2	3348	+1.16%	+2.70%	+1.77	3348	+2.12%	+3.37%	+14.93%
Total avoided emissions from electricity generation from fossil fuels (Mt CO2)	13.2.2	3.60	+2.50%	+5.50%	+3.50%	3.60	+4.50%	+6.50%	+27.00%
Reduced emissions (% change of MtCO2/MWh)	13.2.2	635.86	+2.50%	+5.50%	+3.50%	635.86	+4.50%	+6.50%	+27.00%
Transport solar PV capacity demand and avoided emissions as a result of transport electrification									
Estimated Solar capacity required for transport sector, reference values in GW	7.2.1	2.04	6.89	8.94	9.70	2.30	10.21	16.85	28.34
CO2 emissions from petrol and diesel consumption in road transportation (Mt CO2)	13.2.2	11.34	-0.37%	-0.48%	-0.49%	11.34	-0.5%	-0.67%	-0.8%
CH4 emissions from Diesel and petrol consumption (Mt CO2e)	13.2.2	0.014	-0.37%	-0.47%	-0.49%	0.014	-0.49%	-0.67%	-0.79%
NO2 emissions from Diesel and petrol consumption (Mt CO2e)	13.2.2	0.20	-0.37%	-0.47%	-0.49%	0.20	-0.49%	-0.67%	-0.79%
Land requirement for biofuel demand in transport sector									
Cropland demand for bioethanol (Hectares)	15.2.1 and 15.3.1	5671.7	+0.25%	-0.5%	-0.5%	5671.7	+3.5%	+3.77%	+6%
Cropland demand for biodiesel (Hectares)	15.2.1 and 15.3.1	100.41	+0.25%	+0.013%	-0.5%	100.41	+3.5%	+4.0%	+6.0%

Notes: SDG 7.2.1 Renewable energy share in the total final energy consumption, SDG 7.b.1 and 12.a.1 Installed renewable energy-generating capacity, SDG 9.2.2 Manufacturing employment as a proportion of total employment, SDG 13.2.2 Total greenhouse gas emissions per year, SDG 15.1.1 Forest area as a proportion of total land area, 15.2.1 Above-ground biomass stock in forest, SDG 15.3.1 Proportion of land area degraded over total land area

6.2 Ongoing Projects 2020-2022

6.2.1 African Green Growth and Entrepreneurship Index

Collaborators: GGPM Team, African Development Bank (AfDB), and GGGI Burkina Faso and Cote D'Ivoire Teams

Duration: Since 2020

Objectives: GGGI is collaborating with the AfDB to develop the second phase of the African Green Growth Index by applying GGGI's conceptual framework for green growth. The first phase or pilot version of the African Green Growth Index was developed in 2015 (AfDB, 2015). Through the collaborative project, two main improvements were identified – the addition of indicators for green economic opportunities and the dimension on enabling environment, considering the regional social, economic, and environmental contexts. The conceptual and indicator frameworks for enabling environment have been developed with the former identifying the links of the enabling environment pillars (or indicator categories) to the four dimensions of the Green Growth Index and the latter providing guidance for the selection of the indicators for these pillars. The next steps ahead will be to (1) identify quantifiable indicators for institutions and competencies, capital and market facilities, and people empowerment, (2) conduct stakeholder dialogues to validate the relevance of the indicators to policy, (3) inventory and collect data for the validated indicators, (4) identify proxy variables for indicators with insufficient data, (5) compute the Green Growth and Entrepreneurship Index to include additional indicators for green economic opportunities and enabling environment, (6) conduct expert consultation through an online survey to collect feedback on the African Green Growth Index, (7) publish the report on the Index, and (8) conduct capacity building to transfer Index model and database to the AfDB. GGGI and the AfDB are currently seeking funding opportunities to complete the project.

6.2.2 SDG co-benefits of the Green Emerging Senegal Plan (PSE)

Collaborators: GGPM Team, Bureau Opérationnel de Suivi du Plan Sénégal Émergent (BOS), and GGGI Senegal Team

Duration: January 2021-June 2022

Objectives: Senegal's short-term economic growth prospects have been strongly affected by the COVID-19 pandemic. To account for the impacts of the pandemic, the Government of Senegal has updated in September 2020 the second Priority Action Plan (PAP2, 2019-2023) of the second phase of the PSE, the country's main long-term development policy. Although the PSE clearly references improved natural resources management as an objective, the Adjusted and Accelerated PAP (PAP2a), now Senegal's recovery plan, does not refer to the conservation of nature and biodiversity as guiding principles for the post-COVID-19 era. The Green PSE is expected to provide practical responses to the dynamics of environmental degradation and state efforts in achieving the SDGs. The project aims to help catalyze investment in nature for a green recovery and allow Senegal to progress towards its environmental commitments (Brillie, 2020). It will position the integration of nature conservation and restoration at the heart of Senegal's main long-term development policy and as a tool for Senegal's recovery from COVID-19 pandemic. Moreover, it will support the Government of Senegal in the conceptualization, operationalization, and financing of the Green PSE, allowing the country to make progress towards its environmental targets of restoring 2 million hectares under the Bonn Challenge (Bonn Challenge, n.d.) and other international environmental conventions. Expected impacts include creating a political momentum and catalyzing investment at the benefit of nature conservation and restoration projects, helping identify and prepare priority projects for Government and other financing. As part of the project, GGPM Team is applying the Green Growth Simulation Tool to assess the co-benefits from implementing the PSE with particular focus on the AFOLU sector and co-benefits for energy, water, and waste sectors.

6.2.3 SDG co-benefits of the Low Emission Development Strategies (LEDS) in Ethiopia and Burkina Faso

Collaborators: CAID Team, Government agencies, and GGGI Ethiopia and Burkina Faso Teams

Duration: July 2021-June 2022

Objectives: The Paris Agreement invites Parties to submit their Long Term–Low Emissions Development Strategy (LT-LEDS) by 2020 towards achieving the ambitious commitment by all countries to limit the increase in global average temperature to below 2°C and pursue efforts to limit the increase to 1.5°C. COVID-19 is going to have significant implication in terms of slowing down the double-digit economic growth of the country. Hence, the LEDS will help the country to recover from this shock within a short period of time by creating green jobs and sustaining the development while following a long-term low emission development pathway. Overall, the LEDS will help governments to have a long-term vision and not to be distracted by the impact of COVID-19, but on the contrary, to incorporate issues of resilience, including climate resilience, in its LT-LEDS. The LEDS projects aim to support the development of a concise and strategic LEDS document through a participatory stakeholders' consultation process describing the pathways to low-carbon and resilient development for different scenarios including BAU (Grafakos 2020). Among others, recommendations on policy options and an implementation action plan that can help realize the mitigation potential will be provided. The GGPM Team is working with the CAID Team to assess SDG co-benefits for the scenarios to be developed for Ethiopia and Burkina Faso.

6.2.4 Green Growth Performance in Country Planning Frameworks (CPFs)

Collaborators: GGPM Team, GGGI Green Growth Planning & Implementation, and GGGI Country Teams

Duration: Since 2020

Objectives: GGGI's CPF is a 5-year in-country delivery strategy that identifies GGGI's contribution to green growth in member and partner countries in alignment with GGGI's Strategy 2030. The CPF process entails an assessment of green growth challenges, opportunities, and enabling conditions, identification of GGGI's in-country comparative advantage, and elaboration of priority interventions and intended results. Two figures are included in the CPFs, the distance to targets and dashboard. Distance to targets is a circular diagram showing how far a country is achieving the sustainability targets for the green growth indicators. The dashboard highlights the current green growth performance against other relevant countries, by region and economic development level. Both figures show where the policy should focus and the opportunities that can be created to improve the performance on green growth indicators.

6.3 Upcoming projects 2022

6.3.1 Green growth promotion support project for Lao PDR

Collaborators: GGPM Team, Ministry of Planning and Investment, and GGGI Lao PDR Team

Duration: January-December 2022

Objectives: Lao PDR's National Green Growth Strategy (NGGS), which incorporated the results of GGGI's Green Growth Potential Assessment, was approved in January 2019. The Strategy supports the integration of green growth into the formulation and implementation of the sector and local strategies and plan in each period to achieve the long-term goals of national socio-economic development plan and strengthen the balance between economic expansion, environmental protection, and social development. The proposed project will aim to gain broader understanding on green growth index and indicators and build capacity of key technical officials of the Ministry of Planning and Investment to review and monitor the green growth index and indicators under the NGGS. Ultimately, it will facilitate the development of the national Green Growth Index which green growth indicators will be aligned with the NGGS.

6.3.2 Supporting green growth advancement in Zambia

Collaborators: GGPM Team and GGGI Africa Region Team

Duration: January-June 2022

Objectives: The creation of a Green Economy and Environment Ministry in Zambia is a clear demonstration of the political will by the Government of Zambia to transition to a green economy growth model to create a more sustainable and inclusive path to resource use, economic growth, employment creation, and poverty reduction. Climate variability and change are major threats to sustainable development in Zambia. The impact of the COVID-19 pandemic on the economy has also shifted the country's focus toward green economic recovery. The Government of Zambia is currently in the process of finalizing its 8th 5-yr National Development Plan (8NDP) beginning 2022. GGGI can support the government through this project to present green growth as an innovative path for economic growth, inclusive, and sustainable development by highlighting potential green interventions aligned with 8NDP. The Green Growth Potential Assessment (GGPA) tool will be used to develop the National Green Growth Index and the second will utilize GGPA as an important step to measure the readiness of a country to green economy model of growth. The outputs from the GGPA/ Green Growth Index work will provide baseline data and information for the next phase of support utilizing the Green Economy Model tool within the Green Climate Fund (GCF) Readiness Project once approved in 2022.

6.3.3 SDG Co-benefits from climate adaptation measures in Sri Lanka

Collaborators: GGPM Team and GGGI Sri Lanka Team

Duration: January-December 2022

Objectives: Sri Lanka is one of the new GGGI member countries which requires support to strengthen its capacity and system to implement NAP and enhance resilience of vulnerable sectors. This proposed project aims to support the implementation of GCF-funded Readiness Program by directly contributing to five of the 14 objectives: (i) develop prioritization methodology for adaptation actions and projects; (ii) identify adaptation solutions for addressing prioritized barriers to addressing climate vulnerabilities identified and prioritize actions; (iii) conduct technical capacity building for relevant government agencies to update, analyze and utilize climate change adaptation information; (iv) prepare adaptation strategies for all sectors and Provinces; and (v) strengthen the implementation mechanism of the NAP. The proposed project will assess SDG co-benefits from adaptation measures in Sri Lanka's vulnerable sectors (i.e., agriculture and fisheries, water and waste, health and sanitation, urban development, and biodiversity and ecosystem). Applying the Green Growth Simulation Tool to prioritize adaptation measures in vulnerable sectors will align the NAP with the medium and long-term sustainability goals and help guide the Sri Lankan government to achieve the SDG targets.

7 Statistical Tables

Table 9 Green growth dimension sub-indices and Green Growth Index and ranks for the African countries

African Countries/ Territories	Africa Subregion	Dimensions				Green Growth Index		
		Efficient and Sustainable Resource Use	Natural Capital Protection	Green Economic Opportunities	Social Inclusion	Scores	Level	Rank
Tanzania	Eastern	63.32	66.28	49.46	50.82	58.63	Moderate	1
Morocco	Northern	47.11	71.24	21.51	71.00	55.77	Moderate	2
Botswana	Southern	66.96	72.41	11.70	57.77	55.08	Moderate	3
Cabo Verde	Western	55.94	63.33	15.98	67.81	54.27	Moderate	4
Mauritius	Eastern	57.29	52.42	14.21	77.87	53.21	Moderate	5
Uganda	Eastern	61.66	70.85	24.69	44.00	53.02	Moderate	6
Kenya	Eastern	55.61	61.22	23.03	55.48	52.37	Moderate	7
Senegal	Western	55.99	64.61	19.14	55.29	52.30	Moderate	8
Ghana	Western	59.67	66.55	13.61	53.49	51.47	Moderate	9
Ethiopia	Eastern	55.19	67.49	27.20	45.27	51.46	Moderate	10
South Africa	Southern	39.14	62.95	23.97	67.88	50.70	Moderate	11
Tunisia	Northern	29.20	59.31	42.92	76.81	50.17	Moderate	12
Malawi	Eastern	61.19	74.28	14.70	38.00	48.74	Moderate	13
Cameroon	Middle	59.10	56.54	13.33	53.21	48.70	Moderate	14
Zimbabwe	Eastern	52.37	77.86	9.89	46.39	48.15	Moderate	15
Rwanda	Eastern	64.89	67.50	5.67	48.69	47.21	Moderate	16
Angola	Middle	67.43	57.21	11.97	40.17	46.23	Moderate	17
Gambia	Western	63.88	66.01	5.01	47.40	45.73	Moderate	18
Madagascar	Eastern	60.35	56.80	15.44	32.81	43.07	Moderate	19
Burundi	Eastern	59.41	64.99	6.12	39.43	42.99	Moderate	20
Lesotho	Southern	51.82	42.68	8.61	59.81	42.65	Moderate	21
Eswatini	Southern	26.76	61.69	15.27	60.23	41.46	Moderate	22
Egypt	Northern	21.63	54.67	35.93	62.03	41.23	Moderate	23
Nigeria	Western	56.68	59.87	4.07	44.23	41.10	Moderate	24
Niger	Western	59.34	51.26	5.25	28.39	35.72	Low	25
Algeria	Northern	27.59	52.04	-	70.87	-	-	-
Benin	Western	57.77	66.01	-	43.42	-	-	-
Burkina Faso	Western	62.35	72.12	-	33.71	-	-	-
Central African Republic	Middle	63.98	56.93	-	16.80	-	-	-
Chad	Middle	60.10	54.17	-	21.05	-	-	-
Comoros	Eastern	65.36	59.04	-	48.23	-	-	-
Congo Republic	Middle	68.11	70.43	-	42.15	-	-	-
Cote d'Ivoire	Western	68.39	71.15	-	45.11	-	-	-
Djibouti	Eastern	59.14	38.56	-	45.93	-	-	-
DR Congo	Middle	64.45	69.20	-	30.23	-	-	-
Equatorial Guinea	Middle	-	58.54	-	39.38	-	-	-
Eritrea	Eastern	63.84	49.13	-	-	-	-	-
Gabon	Middle	73.94	74.74	-	61.40	-	-	-
Guinea	Western	58.73	69.41	-	36.24	-	-	-

Table 9 Green growth dimension sub-indices and Green Growth Index and ranks for the African countries (continued)

African Countries/ Territories	Africa Subregion	Dimensions				Green Growth Index		
		Efficient and Sustainable Resource Use	Natural Capital Protection	Green Economic Opportunities	Social Inclusion	Scores	Level	Rank
Guinea-Bissau	Western	46.06	65.43	-	19.39	-	-	-
Liberia	Western	50.31	60.00	-	38.03	-	-	-
Libya	Northern	24.44	28.19	-	45.00	-	-	-
Mali	Western	61.83	55.43	-	41.06	-	-	-
Mauritania	Western	55.83	37.09	-	37.18	-	-	-
Mozambique	Eastern	54.28	68.51	-	36.11	-	-	-
Namibia	Southern	60.62	67.49	-	62.50	-	-	-
Sao Tome and Principe	Middle	71.31	71.04	-	39.61	-	-	-
Seychelles	Eastern	41.73	67.03	-	75.04	-	-	-
Sierra Leone	Western	56.43	61.77	-	37.44	-	-	-
Somalia	Eastern	-	49.18	-	18.42	-	-	-
South Sudan	Eastern	-	62.54	-	25.57	-	-	-
Sudan	Northern	25.79	50.79	-	41.20	-	-	-
Togo	Western	53.20	68.74	-	50.32	-	-	-
Zambia	Eastern	59.21	69.66	-	33.98	-	-	-

Table 10 Green growth dimension sub-indices and Green Growth Index and ranks for the American countries

America Countries/ Territories	America Subregion	Dimensions				Green Growth Index		
		Efficient and Sustainable Resource Use	Natural Capital Protection	Green Economic Opportunities	Social Inclusion	Scores	Level	Rank
Mexico	Central	52.04	72.73	34.52	78.81	62.55	High	1
Brazil	Southern	60.58	71.77	23.80	72.28	61.21	High	2
Canada	Northern	56.72	57.04	32.59	86.85	61.08	High	3
United States	Northern	52.19	61.58	30.18	83.64	59.81	Moderate	4
Paraguay	Southern	60.88	70.82	20.81	70.22	59.72	Moderate	5
Peru	Southern	57.05	72.20	23.00	70.26	59.51	Moderate	6
Chile	Southern	52.70	73.16	20.08	74.71	58.63	Moderate	7
El Salvador	Central	54.72	64.07	30.04	69.32	58.00	Moderate	8
Dominican Republic	Caribbean	55.30	74.94	18.14	69.01	57.91	Moderate	9
Ecuador	Southern	53.49	71.52	16.99	76.30	57.89	Moderate	10
Colombia	Southern	57.46	71.84	21.64	63.34	57.38	Moderate	11
Bolivia	Southern	51.68	75.15	14.80	76.40	57.38	Moderate	12
Costa Rica	Central	55.16	69.55	15.89	70.65	56.24	Moderate	13
Nicaragua	Central	57.48	73.25	13.60	65.05	55.54	Moderate	14
Bahamas	Caribbean	52.21	67.13	24.88	61.64	54.95	Moderate	15
Uruguay	Southern	63.34	59.01	10.12	77.75	54.89	Moderate	16
Argentina	Southern	52.90	58.73	16.89	76.78	54.46	Moderate	17
Honduras	Central	57.05	72.24	13.03	55.70	52.45	Moderate	18
Panama	Central	61.19	66.81	6.47	66.87	51.54	Moderate	19
Guatemala	Central	56.59	66.07	6.77	56.27	47.86	Moderate	20
Antigua and Barbuda	Caribbean	54.29	64.58	-	-	-	-	-
Barbados	Caribbean	36.50	58.91	-	61.24	-	-	-
Belize	Central	60.22	77.72	-	65.60	-	-	-
Bermuda	Northern		58.14	-	-	-	-	-
Cuba	Caribbean	51.70	65.75	-	-	-	-	-
Dominica	Caribbean	51.20	66.00	-	-	-	-	-
Greenland	Northern	-	45.34	-	-	-	-	-
Grenada	Caribbean	52.96	62.07	-	70.20	-	-	-
Guyana	Southern	48.64	64.75	-	72.53	-	-	-
Haiti	Caribbean	48.77	49.80	-	33.40	-	-	-
Jamaica	Caribbean	51.86	66.68	-	57.17	-	-	-
Puerto Rico	Caribbean	46.49	48.65	-	-	-	-	-
St. Kitts and Nevis	Caribbean	-	66.63	-	-	-	-	-
St. Lucia	Caribbean	-	72.43	-	63.10	-	-	-
St. Vincent and the Grenadines	Caribbean	-	72.29	-	53.38	-	-	-
Suriname	Southern	58.15	72.17	-	72.66	-	-	-

Table 10 Green growth dimension sub-indices and Green Growth Index and ranks for the American countries (continued)

America Countries/ Territories	America Subregion	Dimensions				Green Growth Index		
		Efficient and Sustainable Resource Use	Natural Capital Protection	Green Economic Opportunities	Social Inclusion	Scores	Level	Rank
Trinidad and Tobago	Caribbean	31.34	51.44	-	69.43	-	-	-
United States Virgin Islands	Caribbean		50.04	-	-	-	-	-
Venezuela	Southern	45.49	68.86	-	63.19	-	-	-

Table 11 Green growth dimension sub-indices and Green Growth Index and ranks for the Asian countries

Asian Countries/ Territories	Asia Subregion	Dimensions				Green Growth Index		
		Efficient and Sustainable Resource Use	Natural Capital Protection	Green Economic Opportunities	Social Inclusion	Scores	Level	Rank
Japan	Eastern	58.05	70.84	34.11	80.71	64.50	High	1
Thailand	South-eastern	56.17	73.82	46.29	70.73	64.08	High	2
Cyprus	Western	54.89	68.17	34.20	80.08	62.58	High	3
Georgia	Western	53.27	72.17	30.84	72.25	60.54	High	4
China	Eastern	50.93	63.48	43.18	74.63	60.02	High	5
Philippines	South-eastern	56.48	73.94	29.27	64.06	59.55	Moderate	6
Singapore	South-eastern	50.06	59.47	36.23	80.73	58.91	Moderate	7
Vietnam	South-eastern	55.08	61.84	27.62	72.57	57.82	Moderate	8
Indonesia	South-eastern	55.43	64.86	26.62	66.68	57.08	Moderate	9
Turkey	Western	54.73	53.44	30.00	76.92	56.67	Moderate	10
Malaysia	South-eastern	51.35	67.96	31.07	63.65	56.65	Moderate	11
Nepal	Southern	57.53	72.08	19.05	62.72	56.56	Moderate	12
Brunei Darussalam	South-eastern	51.81	59.07	28.67	72.08	56.08	Moderate	13
Kyrgyz Republic	Central	47.59	62.98	29.53	70.86	55.61	Moderate	14
Armenia	Western	43.51	70.10	24.37	73.81	55.51	Moderate	15
South Korea	Eastern	35.18	55.54	43.55	80.82	52.90	Moderate	16
Laos	South-eastern	53.94	75.75	9.77	61.30	52.32	Moderate	17
Israel	Western	47.58	46.95	20.16	81.37	51.09	Moderate	18
Cambodia	South-eastern	56.99	78.31	6.28	59.59	50.96	Moderate	19
Kazakhstan	Central	51.67	44.04	19.69	77.26	50.46	Moderate	20
Azerbaijan	Western	44.68	64.58	21.25	58.84	50.32	Moderate	21
Mongolia	Eastern	47.07	58.14	12.71	70.49	49.66	Moderate	22
Sri Lanka	Southern	40.66	64.11	26.35	56.88	49.36	Moderate	23
Myanmar	South-eastern	60.09	61.66	8.89	54.81	48.66	Moderate	24
Lebanon	Western	44.33	59.73	23.67	54.33	48.39	Moderate	25
India	Southern	38.11	54.92	33.69	54.70	46.82	Moderate	26
Bangladesh	Southern	50.54	55.11	14.25	54.32	46.70	Moderate	27
Maldives	Southern	58.32	51.90	4.35	64.14	44.69	Moderate	28
Jordan	Western	33.76	46.62	29.47	62.54	44.15	Moderate	29
Qatar	Western	50.04	39.49	12.25	53.09	41.21	Moderate	30
Saudi Arabia	Western	31.68	34.74	28.58	64.38	39.88	Low	31
Oman	Western	31.68	40.32	27.06	52.50	39.01	Low	32
Uzbekistan	Central	18.12	55.18	16.25	63.52	36.47	Low	33
Kuwait	Western	32.00	41.24	13.76	50.66	36.42	Low	34
Pakistan	Southern	25.59	52.57	16.59	44.45	35.89	Low	35
Afghanistan	Southern	42.61	36.53	-	39.53	-	-	-
Bahrain	Western	29.85	22.97	-	58.36	-	-	-
Bhutan	Southern	61.84	78.81	-	56.74	-	-	-
Hong Kong	Eastern	-	-	8.40	-	-	-	-
Iran	Southern	24.31	57.18	-	62.24	-	-	-

Table 11 Green growth dimension sub-indices and Green Growth Index and ranks for the Asian countries (continued)

Asian Countries/ Territories	Asia Subregion	Dimensions				Green Growth Index		
		Efficient and Sustainable Resource Use	Natural Capital Protection	Green Economic Opportunities	Social Inclusion	Scores	Level	Rank
Iraq	Western	37.76	36.82	-	57.67	-	-	-
North Korea	Eastern	-	58.91	-	-	-	-	-
Palestine	Western	38.46	-	-	-	-	-	-
Syria	Western	8.30	40.19	-	46.57	-	-	-
Tajikistan	Central	43.81	61.10	-	68.41	-	-	-
Timor-Leste	South-eastern	55.98	63.95	-	63.38	-	-	-
Turkmenistan	Central	9.34	44.98	-	-	-	-	-
United Arab Emirates	Western	32.51	50.80	-	64.08	-	-	-
Yemen	Western	28.65	38.30	-	24.64	-	-	-

Table 12 Green growth dimension sub-indices and Green Growth Index and ranks for the European countries

European Countries/ Territories	Europe Subregion	Dimensions				Green Growth Index		
		Efficient and Sustainable Resource Use	Natural Capital Protection	Green Economic Opportunities	Social Inclusion	Scores	Level	Rank
Sweden	Northern	75.92	77.84	52.70	94.94	78.87	High	1
Austria	Western	76.45	80.11	46.42	91.16	77.76	High	2
Czech Republic	Eastern	72.23	81.44	55.38	85.76	76.77	High	3
Denmark	Northern	75.08	73.55	51.43	91.19	76.16	High	4
Switzerland	Western	76.38	77.86	36.64	91.81	75.43	High	5
Slovakia	Eastern	68.68	84.18	51.49	81.59	74.69	High	6
Germany	Western	62.91	82.34	50.94	90.50	74.47	High	7
Finland	Northern	70.51	73.23	51.41	89.95	74.34	High	8
United Kingdom	Northern	63.70	78.83	38.64	90.32	71.73	High	9
Italy	Southern	63.74	80.37	41.79	86.24	71.73	High	10
Hungary	Eastern	63.99	80.87	48.63	80.98	71.68	High	11
Estonia	Northern	62.20	76.12	51.66	86.65	71.65	High	12
Latvia	Northern	71.30	78.38	35.56	82.47	71.48	High	13
Lithuania	Northern	67.37	75.15	43.46	84.41	71.29	High	14
Portugal	Southern	61.93	78.43	39.68	90.14	71.16	High	15
France	Western	62.08	78.09	36.97	91.00	70.82	High	16
Croatia	Southern	63.54	83.03	39.40	81.43	70.71	High	17
Romania	Eastern	62.44	77.22	46.62	81.29	69.96	High	18
Slovenia	Southern	58.97	78.80	41.34	87.25	69.83	High	19
Spain	Southern	57.97	75.77	38.70	91.58	69.20	High	20
Norway	Northern	64.61	68.66	34.16	93.45	68.97	High	21
Poland	Eastern	55.12	75.74	46.97	88.98	68.89	High	22
Netherlands	Western	54.23	73.54	42.04	93.62	68.23	High	23
Belarus	Eastern	60.37	71.96	39.40	84.32	67.41	High	24
Luxembourg	Western	60.25	75.92	29.37	87.71	67.27	High	25
Greece	Southern	59.17	76.77	27.98	85.78	66.36	High	26
Bulgaria	Eastern	50.95	78.05	39.43	81.04	64.87	High	27
Belgium	Western	50.33	76.84	29.12	90.35	64.48	High	28
Serbia	Southern	59.63	69.03	30.30	78.07	63.13	High	29
Ireland	Northern	60.13	58.56	24.44	86.85	60.88	High	30
Albania	Southern	63.02	82.40	8.86	72.86	58.63	Moderate	31
Ukraine	Eastern	54.54	62.11	27.29	70.58	57.17	Moderate	32
Iceland	Northern	58.18	44.25	34.55	85.63	57.12	Moderate	33
Russia	Eastern	54.47	55.73	27.10	77.20	56.79	Moderate	34
Moldova	Eastern	60.25	57.02	23.68	66.64	55.63	Moderate	35
Montenegro	Southern	33.05	62.44	9.22	71.06	44.29	Moderate	36
Andorra	Southern	-	76.48	-	-	-	-	-
Bosnia and Herzegovina	Southern	60.20	62.65	-	70.31	-	-	-
Liechtenstein	Western	-	85.68	-	-	-	-	-
Macedonia	Southern	60.36	74.78	-	73.82	-	-	-
Malta	Southern	41.72	70.72	-	82.70	-	-	-
Monaco	Western	-	16.23	-	-	-	-	-

Table 13 Green growth dimension sub-indices and Green Growth Index and ranks for the Oceania countries

Oceania Countries/ Territories	Oceania Subregion	Dimensions				Green Growth Index		
		Efficient and Sustainable Resource Use	Natural Capital Protection	Green Economic Opportunities	Social Inclusion	Scores	Level	Rank
New Zealand	Australia and New Zealand	55.04	67.29	21.21	87.65	61.10	High	1
Australia	Australia and New Zealand	67.70	52.58	23.43	87.97	61.05	High	2
Fiji	Melanesia	64.33	68.07	29.01	64.10	60.35	High	3
American Samoa	Polynesia	-	68.20	-	-	-	-	-
Guam	Micronesia	-	16.65	-	-	-	-	-
Kiribati	Micronesia	-	59.41	-	57.72	-	-	-
Marshall Islands	Micronesia	-	64.33	-	-	-	-	-
Micronesia, Fed. Sts.	Micronesia	-	57.65	-	52.17	-	-	-
Nauru	Micronesia	-	25.68	-	-	-	-	-
Northern Mariana Islands	Micronesia	-	70.29	-	-	-	-	-
Palau	Micronesia	-	74.24	-	-	-	-	-
Papua New Guinea	Melanesia	70.99	54.35	-	29.98	-	-	-
Samoa	Polynesia	82.72	66.89	-	60.97	-	-	-
Solomon Islands	Melanesia	-	55.76	-	34.52	-	-	-
Tonga	Polynesia	-	63.64	7.15	54.61	-	-	-
Tuvalu	Polynesia	-	70.96	-	-	-	-	-
Vanuatu	Melanesia	78.96	63.09	-	38.65	-	-	-

Table 14 Scores on indicator categories for efficient and sustainable resource use by region and rank

Country	Regional Rank	Efficient and Sustainable Resource Use	Indicator categories			
			Efficient and sustainable energy	Efficient and sustainable water use	Sustainable land use	Material use efficiency
AFRICA						
Gabon	-	73.94	55.53	68.20	97.47	81.00
Sao Tome and Principe	-	71.31	59.64	60.74	99.72	71.60
Cote d'Ivoire	-	68.39	73.18	55.21	67.07	80.71
Congo Republic	-	68.11	58.16	48.10	99.97	76.97
Angola	17	67.43	63.10	64.19	66.65	76.60
Botswana	3	66.96	59.03	64.34	86.03	61.51
Comoros	-	65.36	68.34	76.01	53.76	-
Rwanda	16	64.89	70.84	57.04	62.86	69.80
DR Congo	-	64.45	52.54	59.38	67.43	82.02
Central African Republic	-	63.98	59.18	53.70	89.97	58.61
Gambia	18	63.88	67.05	59.59	62.58	66.60
Eritrea	-	63.84	52.74	51.81	95.24	-
Tanzania	1	63.32	65.44	51.86	65.41	72.40
Burkina Faso	-	62.35	65.46	52.65	62.28	70.40
Mali	-	61.83	64.65	50.81	64.81	68.64
Uganda	6	61.66	51.33	56.51	66.18	75.32
Malawi	13	61.19	64.83	51.07	62.25	68.01
Namibia	-	60.62	55.82	49.17	63.99	76.91
Madagascar	19	60.35	54.95	57.15	66.40	63.64
Chad	-	60.10	65.82	52.24	-	63.13
Ghana	9	59.67	63.49	40.38	66.50	74.36
Burundi	20	59.41	51.73	51.63	63.47	73.48
Niger	25	59.34	58.04	51.15	64.83	64.42
Zambia	-	59.21	54.55	52.94	62.68	67.90
Djibouti	-	59.14	56.76	53.83	-	67.70
Cameroon	14	59.10	65.47	38.24	63.84	76.33
Guinea	-	58.73	58.58	44.93	64.53	70.06
Benin	-	57.77	58.43	39.28	65.17	74.48
Mauritius	5	57.29	45.48	53.98	59.34	73.98
Nigeria	24	56.68	59.42	38.69	63.72	70.44
Sierra Leone	-	56.43	57.66	68.06	59.80	43.20
Senegal	8	55.99	54.29	40.32	62.55	71.77
Cabo Verde	4	55.94	66.26	43.35	48.97	69.63
Mauritania	-	55.83	48.47	51.19	-	70.13
Kenya	7	55.61	65.60	30.29	63.40	75.90
Ethiopia	10	55.19	54.64	44.18	58.03	66.22
Mozambique	-	54.28	49.10	41.64	67.00	63.35
Togo	-	53.20	47.10	38.24	68.38	65.07
Zimbabwe	15	52.37	44.16	41.06	64.05	64.77
Lesotho	21	51.82	44.86	59.74	48.35	55.65
Liberia	-	50.31	38.98	51.32	50.10	63.94

Table 14 Scores on indicator categories for efficient and sustainable resource use by region and rank (continued)

Country	Regional Rank	Efficient and Sustainable Resource Use	Indicator categories			
			Efficient and sustainable energy	Efficient and sustainable water use	Sustainable land use	Material use efficiency
Morocco	2	47.11	41.98	21.95	65.59	81.49
Guinea-Bissau	-	46.06	52.75	46.21	43.26	42.67
Seychelles	-	41.73	44.81	24.07	-	67.38
South Africa	11	39.14	39.52	10.99	63.96	84.50
Tunisia	12	29.20	41.30	2.86	74.22	82.99
Algeria	-	27.59	29.01	3.69	66.15	81.76
Eswatini	22	26.76	87.25	1.63	47.41	75.82
Sudan	-	25.79	63.59	1.45	62.77	76.15
Libya	-	24.44	21.45	1.77	98.37	95.58
Egypt	23	21.63	40.14	1.82	37.32	80.48
South Sudan	-	-	-	54.19	-	-
Equatorial Guinea	-	-	34.43	51.80	-	-
Somalia	-	-	54.70	50.50	-	-
THE AMERICAS						
Uruguay	16	63.34	70.09	35.73	92.46	69.50
Panama	19	61.19	63.02	42.12	61.70	85.60
Paraguay	5	60.88	70.07	53.11	46.03	80.18
Brazil	2	60.58	68.18	54.68	44.80	80.64
Belize	-	60.22	71.21	39.65	57.91	80.43
Suriname	-	58.15	57.63	48.74	57.22	71.15
Nicaragua	14	57.48	63.81	37.89	59.10	76.39
Colombia	11	57.46	61.30	36.60	56.94	85.32
Honduras	18	57.05	64.36	35.70	57.68	79.96
Peru	6	57.05	56.00	36.93	64.96	78.83
Canada	3	56.72	52.94	39.68	65.95	74.68
Guatemala	20	56.59	64.02	36.62	54.51	80.28
Dominican Republic	9	55.30	49.43	26.90	80.10	87.81
Costa Rica	13	55.16	63.30	36.95	47.06	84.13
El Salvador	8	54.72	50.07	36.55	58.19	84.18
Antigua and Barbuda	-	54.29	41.95	52.59	-	72.51
Ecuador	10	53.49	49.37	37.34	55.75	79.65
Grenada	-	52.96	54.86	57.17	47.37	-
Argentina	17	52.90	45.18	36.18	57.46	83.39
Chile	7	52.70	58.69	34.96	49.29	76.24
Bahamas	15	52.21	36.34	-	56.20	69.68
United States	4	52.19	52.34	37.37	49.92	75.95
Mexico	1	52.04	47.14	30.56	61.47	82.82
Jamaica	-	51.86	38.00	36.59	62.69	83.01
Cuba	-	51.70	25.10	52.81	63.17	85.29
Bolivia	12	51.68	35.89	53.02	49.36	75.94
Dominica	-	51.20	51.20	52.86	49.58	-
Haiti	-	48.77	47.11	35.99	43.83	76.15

Table 14 Scores on indicator categories for efficient and sustainable resource use by region and rank (continued)

Country	Regional Rank	Efficient and Sustainable Resource Use	Indicator categories			
			Efficient and sustainable energy	Efficient and sustainable water use	Sustainable land use	Material use efficiency
Guyana	-	48.64	38.89	40.34	96.50	36.96
Puerto Rico	-	46.49	51.81	55.84	34.72	-
Venezuela	-	45.49	19.56	51.92	52.02	81.06
Barbados	-	36.50	45.92	8.07	61.92	77.32
Trinidad and Tobago	-	31.34	6.33	41.39	44.34	83.12
St. Vincent and the Grenadines	-	-	49.08	52.84	-	-
St. Lucia	-	-	53.47	-	-	-
St. Kitts and Nevis	-	-	46.22	26.48	-	-
Aruba	-	-	50.62	-	-	-
Cayman Islands	-	-	47.11	-	-	-
Curacao	-	-	5.69	-	-	-
Sint Maarten	-	-	19.32	-	-	-
Turks and Caicos Islands	-	-	42.42	-	-	-
Bermuda	-	-	-	51.07	-	-
ASIA						
Bhutan	-	61.84	51.44	51.63	65.02	84.69
Myanmar	24	60.09	64.14	47.94	53.73	78.91
Maldives	28	58.32	38.53	80.04	-	64.32
Japan	1	58.05	55.14	49.69	52.13	79.49
Nepal	12	57.53	59.71	50.88	47.88	75.30
Cambodia	19	56.99	63.74	38.83	63.94	66.68
Philippines	6	56.48	54.84	34.63	66.58	80.46
Thailand	2	56.17	56.30	36.85	61.71	77.74
Timor-Leste	-	55.98	64.41	47.65	92.46	34.60
Indonesia	9	55.43	54.97	34.68	62.43	79.34
Vietnam	8	55.08	53.96	41.86	57.22	71.24
Cyprus	3	54.89	50.37	39.87	64.22	70.39
Turkey	10	54.73	50.61	32.91	65.39	82.38
Laos	17	53.94	57.27	50.81	40.16	72.46
Georgia	4	53.27	50.30	35.41	55.40	81.62
Brunei Darussalam	13	51.81	29.93	53.07	-	87.56
Kazakhstan	20	51.67	30.21	44.23	67.15	79.45
Malaysia	11	51.35	42.47	44.74	66.41	55.10
China	5	50.93	47.22	36.81	50.94	76.00
Bangladesh	27	50.54	56.91	36.56	38.63	81.20
Singapore	7	50.06	51.93	-	49.11	49.19
Qatar	30	50.04	35.88	38.40	-	90.93
Kyrgyz Republic	14	47.59	43.32	25.83	64.33	71.23
Israel	18	47.58	46.95	26.87	53.47	76.01
Mongolia	22	47.07	27.50	54.73	49.60	65.74
Azerbaijan	21	44.68	32.62	22.74	62.93	85.40
Lebanon	25	44.33	39.49	21.79	59.70	75.17

Table 14 Scores on indicator categories for efficient and sustainable resource use by region and rank (continued)

Country	Regional Rank	Efficient and Sustainable Resource Use	Indicator categories			
			Efficient and sustainable energy	Efficient and sustainable water use	Sustainable land use	Material use efficiency
Tajikistan	-	43.81	53.70	14.49	61.86	76.57
Armenia	15	43.51	42.24	21.68	47.63	82.15
Afghanistan	-	42.61	45.91	21.17	48.86	69.39
Sri Lanka	23	40.66	72.13	6.42	72.57	81.40
Palestine	-	38.46	55.93	19.43	52.36	-
India	26	38.11	59.25	8.26	52.05	82.88
Iraq	-	37.76	23.01	20.09	62.88	69.91
South Korea	16	35.18	42.96	10.99	41.99	77.24
Jordan	29	33.76	39.47	7.61	58.12	74.48
United Arab Emirates	-	32.51	47.45	14.74	26.77	59.64
Kuwait	34	32.00	29.52	13.80	40.76	63.17
Oman	32	31.68	30.82	9.19	44.10	80.62
Saudi Arabia	31	31.68	34.18	6.25	62.51	75.40
Bahrain	-	29.85	26.84	11.10	-	89.27
Yemen	-	28.65	10.23	10.63	98.60	62.86
Pakistan	35	25.59	56.93	2.25	43.40	77.01
Iran	-	24.31	24.47	2.81	63.17	80.51
Uzbekistan	33	18.12	22.71	1.23	47.20	81.85
Turkmenistan	-	9.34	8.63	1.25	-	75.67
Syria	-	8.30	7.51	1.15	66.30	-
North Korea	-	-	-	48.06	-	73.63
Macao	-	-	63.99	-	-	-
Hong Kong	-	-	54.64	-	-	-
EUROPE						
Austria	2	76.45	73.71	69.74	83.69	79.42
Switzerland	5	76.38	68.84	100.00	64.07	77.19
Sweden	1	75.92	82.66	58.75	88.64	77.18
Denmark	4	75.08	75.77	64.61	82.02	79.14
Czech Republic	3	72.23	53.94	71.66	86.32	81.60
Latvia	13	71.30	63.96	52.03	94.98	81.78
Finland	8	70.51	73.45	48.29	91.47	76.20
Slovakia	6	68.68	45.81	76.24	86.92	73.29
Lithuania	14	67.37	61.58	53.76	82.91	75.06
Norway	21	64.61	79.61	53.38	53.88	76.12
Hungary	11	63.99	51.91	55.14	71.10	82.42
Italy	10	63.74	60.64	36.89	87.42	84.40
United Kingdom	9	63.70	59.66	67.14	49.22	83.49
Croatia	17	63.54	62.22	42.01	74.33	83.88
Albania	31	63.02	62.51	52.39	56.88	84.68
Germany	7	62.91	63.89	42.27	69.61	83.33
Romania	18	62.44	67.05	37.54	72.23	83.61
Estonia	12	62.20	55.82	36.37	93.78	78.64

Table 14 Scores on indicator categories for efficient and sustainable resource use by region and rank (continued)

Country	Regional Rank	Efficient and Sustainable Resource Use	Indicator categories			
			Efficient and sustainable energy	Efficient and sustainable water use	Sustainable land use	Material use efficiency
France	16	62.08	58.36	44.43	71.38	80.24
Portugal	15	61.93	65.98	38.47	69.92	82.88
Belarus	24	60.37	32.33	56.64	83.55	86.84
Macedonia	-	60.36	50.01	52.06	62.32	81.83
Moldova	35	60.25	45.92	51.95	67.72	81.60
Luxembourg	25	60.25	59.09	100.00	38.03	58.65
Bosnia and Herzegovina	-	60.20	52.40	50.50	58.68	84.58
Ireland	30	60.13	56.72	62.68	43.87	83.80
Serbia	29	59.63	46.60	51.57	66.00	79.70
Greece	26	59.17	54.18	36.46	83.68	74.16
Slovenia	19	58.97	55.61	39.31	68.00	81.37
Iceland	33	58.18	51.24	55.88	52.02	76.91
Spain	20	57.97	61.10	27.40	82.76	81.49
Poland	22	55.12	51.80	34.37	63.60	81.53
Ukraine	32	54.54	31.90	51.69	68.04	78.91
Russia	34	54.47	27.21	54.06	67.05	89.25
Netherlands	23	54.23	55.79	45.38	41.41	82.49
Bulgaria	27	50.95	48.45	25.12	68.81	80.47
Belgium	28	50.33	56.48	31.53	42.53	84.73
Malta	-	41.72	47.23	23.25	37.07	74.42
Montenegro	36	33.05	62.65	5.05	54.56	69.08
Faeroe Islands	-	-	-	-	51.32	-
OCEANIA						
Samoa	-	82.72	73.83	-	94.09	81.47
Vanuatu	-	78.96	69.91	-	92.84	75.84
Papua New Guinea	-	70.99	59.45	-	76.42	78.75
Australia	2	67.70	51.42	63.55	91.79	70.02
Fiji	3	64.33	53.66	42.75	90.89	82.15
New Zealand	1	55.04	66.91	41.81	40.10	81.80
Kiribati	-	-	71.59	-	-	-
Palau	-	-	20.39	-	-	-
Marshall Islands	-	-	28.34	-	-	-
Tonga	-	-	44.76	-	70.53	-
Micronesia, Fed. Sts.	-	-	35.34	-	-	-
Solomon Islands	-	-	62.29	-	66.48	-
Nauru	-	-	35.84	-	-	-
Cook Islands	-	-	-	-	56.00	-
French Polynesia	-	-	-	-	63.42	-
New Caledonia	-	-	-	-	47.43	-
Niue	-	-	-	-	54.08	-
Tuvalu	-	-	52.70	-	-	-

Table 15 Scores on indicator categories for natural capital protection by region and rank

Country	Regional Rank	Natural Capital Protection	Indicator categories			
			Environmental quality	GHG emissions reductions	Biodiversity and ecosystem protection	Cultural and social value
AFRICA						
Zimbabwe	15	77.86	76.02	86.15	68.26	82.21
Gabon	-	74.74	74.96	84.57	75.14	65.51
Malawi	13	74.28	70.09	91.50	56.87	83.47
Botswana	3	72.41	80.49	60.87	57.30	97.91
Burkina Faso	-	72.12	51.40	86.32	61.66	98.85
Morocco	2	71.24	83.52	90.00	42.32	81.00
Cote d'Ivoire	-	71.15	73.25	94.63	53.40	69.25
Sao Tome and Principe	-	71.04	85.84	96.51	71.93	42.74
Uganda	6	70.85	65.38	88.88	54.63	79.36
Congo Republic	-	70.43	63.27	87.25	65.14	68.41
Zambia	-	69.66	68.14	69.18	55.90	89.38
Guinea	-	69.41	67.27	79.39	68.69	63.27
DR Congo	-	69.20	61.84	91.11	67.65	60.17
Togo	-	68.74	53.81	92.41	69.88	64.24
Mozambique	-	68.51	77.33	82.81	57.45	59.90
Rwanda	16	67.50	63.18	95.92	46.35	73.89
Namibia	-	67.49	76.89	66.35	51.28	79.30
Ethiopia	10	67.49	60.41	85.87	45.94	87.03
Seychelles	-	67.03	81.64	77.49	65.40	48.79
Ghana	9	66.55	74.91	90.68	61.08	47.27
Tanzania	1	66.28	74.32	82.66	53.96	58.21
Gambia	18	66.01	74.15	90.46	57.13	49.56
Benin	-	66.01	65.84	91.21	49.31	64.14
Guinea-Bissau	-	65.43	55.79	85.95	58.64	65.19
Burundi	20	64.99	49.67	95.71	54.39	68.99
Senegal	8	64.61	63.34	87.16	44.57	70.82
Cabo Verde	4	63.33	80.50	94.70	34.24	61.61
South Africa	11	62.95	76.37	75.71	46.74	58.08
South Sudan	-	62.54	48.09	60.76	55.72	93.95
Sierra Leone	-	61.77	69.01	92.09	56.67	40.42
Eswatini	22	61.69	70.72	82.12	49.95	49.91
Kenya	7	61.22	69.60	88.05	41.16	55.67
Liberia	-	60.00	65.09	85.47	62.19	37.45
Nigeria	24	59.87	39.81	90.48	63.21	56.44
Tunisia	12	59.31	82.70	87.22	27.84	61.62
Comoros	-	59.04	75.55	95.60	59.13	28.44
Equatorial Guinea	-	58.54	74.23	58.88	83.51	32.17
Angola	17	57.21	64.46	79.26	48.50	43.23
Central African Republic	-	56.93	43.79	33.93	74.82	94.47
Madagascar	19	56.80	58.76	89.37	57.15	34.69
Cameroon	14	56.54	40.10	71.26	65.58	54.53

Table 15 Scores on indicator categories for natural capital protection by region and rank (continued)

Country	Regional Rank	Natural Capital Protection	Indicator categories			
			Environmental quality	GHG emissions reductions	Biodiversity and ecosystem protection	Cultural and social value
Mali	-	55.43	55.57	79.56	27.05	78.95
Egypt	23	54.67	62.36	88.59	22.52	71.77
Chad	-	54.17	43.49	61.66	34.67	92.64
Mauritius	5	52.42	89.70	77.45	47.26	23.00
Algeria	-	52.04	80.76	80.41	21.93	51.52
Niger	25	51.26	30.77	81.71	29.07	94.46
Sudan	-	50.79	71.29	78.09	30.37	39.36
Somalia	-	49.18	54.97	82.56	27.87	46.23
Eritrea	-	49.13	49.03	79.77	29.46	50.59
Lesotho	21	42.68	59.44	83.94	14.32	46.42
Djibouti	-	38.56	68.83	89.22	8.52	42.25
Mauritania	-	37.09	62.51	75.52	9.66	41.48
Libya	-	28.19	73.96	49.17	5.03	34.50
Mayotte	-	-	-	-	-	65.72
Reunion	-	-	-	-	50.00	-
Western Sahara	-	-	-	-	-	59.34
St. Helena	-	-	-	-	-	38.38
British Indian Ocean Territory	-	-	-	-	-	54.28
THE AMERICAS						
Belize	-	77.72	85.77	75.35	64.83	87.09
Bolivia	12	75.15	87.87	65.81	61.41	89.83
Dominican Republic	9	74.94	85.66	84.01	68.17	64.27
Nicaragua	14	73.25	88.45	77.73	62.98	66.50
Chile	7	73.16	86.38	82.00	62.87	64.32
Mexico	1	72.73	84.72	79.02	52.62	79.43
St. Lucia	-	72.43	82.79	80.57	70.83	58.25
St. Vincent and the Grenadines	-	72.29	86.19	89.69	66.88	52.81
Honduras	18	72.24	85.14	85.92	65.68	56.68
Peru	6	72.20	86.01	84.87	65.17	57.12
Suriname	-	72.17	87.25	67.69	79.24	57.97
Colombia	11	71.84	90.18	77.94	65.04	58.27
Brazil	2	71.77	88.25	68.56	62.78	69.84
Ecuador	10	71.52	88.85	82.32	63.03	56.75
Paraguay	5	70.82	91.06	52.31	55.00	96.03
Costa Rica	13	69.55	89.80	83.36	64.02	48.84
Venezuela	-	68.86	87.67	61.82	66.09	62.79
Bahamas	15	67.13	79.61	82.33	43.67	70.94
Panama	19	66.81	88.39	78.84	57.53	49.71
Jamaica	-	66.68	88.60	90.89	54.13	45.35
St. Kitts and Nevis	-	66.63	74.30	74.31	68.07	52.43

Table 15 Scores on indicator categories for natural capital protection by region and rank (continued)

Country	Regional Rank	Natural Capital Protection	Indicator categories			
			Environmental quality	GHG emissions reductions	Biodiversity and ecosystem protection	Cultural and social value
Guatemala	20	66.07	83.69	88.38	53.90	47.80
Dominica	-	66.00	90.18	87.00	58.75	41.15
Cuba	-	65.75	89.12	82.54	66.92	37.96
Guyana	-	64.75	85.07	62.28	68.29	48.58
Antigua and Barbuda	-	64.58	87.55	56.41	59.40	59.27
El Salvador	8	64.07	85.83	90.63	58.81	36.82
Grenada	-	62.07	86.78	61.07	56.44	49.63
United States	4	61.58	80.63	47.99	51.54	72.11
Uruguay	16	59.01	90.80	56.06	41.37	57.59
Barbados	-	58.91	78.90	58.55	44.80	58.21
Argentina	17	58.73	88.27	53.24	48.47	52.23
Bermuda	-	58.14	67.95	-	64.35	44.96
Canada	3	57.04	83.14	38.48	51.43	64.35
Trinidad and Tobago	-	51.44	80.38	49.17	48.02	36.89
United States Virgin Islands	-	50.04	65.50	-	48.43	39.50
Haiti	-	49.80	73.09	93.91	40.65	22.04
Puerto Rico	-	48.65	69.88	-	53.33	30.91
Greenland	-	45.34	78.39	-	15.77	75.40
Anguilla	-	-	-	-	28.58	93.54
Aruba	-	-	-	-	22.91	64.97
British Virgin Islands	-	-	-	-	53.53	53.56
Cayman Islands	-	-	-	-	77.52	55.69
Curacao	-	-	-	-	22.17	59.24
Falkland Islands	-	-	-	-	7.69	50.18
French Guiana	-	-	-	-	82.26	59.76
Guadeloupe	-	-	-	-	85.33	-
Martinique	-	-	-	-	85.00	-
Montserrat	-	-	-	-	-	83.95
Saint-Martin	-	-	-	-	68.08	95.39
Sint Maarten	-	-	-	-	35.53	86.29
Turks and Caicos Islands	-	-	-	-	41.83	59.18
St. Barths	-	-	-	-	46.91	-
St. Pierre and Miquelon	-	-	-	-	4.84	33.92
ASIA						
Bhutan	-	78.81	80.75	83.80	68.90	82.73
Cambodia	19	78.31	88.15	81.40	59.50	88.08
Laos	17	75.75	85.48	80.11	57.19	84.07
Philippines	6	73.94	89.64	89.87	65.46	56.69
Thailand	2	73.82	82.55	73.37	65.49	74.88
Georgia	4	72.17	89.35	78.37	56.04	69.12
Nepal	12	72.08	57.72	85.95	63.42	85.82
Japan	1	70.84	91.30	80.93	64.44	52.89

Table 15 Scores on indicator categories for natural capital protection by region and rank (continued)

Country	Regional Rank	Natural Capital Protection	Indicator categories			
			Environmental quality	GHG emissions reductions	Biodiversity and ecosystem protection	Cultural and social value
Armenia	15	70.10	87.14	85.35	38.05	85.32
Cyprus	3	68.17	81.96	80.30	56.99	57.59
Malaysia	11	67.96	86.18	69.20	60.47	59.15
Indonesia	9	64.86	83.19	81.50	57.50	45.40
Azerbaijan	21	64.58	87.54	54.52	57.66	63.21
Sri Lanka	23	64.11	95.12	92.94	53.95	35.41
Timor-Leste	-	63.95	87.76	60.72	58.30	53.83
China	5	63.48	76.83	75.65	42.02	66.48
Kyrgyz Republic	14	62.98	89.38	86.59	27.60	73.67
Vietnam	8	61.84	88.97	84.16	50.90	38.37
Myanmar	24	61.66	82.44	81.59	53.04	40.52
Tajikistan	-	61.10	76.42	90.23	20.42	98.93
Lebanon	25	59.73	82.16	85.39	37.66	48.20
Singapore	7	59.47	88.78	58.17	48.47	49.97
Brunei Darussalam	13	59.07	87.73	38.40	66.76	54.13
North Korea	-	58.91	86.12	90.73	38.80	39.73
Mongolia	22	58.14	63.98	50.06	37.03	96.35
Iran	-	57.18	82.61	66.91	40.21	48.11
South Korea	16	55.54	84.91	66.48	54.53	30.92
Uzbekistan	33	55.18	89.08	61.26	28.09	60.48
Bangladesh	27	55.11	71.12	92.32	40.19	34.96
India	26	54.92	52.41	90.50	46.46	41.29
Turkey	10	53.44	75.67	82.60	38.62	33.79
Pakistan	35	52.57	60.32	88.32	26.33	54.46
Maldives	28	51.90	85.83	87.27	16.70	58.02
United Arab Emirates	-	50.80	73.79	32.58	36.01	76.93
Israel	18	46.95	80.40	64.72	21.04	44.38
Jordan	29	46.62	83.44	86.94	12.30	52.91
Turkmenistan	-	44.98	91.97	32.07	22.99	60.35
Kazakhstan	20	44.04	91.24	54.08	14.94	51.04
Kuwait	34	41.24	66.58	33.50	22.74	57.00
Oman	32	40.32	76.45	60.68	13.05	43.64
Syria	-	40.19	81.14	88.12	10.37	35.18
Qatar	30	39.49	57.86	37.62	20.80	53.73
Yemen	-	38.30	68.46	95.37	12.19	27.04
Iraq	-	36.82	70.53	86.45	10.07	29.96
Afghanistan	-	36.53	72.00	78.37	8.58	36.82
Saudi Arabia	31	34.74	57.78	44.81	10.82	51.96
Bahrain	-	22.97	60.29	35.74	3.46	37.32
Palestine	-	-	81.90	-	12.89	-
Hong Kong	-	-	-	-	-	86.33
Taiwan	-	-	88.39	-	-	-

Table 15 Scores on indicator categories for natural capital protection by region and rank (continued)

Country	Regional Rank	Natural Capital Protection	Indicator categories			
			Environmental quality	GHG emissions reductions	Biodiversity and ecosystem protection	Cultural and social value
EUROPE						
Liechtenstein	-	85.68	-	84.83	79.32	93.48
Slovakia	6	84.18	86.80	79.28	76.11	95.88
Croatia	17	83.03	86.06	80.24	73.19	94.02
Albania	31	82.40	86.74	82.14	82.28	78.64
Germany	7	82.34	84.73	76.03	73.89	96.60
Czech Republic	3	81.44	85.49	67.98	77.68	97.45
Hungary	11	80.87	88.08	78.94	69.63	88.35
Italy	10	80.37	85.59	80.49	68.22	88.79
Austria	2	80.11	85.07	76.64	69.44	90.97
United Kingdom	9	78.83	88.79	78.61	64.30	86.04
Slovenia	19	78.80	85.53	75.61	78.07	76.38
Portugal	15	78.43	87.72	77.50	60.91	91.40
Latvia	13	78.38	87.64	73.74	75.77	77.06
France	16	78.09	86.25	77.03	70.41	79.49
Bulgaria	27	78.05	86.29	75.25	79.46	71.94
Switzerland	5	77.86	82.99	83.68	63.32	83.58
Sweden	1	77.84	89.29	85.13	60.62	79.66
Romania	18	77.22	90.86	78.11	75.23	66.60
Belgium	28	76.84	89.02	74.78	70.32	74.46
Greece	26	76.77	85.21	74.13	65.07	84.51
Andorra	-	76.48	87.46	77.77	54.46	92.36
Estonia	12	76.12	90.64	62.42	74.32	79.86
Luxembourg	25	75.92	81.00	61.83	67.21	98.67
Spain	20	75.77	88.64	77.72	59.17	80.87
Poland	22	75.74	87.63	68.93	76.07	71.64
Lithuania	14	75.15	87.42	68.93	73.79	71.72
Macedonia	-	74.78	84.90	80.88	54.69	83.26
Denmark	4	73.55	79.86	70.37	70.36	74.02
Netherlands	23	73.54	87.14	71.24	55.33	85.14
Finland	8	73.23	86.51	70.53	63.77	73.92
Belarus	24	71.96	85.50	61.37	62.23	82.10
Malta	-	70.72	82.01	86.04	47.03	75.36
Serbia	29	69.03	85.98	68.16	54.92	70.57
Norway	21	68.66	81.50	71.70	58.84	64.64
Bosnia and Herzegovina	-	62.65	84.34	76.32	61.81	38.73
Montenegro	36	62.44	82.69	75.47	48.55	50.16
Ukraine	32	62.11	87.33	75.74	53.05	42.42
Ireland	30	58.56	85.75	50.80	57.71	46.79
Moldova	35	57.02	69.85	80.05	31.00	60.97
Russia	34	55.73	86.98	42.69	49.01	52.99
Iceland	33	44.25	84.36	59.31	12.49	61.31

Table 15 Scores on indicator categories for natural capital protection by region and rank (continued)

Country	Regional Rank	Natural Capital Protection	Indicator categories			
			Environmental quality	GHG emissions reductions	Biodiversity and ecosystem protection	Cultural and social value
Monaco	-	16.23	56.47	-	1.00	75.77
Faeroe Islands	-	-	-	-	9.20	39.75
Gibraltar	-	-	-	-	1.00	92.85
San Marino	-	-	81.52	-	60.04	-
Svalbard and Jan Mayen Islands	-	-	-	-	39.12	-
Vatican	-	-	-	-	-	-
OCEANIA						
Palau	-	74.24	79.62	60.84	85.91	72.99
Tuvalu	-	70.96	81.15	89.90	-	48.97
Northern Mariana Islands	-	70.29	83.03	-	67.64	61.84
American Samoa	-	68.20	88.47	-	49.68	72.15
Fiji	3	68.07	89.64	87.14	52.38	52.46
New Zealand	1	67.29	82.55	45.33	69.29	79.07
Samoa	-	66.89	93.46	79.93	57.14	46.91
Marshall Islands	-	64.33	90.51	87.77	47.13	45.74
Tonga	-	63.64	93.74	83.59	45.07	46.45
Vanuatu	-	63.09	81.62	76.34	52.16	48.76
Kiribati	-	59.41	74.77	96.63	23.29	74.02
Micronesia, Fed. Sts.	-	57.65	89.06	89.78	67.18	20.57
Solomon Islands	-	55.76	72.55	91.50	43.80	33.25
Papua New Guinea	-	54.35	78.82	82.30	49.37	27.25
Australia	2	52.58	86.54	19.63	59.03	76.21
Nauru	-	25.68	77.78	90.07	1.00	62.09
Guam	-	16.65	76.25	-	43.59	1.39
Cook Islands	-	-	-	-	-	71.60
French Polynesia	-	-	-	-	45.46	44.67
New Caledonia	-	-	-	-	58.26	76.72
Niue	-	-	-	-	61.10	72.89
Tokelau	-	-	-	-	1.00	75.61
Christmas Island	-	-	-	-	-	48.33
Cocos (Keeling) Islands	-	-	-	-	-	75.52
Norfolk Island	-	-	-	-	-	68.02
Pitcairn	-	-	-	-	-	65.92
Wallis and Futuna Islands	-	-	-	-	23.24	77.09

Table 16 Scores on indicator categories for green economic opportunities by region and rank

Country	Regional Rank	Green Economic Opportunities	Indicator categories			
			Green investment	Green Trade	Green employment	Green innovation
AFRICA						
Tanzania	1	49.46	78.76	29.71	51.71	-
Tunisia	12	42.92	63.20	40.71	50.64	26.03
Egypt	23	35.93	56.98	15.46	54.79	34.52
Ethiopia	10	27.20	70.46	5.63	50.72	-
Uganda	6	24.69	53.09	4.13	68.70	-
South Africa	11	23.97	53.73	46.55	24.95	5.30
Kenya	7	23.03	50.97	8.96	26.77	-
Morocco	2	21.51	80.52	7.87	17.23	19.60
Senegal	8	19.14	73.34	4.02	23.80	-
Cabo Verde	4	15.98	80.97	1.10	45.88	-
Madagascar	19	15.44	57.95	3.32	19.17	-
Eswatini	22	15.27	65.84	2.40	22.59	-
Malawi	13	14.70	51.39	2.67	23.20	-
Mauritius	5	14.21	61.03	4.29	10.96	-
Ghana	9	13.61	62.82	5.39	7.44	-
Cameroon	14	13.33	58.09	4.75	8.60	-
Angola	17	11.97	53.88	2.14	14.89	-
Botswana	3	11.70	84.68	1.76	10.76	-
Zimbabwe	15	9.89	33.04	2.09	14.02	-
Lesotho	21	8.61	67.08	7.00	1.36	-
Burundi	20	6.12	25.79	1.81	4.89	-
Rwanda	16	5.67	49.82	2.60	1.40	-
Niger	25	5.25	67.55	2.14	1.00	-
Gambia	18	5.01	46.98	2.67	1.00	-
Nigeria	24	4.07	52.27	1.29	1.00	-
Zambia	-	-	76.93	7.39	-	-
Algeria	-	-	84.90	5.00	-	-
Burkina Faso	-	-	53.67	2.65	-	-
Gabon	-	-	80.61	-	-	-
Cote d'Ivoire	-	-	71.89	3.48	-	-
Sao Tome and Principe	-	-	-	11.16	-	-
DR Congo	-	-	54.77	1.24	-	-
Guinea	-	-	28.79	4.32	-	-
Mozambique	-	-	45.35	1.82	-	-
Namibia	-	-	59.64	5.69	-	-
Seychelles	-	-	-	1.97	-	-
Benin	-	-	57.37	5.24	-	-
Togo	-	-	64.00	19.19	-	-
Guinea-Bissau	-	-	55.72	-	-	-
Congo Republic	-	-	60.05	7.28	-	-
Liberia	-	-	1.00	-	-	-
Sierra Leone	-	-	32.86	2.55	-	-

Table 16 Scores on indicator categories for green economic opportunities by region and rank (continued)

Country	Regional Rank	Green Economic Opportunities	Indicator categories			
			Green investment	Green Trade	Green employment	Green innovation
South Sudan	-	-	38.64	-	-	-
Central African Republic	-	-	-	2.90	-	-
Comoros	-	-	53.04	1.25	-	-
Eritrea	-	-	-	-	1.00	-
Mali	-	-	59.12	2.75	-	-
Sudan	-	-	76.69	1.03	-	-
Djibouti	-	-	81.77	-	-	-
Mauritania	-	-	78.08	1.00	-	-
Chad	-	-	-	-	-	-
Libya	-	-	100.00	1.61	-	-
THE AMRERICAS						
Mexico	1	34.52	62.53	44.53	54.56	9.35
Canada	3	32.59	61.88	24.73	69.67	10.58
United States	4	30.18	61.43	46.55	76.50	3.79
El Salvador	8	30.04	57.75	13.96	-	33.64
Bahamas	15	24.88	76.81	22.62	8.86	-
Brazil	2	23.80	67.52	15.96	23.48	12.69
Peru	6	23.00	68.82	5.33	35.37	21.57
Colombia	11	21.64	58.07	5.49	33.74	20.38
Paraguay	5	20.81	80.28	2.44	46.10	-
Chile	7	20.08	63.70	3.44	39.66	18.70
Dominican Republic	9	18.14	79.43	9.58	16.20	8.78
Ecuador	10	16.99	66.92	3.07	53.60	7.57
Argentina	17	16.89	60.04	6.27	27.34	7.91
Costa Rica	13	15.89	75.53	12.29	31.65	2.17
Bolivia	12	14.80	59.88	2.38	22.75	-
Nicaragua	14	13.60	79.04	2.14	-	14.88
Honduras	18	13.03	77.85	3.64	-	7.80
Uruguay	16	10.12	64.23	3.02	15.98	3.39
Guatemala	20	6.77	55.97	7.21	1.01	5.14
Panama	19	6.47	91.03	10.79	1.00	1.79
Trinidad and Tobago	-	-	-	96.27	10.43	-
St. Vincent and the Grenadines	-	-	-	6.99	-	-
St. Lucia	-	-	-	9.24	-	-
Belize	-	-	49.50	11.74	-	-
Suriname	-	-	87.43	2.40	-	-
Jamaica	-	-	78.40	12.39	-	-
Cuba	-	-	-	-	1.00	7.69
Venezuela	-	-	63.02	1.79	-	-
St. Kitts and Nevis	-	-	-	10.24	-	-
Antigua and Barbuda	-	-	-	10.01	-	-

Table 16 Scores on indicator categories for green economic opportunities by region and rank (continued)

Country	Regional Rank	Green Economic Opportunities	Indicator categories			
			Green investment	Green Trade	Green employment	Green innovation
Guyana	-	-	-	7.72	-	-
Barbados	-	-	50.99	13.64	-	-
Bermuda	-	-	-	33.22	18.78	-
Haiti	-	-	61.10	-	-	-
Greenland	-	-	-	1.35	-	-
Aruba	-	-	-	17.96	-	-
Grenada	-	-	-	23.64	-	-
ASIA						
Thailand	2	46.29	70.77	30.20	46.40	-
South Korea	16	43.55	82.34	41.20	73.93	14.34
China	5	43.18	89.63	34.01	49.01	23.27
Singapore	7	36.23	100.00	31.00	52.14	10.65
Cyprus	3	34.20	61.41	11.75	38.10	49.76
Japan	1	34.11	62.80	58.36	45.24	8.17
India	26	33.69	78.87	22.75	48.27	14.88
Malaysia	11	31.07	61.64	29.28	34.14	15.13
Georgia	4	30.84	56.57	24.98	27.26	23.48
Turkey	10	30.00	70.99	26.06	51.27	8.54
Kyrgyz Republic	14	29.53	52.53	10.86	45.16	-
Jordan	29	29.47	62.12	13.03	39.94	23.33
Philippines	6	29.27	85.21	18.80	34.00	13.48
Brunei Darussalam	13	28.67	100.00	6.37	36.97	-
Saudi Arabia	31	28.58	76.79	6.44	48.71	27.70
Vietnam	8	27.62	69.18	9.83	30.98	-
Oman	32	27.06	29.06	13.16	51.84	-
Indonesia	9	26.62	70.48	10.58	25.30	-
Sri Lanka	23	26.35	85.37	12.69	16.89	-
Armenia	15	24.37	56.98	6.21	40.93	-
Lebanon	25	23.67	24.08	14.20	38.78	-
Azerbaijan	21	21.25	62.48	2.15	71.47	-
Israel	18	20.16	76.24	41.80	17.46	2.97
Kazakhstan	20	19.69	63.39	3.05	39.46	-
Nepal	12	19.05	100.00	2.70	25.65	-
Pakistan	35	16.59	60.45	4.03	18.73	-
Uzbekistan	33	16.25	81.09	2.08	25.41	-
Bangladesh	27	14.25	88.06	2.43	13.53	-
Kuwait	34	13.76	77.43	2.72	12.38	-
Mongolia	22	12.71	59.30	1.69	20.54	-
Qatar	30	12.25	83.80	1.00	21.89	-
Laos	17	9.77	52.94	3.05	5.78	-
Myanmar	24	8.89	83.34	5.16	1.64	-
Hong Kong	-	8.40	-	16.68	35.47	1.00
Cambodia	19	6.28	71.33	3.28	1.06	-

Table 16 Scores on indicator categories for green economic opportunities by region and rank (continued)

Country	Regional Rank	Green Economic Opportunities	Indicator categories			
			Green investment	Green Trade	Green employment	Green innovation
Maldives	28	4.35	76.79	1.07	1.00	-
Afghanistan	-	-	-	3.86	1.00	-
Tajikistan	-	-	73.96	-	1.00	-
Macao	-	-	-	1.45	1.00	-
Bhutan	-	-	83.58	-	-	-
Timor-Leste	-	-	36.18	4.39	-	-
Iran	-	-	-	6.79	64.57	-
United Arab Emirates	-	-	-	12.35	54.52	-
Syria	-	-	-	-	34.21	-
Yemen	-	-	-	4.82	32.30	-
Iraq	-	-	53.64	-	1.00	-
Bahrain	-	-	81.14	7.09	-	-
Palestine	-	-	-	5.75	35.59	-
Turkmenistan	-	-	-	-	3.20	-
EUROPE						
Czech Republic	3	55.38	65.91	58.32	87.47	27.97
Sweden	1	52.70	77.92	41.60	62.97	37.80
Estonia	12	51.66	71.75	38.30	43.58	59.46
Slovakia	6	51.49	64.53	40.42	80.26	33.58
Denmark	4	51.43	80.23	48.51	94.80	18.96
Finland	8	51.41	64.96	40.47	69.85	38.03
Germany	7	50.94	72.95	75.86	88.53	13.75
Hungary	11	48.63	72.54	58.71	63.95	20.53
Poland	22	46.97	67.54	37.42	58.79	32.77
Romania	18	46.62	61.19	61.97	49.09	25.37
Austria	2	46.42	71.15	56.75	67.68	16.99
Lithuania	14	43.46	66.42	38.08	43.16	32.67
Netherlands	23	42.04	78.43	30.65	53.69	24.19
Italy	10	41.79	59.82	55.49	60.41	15.21
Slovenia	19	41.34	64.54	39.49	59.69	19.21
Portugal	15	39.68	59.76	37.60	47.98	22.99
Bulgaria	27	39.43	67.51	24.16	48.33	30.68
Croatia	17	39.40	70.75	23.42	54.42	26.73
Belarus	24	39.40	69.73	17.63	49.75	-
Spain	20	38.70	67.79	24.27	57.19	23.85
United Kingdom	9	38.64	57.27	46.92	64.29	12.90
France	16	36.97	65.07	35.63	49.23	16.36
Switzerland	5	36.64	76.56	33.79	100.00	6.97
Latvia	13	35.56	57.73	22.41	42.57	29.04
Iceland	33	34.55	75.71	6.12	30.77	100.00
Norway	21	34.16	80.03	25.08	49.18	13.79
Serbia	29	30.30	50.97	29.46	66.95	8.38
Luxembourg	25	29.37	73.53	35.76	18.34	15.43

Table 16 Scores on indicator categories for green economic opportunities by region and rank (continued)

Country	Regional Rank	Green Economic Opportunities	Indicator categories			
			Green investment	Green Trade	Green employment	Green innovation
Belgium	28	29.12	69.28	29.37	47.51	7.44
Greece	26	27.98	45.70	15.94	32.25	26.10
Ukraine	32	27.29	56.19	11.26	62.50	14.02
Russia	34	27.10	63.90	9.03	49.54	18.87
Ireland	30	24.44	75.30	11.37	19.37	21.51
Moldova	35	23.68	66.04	12.49	30.62	12.44
Montenegro	36	9.22	-	8.87	24.47	3.61
Albania	31	8.86	53.71	1.70	7.59	-
Bosnia and Herzegovina	-	-	-	30.77	31.69	-
Malta	-	-	-	23.76	2.79	-
Liechtenstein	-	-	-	-	1.00	-
Andorra	-	-	-	9.38	-	-
Macedonia	-	-	77.44	100.00	-	-
OCEANIA						
Fiji	3	29.01	65.94	4.37	84.72	-
Australia	2	23.43	61.80	8.99	52.25	10.39
New Zealand	1	21.21	72.41	8.95	45.02	6.93
Kiribati	-	-	-	4.56	-	-
Palau	-	-	-	1.66	-	-
Tonga	-	7.15	65.54	5.58	1.00	-
Vanuatu	-	-	87.70	-	-	-
Samoa	-	-	-	3.17	-	-
Solomon Islands	-	-	64.85	1.44	-	-
French Polynesia	-	-	-	5.14	-	-
New Caledonia	-	-	-	2.68	-	-

Table 17 Scores on indicator categories for social inclusion by region and rank

Country	Regional Rank	Social Inclusion	Indicator categories			
			Access to basic services and resources	Gender balance	Social equity	Social protection
AFRICA						
Mauritius	5	77.87	78.57	74.28	83.39	75.54
Tunisia	12	76.81	76.58	59.46	96.64	79.11
Seychelles	-	75.04	78.29	59.12	84.78	80.81
Morocco	2	71.00	65.81	55.72	91.96	75.37
Algeria	-	70.87	69.96	62.28	85.93	67.40
South Africa	11	67.88	67.23	94.77	46.69	71.37
Cabo Verde	4	67.81	64.75	61.50	73.76	71.97
Namibia	-	62.50	46.58	95.18	50.17	68.62
Egypt	23	62.03	69.54	41.40	80.80	63.63
Gabon	-	61.40	81.45	50.94	76.67	44.69
Eswatini	22	60.23	56.42	54.08	59.40	72.59
Lesotho	21	59.81	38.38	73.91	79.73	56.58
Botswana	3	57.77	42.47	63.89	55.29	74.22
Kenya	7	55.48	39.42	80.78	83.92	35.45
Senegal	8	55.29	46.10	69.19	69.02	42.45
Ghana	9	53.49	49.37	58.29	72.15	39.42
Cameroon	14	53.21	50.74	61.04	68.84	37.61
Tanzania	1	50.82	33.28	90.09	74.53	29.85
Togo	-	50.32	42.94	76.27	66.62	29.39
Rwanda	16	48.69	28.91	90.39	62.28	34.52
Comoros	-	48.23	33.03	68.52	72.88	32.80
Gambia	18	47.40	47.31	47.46	58.27	38.58
Zimbabwe	15	46.39	26.89	78.94	51.94	42.01
Djibouti	-	45.93	39.66	53.81	80.11	26.04
Ethiopia	10	45.27	39.63	65.52	84.25	19.19
Cote d'Ivoire	-	45.11	42.77	56.63	67.25	25.41
Libya	-	45.00	28.12	68.23	-	47.49
Nigeria	24	44.23	42.75	49.15	68.86	26.45
Uganda	6	44.00	20.39	88.57	69.71	29.77
Benin	-	43.42	42.83	51.30	67.74	23.88
Congo Republic	-	42.15	38.68	46.92	56.25	30.91
Sudan	-	41.20	44.90	46.43	89.73	15.40
Mali	-	41.06	39.63	43.73	63.58	25.79
Angola	17	40.17	45.97	66.80	29.70	28.56
Sao Tome and Principe	-	39.61	44.31	19.00	71.07	41.13
Burundi	20	39.43	19.19	82.10	58.37	26.29
Equatorial Guinea	-	39.38	28.56	71.29	-	30.00
Liberia	-	38.03	24.11	72.02	71.08	16.95
Malawi	13	38.00	33.30	76.47	38.14	21.46
Sierra Leone	-	37.44	28.28	55.21	57.14	22.02

Table 17 Scores on indicator categories for social inclusion by region and rank (continued)

Country	Regional Rank	Social Inclusion	Indicator categories			
			Access to basic services and resources	Gender balance	Social equity	Social protection
Mauritania	-	37.18	43.73	54.91	42.39	18.78
Guinea	-	36.24	17.03	62.79	71.41	22.60
Mozambique	-	36.11	25.92	73.50	26.38	33.84
Zambia	-	33.98	17.49	76.46	33.27	29.99
Burkina Faso	-	33.71	32.63	48.33	37.68	21.73
Madagascar	19	32.81	16.53	53.78	83.25	15.67
DR Congo	-	30.23	18.33	58.24	40.78	19.17
Niger	25	28.39	7.73	57.00	70.80	20.85
South Sudan	-	25.57	-	43.41	76.73	5.02
Chad	-	21.05	17.68	54.91	36.19	5.59
Guinea-Bissau	-	19.39	10.29	14.59	63.16	14.92
Somalia	-	18.42	7.36	64.91	-	13.09
Central African Republic	-	16.80	14.32	43.03	21.32	6.06
Eritrea	-	-	17.09	59.91	-	-
THE AMERICAS						
Canada	3	86.85	78.83	84.55	89.77	95.11
United States	4	83.64	89.42	71.51	85.63	89.37
Mexico	1	78.81	67.36	85.54	79.82	83.87
Uruguay	16	77.75	79.58	63.85	82.91	86.74
Argentina	17	76.78	69.57	75.63	81.61	80.95
Bolivia	12	76.40	57.67	99.88	85.61	69.11
Ecuador	10	76.30	67.03	90.67	79.81	69.89
Chile	7	74.71	73.61	69.80	81.58	74.32
Suriname	-	72.66	60.17	63.36	85.85	85.16
Guyana	-	72.53	66.91	82.06	65.55	76.89
Brazil	2	72.28	74.42	65.38	68.19	82.28
Costa Rica	13	70.65	67.50	64.05	77.84	74.04
Peru	6	70.26	61.78	84.08	82.05	57.17
Paraguay	5	70.22	58.26	76.26	79.61	68.73
Grenada	-	70.20	60.62	83.50	-	68.34
Trinidad and Tobago	-	69.43	70.41	78.05	50.50	83.72
El Salvador	8	69.32	70.26	76.89	77.29	55.29
Dominican Republic	9	69.01	70.88	76.02	77.76	54.13
Panama	19	66.87	71.58	61.44	76.10	59.74
Belize	-	65.60	68.80	55.64	73.43	65.87
Nicaragua	14	65.05	47.46	85.63	88.25	49.92
Colombia	11	63.34	57.95	61.90	70.69	63.48
Venezuela	-	63.19	47.37	72.79	77.25	59.87
St. Lucia	-	63.10	61.19	67.00	64.74	59.74
Bahamas	15	61.64	58.86	50.82	-	78.29
Barbados	-	61.24	81.48	42.25	-	66.69
Jamaica	-	57.17	66.89	61.92	-	45.12

Table17 SScores on indicator categories for social inclusion by region and rank (continued)

Country	Regional Rank	Social Inclusion	Indicator categories			
			Access to basic services and resources	Gender balance	Social equity	Social protection
Guatemala	20	56.27	56.61	58.90	71.63	41.96
Honduras	18	55.70	52.76	63.13	69.22	41.75
St. Vincent and the Grenadines	-	53.38	75.51	38.66	-	52.10
Haiti	-	33.40	20.24	67.68	41.51	21.88
Antigua and Barbuda	-	-	-	49.12	-	70.15
Dominica	-	-	69.17	50.50	-	-
Cuba	-	-	70.27	-	-	58.08
St. Kitts and Nevis	-	-	-	38.95	-	-
Puerto Rico	-	-	-	86.65	-	-
Curacao	-	-	-	-	95.14	-
French Guiana	-	-	-	-	-	68.17
Guadeloupe	-	-	-	-	-	83.68
ASIA						
Israel	18	81.37	85.03	68.26	85.78	88.05
South Korea	16	80.82	89.97	53.64	97.47	90.69
Singapore	7	80.73	90.88	74.39	96.09	65.40
Japan	1	80.71	87.65	57.02	95.71	88.71
Cyprus	3	80.08	77.94	70.36	88.93	84.33
Kazakhstan	20	77.26	76.24	59.80	93.16	83.90
Turkey	10	76.92	79.53	65.59	78.44	85.55
China	5	74.63	70.44	57.51	93.14	82.21
Armenia	15	73.81	79.81	66.19	78.42	71.63
Vietnam	8	72.57	69.77	67.99	90.41	64.69
Georgia	4	72.25	71.71	67.55	80.12	70.21
Brunei Darussalam	13	72.08	85.42	47.12	80.89	82.89
Kyrgyz Republic	14	70.86	64.24	54.56	86.22	83.41
Thailand	2	70.73	67.10	54.02	86.99	79.36
Mongolia	22	70.49	59.34	69.78	85.17	70.00
Tajikistan	-	68.41	49.42	61.73	95.94	74.81
Indonesia	9	66.68	70.39	71.56	93.19	42.12
Saudi Arabia	31	64.38	62.67	53.18	84.69	60.87
Maldives	28	64.14	63.47	43.95	83.33	72.84
United Arab Emirates	-	64.08	77.37	47.64	99.89	45.79
Philippines	6	64.06	59.18	83.79	81.37	41.74
Malaysia	11	63.65	78.85	56.96	86.11	42.43
Uzbekistan	33	63.52	69.78	52.44	-	70.03
Timor-Leste	-	63.38	44.34	-	85.32	67.31
Nepal	12	62.72	53.00	70.96	75.02	54.83
Jordan	29	62.54	67.04	46.08	73.70	67.22
Iran	-	62.24	71.59	54.08	73.23	52.92
Laos	17	61.30	67.77	75.67	68.50	40.20

Table 17 Scores on indicator categories for social inclusion by region and rank (continued)

Country	Regional Rank	Social Inclusion	Indicator categories			
			Access to basic services and resources	Gender balance	Social equity	Social protection
Cambodia	19	59.59	51.95	72.08	93.65	35.95
Azerbaijan	21	58.84	71.82	44.74	-	63.39
Bahrain	-	58.36	72.92	38.13	-	71.49
Iraq	-	57.67	42.74	66.11	98.18	39.88
Sri Lanka	23	56.88	62.61	46.03	79.49	45.68
Bhutan	-	56.74	45.19	70.30	94.06	34.68
Myanmar	24	54.81	51.51	57.20	86.69	35.32
India	26	54.70	56.78	41.43	77.64	49.03
Lebanon	25	54.33	58.06	48.47	83.24	37.18
Bangladesh	27	54.32	52.82	51.09	80.02	40.32
Qatar	30	53.09	68.26	56.30	-	38.93
Oman	32	52.50	65.97	41.22	-	53.21
Kuwait	34	50.66	77.34	35.27	-	47.67
Syria	-	46.57	60.29	40.11	-	41.77
Pakistan	35	44.45	49.92	33.60	75.48	30.83
Afghanistan	-	39.53	44.23	40.11	59.92	22.97
Yemen	-	24.64	28.27	9.47	65.90	20.88
Palestine	-	-	-	-	76.39	43.90
North Korea	-	-	34.43	-	-	-
Turkmenistan	-	-	65.61	73.61	-	-
Macao	-	-	96.42	-	-	-
Hong Kong	-	-	100.00	87.51	-	-
EUROPE						
Sweden	1	94.94	94.91	95.71	95.36	93.79
Netherlands	23	93.62	96.34	91.18	96.42	90.69
Norway	21	93.45	89.80	93.53	96.37	94.23
Switzerland	5	91.81	96.67	88.40	93.70	88.71
Spain	20	91.58	93.34	93.51	89.55	89.98
Denmark	4	91.19	87.35	91.69	94.25	91.60
Austria	2	91.16	96.58	88.43	93.95	86.08
France	16	91.00	95.11	92.72	91.02	85.42
Germany	7	90.50	96.77	79.32	94.51	92.47
Belgium	28	90.35	86.17	92.50	93.56	89.37
United Kingdom	9	90.32	92.36	87.42	90.24	91.35
Portugal	15	90.14	90.89	89.73	92.38	87.62
Finland	8	89.95	85.92	94.70	94.19	85.42
Poland	22	88.98	93.60	85.77	93.47	83.55
Luxembourg	25	87.71	83.50	85.63	93.33	88.71
Slovenia	19	87.25	81.79	82.88	95.56	89.44
Ireland	30	86.85	91.22	80.78	91.82	84.10
Estonia	12	86.65	84.57	85.90	92.98	83.44
Italy	10	86.24	87.38	87.15	85.17	85.28

Table 17 Scores on indicator categories for social inclusion by region and rank (continued)

Country	Regional Rank	Social Inclusion	Indicator categories			
			Access to basic services and resources	Gender balance	Social equity	Social protection
Greece	26	85.78	87.56	79.52	89.85	86.54
Czech Republic	3	85.76	86.35	81.49	96.34	79.80
Iceland	33	85.63	83.84	88.22	96.65	75.22
Lithuania	14	84.41	84.64	81.46	91.26	80.69
Belarus	24	84.32	88.68	73.27	99.83	77.92
Malta	-	82.70	84.27	67.07	93.98	88.05
Latvia	13	82.47	83.11	78.79	91.95	76.85
Slovakia	6	81.59	82.42	71.80	93.47	80.11
Croatia	17	81.43	80.20	79.19	91.39	75.76
Romania	18	81.29	87.24	69.57	87.56	82.19
Bulgaria	27	81.04	83.38	81.33	85.31	74.54
Hungary	11	80.98	89.33	64.94	91.88	80.68
Serbia	29	78.07	67.16	89.48	86.71	71.28
Russia	34	77.20	80.15	60.85	87.97	82.78
Macedonia	-	73.82	65.92	73.29	82.62	74.41
Albania	31	72.86	65.49	85.89	81.42	61.52
Montenegro	36	71.06	71.34	57.60	84.54	73.41
Ukraine	32	70.58	85.57	41.70	89.09	78.06
Bosnia and Herzegovina	-	70.31	64.78	63.77	84.36	70.12
Moldova	35	66.64	73.23	57.07	81.83	57.66
San Marino	-	-	-	63.70	-	-
OCEANIA						
Australia	2	87.97	82.24	87.07	91.56	91.35
New Zealand	1	87.65	84.77	85.68	88.97	91.35
Fiji	3	64.10	63.99	41.59	83.38	76.06
Samoa	-	60.97	59.47	48.03	71.17	67.99
Kiribati	-	57.72	51.05	56.95	65.83	57.97
Tonga	-	54.61	43.29	45.46	76.57	59.03
Micronesia, Fed. Sts.	-	52.17	37.88	38.13	78.90	64.99
Vanuatu	-	38.65	47.59	25.75	89.43	20.36
Solomon Islands	-	34.52	39.55	15.36	91.15	25.64
Papua New Guinea	-	29.98	31.24	13.38	88.27	21.92
Palau	-	-	-	50.50	87.73	-
Marshall Islands	-	-	-	47.12	-	-
Nauru	-	-	-	-	73.99	-
New Caledonia	-	-	93.21	-	-	-
Niue	-	-	-	-	-	-
Tuvalu	-	-	-	-	76.76	-
French Polynesia	-	-	93.05	-	-	-

Table 18 Normalized values of green growth indicators for efficient and sustainable resource use

Country	Regional Rank	Indicators											
		EE1	EE2	EE3	EW1	EW2	EW3	SL1	SL2	SL3	ME1	ME2	ME3
AFRICA													
Tanzania	1	61.64	100.00	34.67	3.72	100.00	-	99.46	6.84	89.93	77.58	100.00	39.61
Morocco	2	83.97	21.86	20.11	4.18	49.02	12.64	99.30	1.27	96.19	85.36	100.00	59.11
Botswana	3	85.30	55.31	36.46	28.68	100.00	-	72.37	-	99.70	75.38	58.33	50.82
Cabo Verde	4	87.22	45.30	-	21.07	100.00	8.99	-	6.27	91.68	-	94.90	44.36
Mauritius	5	91.36	18.72	26.36	7.95	100.00	-	78.03	1.03	98.95	93.61	77.95	50.39
Uganda	6	32.74	100.00	21.26	13.02	100.00	-	99.48	16.14	82.92	79.37	100.00	46.58
Kenya	7	67.78	100.00	29.01	5.12	83.68	2.05	99.52	5.65	85.04	82.91	100.00	44.79
Senegal	8	80.50	71.54	10.82	3.68	100.00	17.27	94.47	1.75	91.43	86.12	100.00	29.20
Ghana	9	87.67	81.85	20.94	12.06	100.00	9.07	100.00	2.67	96.82	74.99	100.00	48.10
Ethiopia	10	49.07	100.00	14.84	2.74	85.63	-	94.10	5.09	74.90	63.43	100.00	35.25
South Africa	11	50.48	20.92	47.15	6.26	23.65	3.06	92.71	1.72	97.44	91.21	94.69	67.60
Tunisia	12	78.94	23.89	21.07	4.71	1.00	-	98.56	27.40	96.69	86.85	98.24	63.89
Malawi	13	72.88	100.00	21.60	2.14	100.00	-	91.48	2.83	92.43	55.83	100.00	48.20
Cameroon	14	74.51	100.00	21.92	10.18	100.00	4.54	100.00	1.09	90.43	82.93	100.00	46.06
Zimbabwe	15	25.93	100.00	6.55	2.73	79.39	-	95.68	1.02	95.44	80.72	100.00	13.57
Rwanda	16	78.35	100.00	34.17	14.07	100.00	-	99.92	1.98	86.67	76.38	100.00	33.02
Angola	17	85.15	100.00	4.15	53.86	100.00	38.71	99.74	1.00	99.20	91.60	100.00	38.20
Gambia	18	85.52	100.00	15.63	5.08	100.00	73.69	97.78	1.03	88.93	80.37	100.00	19.43
Madagascar	19	49.59	100.00	15.25	1.21	100.00	70.24	100.00	1.99	97.19	68.03	100.00	22.89
Burundi	20	50.48	100.00	4.72	3.26	100.00	-	98.67	1.07	90.68	46.97	100.00	-
Lesotho	21	47.97	74.99	11.63	19.47	100.00	-	-	1.00	95.69	36.59	90.56	39.79
Eswatini	22	74.51	100.00	-	2.27	1.00	-	-	1.13	93.69	85.08	92.82	49.58
Egypt	23	80.94	10.14	29.33	2.63	1.00	-	29.44	26.16	56.36	82.53	100.00	58.90
Nigeria	24	58.39	100.00	19.86	12.58	100.00	3.48	97.54	1.69	91.93	91.66	100.00	19.67
Niger	25	69.18	100.00	4.92	2.29	100.00	-	99.54	1.00	93.94	59.24	100.00	34.02
Algeria	-	68.52	1.37	17.15	6.38	1.00	-	100.00	1.02	97.44	88.74	100.00	56.56
Benin	-	62.68	85.69	26.90	11.87	100.00	5.97	100.00	4.46	91.06	72.31	100.00	51.14
Burkina Faso	-	73.62	100.00	22.75	5.31	100.00	-	97.27	4.90	84.67	63.49	100.00	47.72
Central African Republic	-	70.07	100.00	7.46	7.39	100.00	-	95.01	-	84.92	40.13	100.00	35.72
Chad	-	81.31	100.00	16.16	4.47	100.00	-	-	-	86.17	80.90	100.00	8.49
Comoros	-	84.34	100.00	20.67	28.02	100.00	100.00	-	14.59	92.94	-	-	37.67
Congo Republic	-	56.10	100.00	18.37	37.28	100.00	7.03	100.00	-	99.95	91.60	100.00	39.31
Cote d'Ivoire	-	81.90	100.00	37.65	10.42	100.00	-	99.28	2.98	98.95	89.02	100.00	53.12
Djibouti	-	92.47	54.61	23.18	-	100.00	7.67	-	-	95.94	-	100.00	35.41
DR Congo	-	5.08	100.00	-	18.76	100.00	-	100.00	2.60	99.70	64.04	100.00	-
Equatorial Guinea	-	79.91	10.45	12.93	-	100.00	3.61	-	-	99.95	89.77	-	-
Eritrea	-	-	100.00	5.48	3.62	100.00	-	95.79	-	94.69	-	100.00	-
Gabon	-	58.69	100.00	7.90	36.39	100.00	-	95.24	-	99.70	96.92	99.90	46.19

Table18 Normalized values of green growth indicators for efficient and sustainable resource use (continued)

Country	Regional Rank	Indicators											
		EE1	EE2	EE3	EW1	EW2	EW3	SL1	SL2	SL3	ME1	ME2	ME3
Guinea	-	66.60	100.00	9.16	4.33	100.00	30.45	99.91	1.00	92.69	71.00	100.00	39.20
Guinea-Bissau	-	43.09	100.00	15.18	2.10	100.00	36.54	-	1.86	84.67	58.88	-	26.46
Liberia	-	6.86	100.00	10.07	2.64	100.00	-	-	1.00	99.20	63.80	100.00	28.01
Libya	-	52.18	6.06	6.10	2.54	1.00	-	98.30	-	98.45	91.15	100.00	-
Mali	-	72.22	100.00	21.74	1.62	100.00	-	99.75	1.26	93.44	51.15	100.00	54.78
Mauritania	-	82.64	49.40	13.37	2.39	100.00	-	-	-	97.95	71.68	100.00	38.71
Mayotte	-	-	1.00	-	-	-	-	-	2.66	-	-	-	-
Mozambique	-	22.53	100.00	24.78	3.87	100.00	21.05	100.00	1.30	99.70	72.85	100.00	17.21
Namibia	-	81.31	59.41	26.74	14.09	100.00	33.42	91.51	1.00	99.45	88.29	95.39	47.03
Reunion	-	-	1.00	-	-	100.00	-	-	22.97	-	-	-	-
Sao Tome and Principe	-	81.24	73.89	23.78	3.79	100.00	78.43	-	100.00	99.45	-	98.48	44.71
Seychelles	-	86.26	3.36	-	37.12	-	11.01	-	-	89.18	-	76.47	58.29
Sierra Leone	-	67.78	100.00	5.19	4.17	100.00	100.00	-	21.91	97.70	1.00	98.64	29.97
Somalia	-	-	100.00	9.41	1.00	100.00	-	-	-	94.94	-	100.00	-
South Sudan	-	-	64.91	-	8.39	100.00	-	-	-	92.43	-	100.00	-
St. Helena	-	-	26.21	-	-	-	-	-	-	-	-	-	-
Sudan	-	74.29	100.00	16.49	1.91	1.00	-	95.68	1.94	90.68	84.20	100.00	44.26
Togo	-	24.16	100.00	17.13	6.01	100.00	8.71	99.95	9.99	95.19	59.18	100.00	36.01
Western Sahara	-	-	-	-	7.26	-	-	-	-	-	-	-	-
Zambia	-	43.97	100.00	19.68	5.89	100.00	-	88.81	1.04	98.20	67.25	100.00	36.45
THE AMERICAS													
Mexico	1	85.23	19.54	36.65	5.77	83.53	2.39	87.80	2.43	94.19	95.80	93.27	59.40
Brazil	2	78.35	91.64	34.53	9.36	100.00	-	-	5.17	84.42	93.40	83.34	65.18
Canada	3	56.62	43.73	58.48	16.73	100.00	2.33	82.66	19.75	95.44	97.42	56.43	70.19
United States	4	72.96	20.47	63.60	17.20	93.66	1.26	-	5.15	94.69	98.83	60.22	68.80
Paraguay	5	82.27	100.00	27.95	6.22	100.00	-	-	2.63	89.43	91.42	85.94	63.18
Peru	6	88.19	54.73	25.07	5.35	100.00	5.44	88.20	11.98	94.69	85.39	93.61	57.49
Chile	7	80.79	50.04	45.24	1.81	100.00	3.08	49.00	1.92	96.94	83.03	82.41	63.27
El Salvador	8	83.23	45.71	21.27	4.74	100.00	4.90	82.19	1.94	90.43	93.17	98.09	61.28
Dominican Republic	9	92.25	31.99	24.06	3.91	49.89	-	100.00	58.89	81.41	96.24	97.74	69.44
Ecuador	10	84.49	32.45	31.16	4.35	100.00	7.67	72.70	7.38	87.17	90.96	91.69	56.31
Colombia	11	90.63	60.17	33.10	8.12	100.00	1.68	78.00	1.37	91.43	96.02	92.18	67.77
Bolivia	12	77.83	15.59	14.25	6.04	100.00	-	-	3.52	95.19	71.08	99.44	57.29
Costa Rica	13	91.88	69.77	28.26	9.29	100.00	1.57	50.07	5.18	85.92	96.18	95.51	60.69
Nicaragua	14	73.92	97.67	19.83	3.45	100.00	10.23	87.67	6.71	82.92	83.06	100.00	46.10
Bahamas	15	86.41	2.96	19.65	-	-	12.11	68.93	3.97	95.69	-	76.83	62.52
Uruguay	16	85.45	100.00	24.81	5.89	100.00	1.29	-	100.00	84.92	85.11	55.13	68.26
Argentina	17	82.94	21.26	31.34	5.87	100.00	2.66	-	21.23	93.69	93.97	86.46	69.74

Table 18 Normalized values of green growth indicators for efficient and sustainable resource use (continued)

Country	Regional Rank	Indicators											
		EE1	EE2	EE3	EW1	EW2	EW3	SL1	SL2	SL3	ME1	ME2	ME3
Honduras	18	73.47	97.42	22.19	5.60	100.00	1.50	79.36	8.26	85.42	89.14	100.00	50.73
Panama	19	97.13	48.02	43.91	18.95	100.00	7.42	93.38	3.17	88.55	97.12	95.73	63.96
Guatemala	20	75.99	100.00	16.07	7.99	100.00	1.87	77.85	4.02	81.66	90.87	100.00	49.97
Anguilla	-	-	1.33	-	-	-	19.60	-	-	-	-	-	-
Antigua and Barbuda	-	81.16	2.74	-	45.08	100.00	12.70	-	-	80.91	-	87.42	57.60
Aruba	-	84.78	16.45	-	-	-	-	-	-	-	-	-	-
Barbados	-	79.61	12.24	-	20.47	1.00	2.74	45.18	-	78.66	-	91.11	63.53
Belize	-	64.16	78.27	-	6.09	100.00	12.86	83.73	2.06	87.93	-	95.70	65.16
Bermuda	-	-	1.73	-	-	100.00	2.13	-	-	-	-	-	-
Bonaire, Saint Eustatius and Saba	-	-	7.22	-	-	-	-	-	-	-	-	-	-
British Virgin Islands	-	-	3.62	-	-	-	-	-	-	-	-	55.83	-
Cayman Islands	-	93.21	1.02	-	-	-	1.46	-	-	-	-	-	-
Cuba	-	-	41.16	9.04	5.62	100.00	-	97.27	1.82	90.43	94.57	95.50	65.81
Curacao	-	4.57	6.81	-	-	-	-	-	-	-	-	-	-
Dominica	-	85.67	16.73	-	-	100.00	5.71	-	8.99	90.18	-	-	52.98
Falkland Islands	-	-	10.56	-	-	-	-	-	24.28	-	-	-	-
French Guiana	-	-	1.00	-	-	-	-	-	-	-	-	-	-
Greenland	-	-	23.10	-	-	-	100.00	-	-	-	-	-	-
Grenada	-	88.70	21.01	-	-	100.00	14.34	-	9.32	85.42	-	-	67.48
Guadeloupe	-	-	1.00	-	-	-	-	-	5.35	-	-	-	-
Guyana	-	69.04	33.37	14.25	1.66	100.00	19.37	94.56	-	98.45	-	1.00	72.92
Haiti	-	35.03	100.00	6.29	2.77	100.00	5.19	-	2.99	84.67	94.49	100.00	33.95
Jamaica	-	76.87	17.70	19.43	4.22	100.00	5.53	93.56	1.69	92.81	93.08	95.24	60.70
Martinique	-	-	1.00	-	-	-	-	-	11.62	-	-	-	-
Montserrat	-	-	1.00	-	-	-	3.81	-	-	-	-	-	-
Puerto Rico	-	100.00	3.63	-	11.68	100.00	-	-	1.05	68.39	-	-	-
Sint Maarten	-	37.54	1.10	-	-	-	-	-	-	-	-	-	-
St. Kitts and Nevis	-	88.26	4.18	-	-	48.86	4.09	-	-	91.93	-	-	54.31
St. Lucia	-	86.26	20.68	-	-	100.00	-	-	-	80.16	-	-	45.36
St. Pierre and Miquelon	-	-	3.04	-	-	-	-	-	-	-	-	-	-
St. Vincent and the Grenadines	-	87.67	10.49	-	-	100.00	5.68	-	-	84.92	-	-	62.35
Suriname	-	77.24	38.01	-	3.58	100.00	42.63	77.05	1.93	92.69	-	86.34	55.95

Table 18 Normalized values of green growth indicators for efficient and sustainable resource use (continued)

Country	Regional Rank	Indicators											
		EE1	EE2	EE3	EW1	EW2	EW3	SL1	SL2	SL3	ME1	ME2	ME3
Trinidad and Tobago	-	1.00	1.88	16.10	22.59	100.00	1.60	1.00	-	87.68	92.58	99.47	57.32
Turks and Caicos Islands	-	82.86	1.98	-	-	-	6.57	-	-	-	-	-	-
United States Virgin Islands	-	-	7.53	-	-	-	-	-	7.24	-	-	-	-
Venezuela	-	-	29.05	10.07	3.83	100.00	-	67.88	1.00	87.17	97.94	96.47	48.77
ASIA													
Japan	1	82.05	15.23	68.15	22.06	77.31	-	72.46	3.03	80.91	99.90	70.81	67.76
Thailand	2	73.92	46.69	48.28	3.68	100.00	6.87	84.36	4.58	96.19	87.47	86.26	59.49
Cyprus	3	86.85	24.39	39.87	24.92	93.49	1.21	72.50	39.12	81.04	98.38	56.64	56.16
Georgia	4	79.09	54.82	16.98	4.94	100.00	1.29	71.37	1.51	93.31	91.46	94.94	58.46
China	5	60.83	26.28	54.55	9.70	63.92	-	-	5.93	95.94	78.92	78.21	70.85
Philippines	6	86.93	45.72	31.88	2.25	92.75	8.89	91.69	15.62	92.43	92.54	100.00	48.83
Singapore	7	86.19	2.40	67.19	-	1.00	-	-	4.78	93.44	97.38	1.00	-
Vietnam	8	71.77	46.25	43.85	1.86	100.00	23.71	65.61	17.25	88.80	61.59	90.10	62.04
Indonesia	9	83.90	41.19	39.84	2.39	90.69	10.94	88.75	4.36	94.19	89.18	98.52	50.33
Turkey	10	88.26	23.87	39.70	6.17	59.65	-	90.82	14.80	90.56	95.86	84.55	66.74
Malaysia	11	74.06	11.23	42.13	22.69	100.00	11.53	98.34	1.93	98.95	91.76	72.55	1.00
Nepal	12	59.87	100.00	19.25	1.76	100.00	-	85.38	3.39	54.86	67.00	100.00	58.90
Brunei Darussalam	13	63.27	1.02	25.50	-	100.00	6.14	-	-	95.19	96.32	78.80	-
Kyrgyz Republic	14	63.94	45.71	20.32	1.25	50.42	-	93.55	2.74	96.69	50.79	94.88	68.02
Armenia	15	81.98	22.44	22.31	2.26	41.10	-	47.09	1.34	94.44	83.76	96.54	66.16
South Korea	16	66.97	7.13	54.78	20.99	1.00	-	48.42	13.44	64.13	98.41	67.20	66.11
Laos	17	64.82	81.67	25.30	1.62	100.00	-	-	3.68	76.65	55.37	97.66	64.35
Israel	18	87.74	8.16	44.94	52.73	1.00	-	66.99	8.74	84.67	98.60	72.54	56.87
Cambodia	19	69.85	100.00	21.37	3.77	100.00	12.71	96.51	5.12	90.18	70.40	100.00	29.63
Kazakhstan	20	57.21	4.57	28.85	3.61	84.85	-	100.00	1.74	99.70	83.30	81.37	73.67
Azerbaijan	21	75.91	4.80	17.16	2.37	43.11	-	93.31	7.55	87.93	90.64	98.76	66.81
Mongolia	22	60.31	7.47	14.73	9.46	100.00	-	-	1.00	98.20	44.79	87.92	64.50
Sri Lanka	23	94.40	100.00	21.99	3.18	1.00	15.06	99.70	23.83	94.19	92.43	100.00	51.78
Myanmar	24	80.13	100.00	12.29	1.61	100.00	42.21	90.25	1.79	69.14	86.07	100.00	50.66
Lebanon	25	82.57	10.07	25.84	10.48	33.10	-	82.09	2.57	94.44	91.87	84.91	48.73
India	26	75.03	62.04	40.70	2.05	17.85	4.87	69.77	9.97	76.40	82.70	100.00	65.95
Bangladesh	27	89.29	60.14	21.30	3.22	100.00	6.46	66.49	1.05	48.35	85.14	100.00	58.46
Maldives	28	88.26	3.15	24.18	-	100.00	60.07	-	-	-	-	83.40	45.25
Jordan	29	78.65	14.85	24.90	14.21	1.00	-	82.25	2.18	89.93	87.14	95.36	40.94
Qatar	30	56.32	1.00	50.32	75.80	1.00	-	-	-	1.00	96.17	85.69	-
Saudi Arabia	31	66.15	1.03	35.35	11.50	1.00	-	86.44	1.09	100.00	93.20	89.34	43.67
Oman	32	50.11	1.00	41.35	15.04	1.00	11.53	-	1.02	87.17	88.19	92.46	61.19

Table 18 Normalized values of green growth indicators for efficient and sustainable resource use (continued)

Country	Regional Rank	Indicators											
		EE1	EE2	EE3	EW1	EW2	EW3	SL1	SL2	SL3	ME1	ME2	ME3
Uzbekistan	33	42.94	3.87	21.32	1.45	1.00	-	49.65	1.03	90.93	75.04	98.34	72.17
Kuwait	34	56.99	1.06	30.50	39.00	1.00	1.41	-	1.11	80.41	95.15	38.68	55.67
Pakistan	35	73.18	81.40	16.21	1.50	1.00	4.26	65.09	2.49	62.62	77.05	100.00	53.99
Afghanistan	-	94.47	42.26	1.00	1.27	41.08	-	-	1.02	96.69	79.52	100.00	28.64
Bahrain	-	46.64	1.00	32.88	30.03	1.00	2.28	-	-	56.61	92.64	85.90	-
Bhutan	-	46.19	100.00	8.13	3.26	100.00	-	90.37	11.76	92.94	76.99	92.39	-
Hong Kong	-	97.80	1.38	64.73	-	-	-	-	-	93.69	-	-	17.36
Iran	-	40.28	2.92	30.23	2.62	1.00	4.79	92.49	1.58	95.44	87.32	87.12	67.10
Iraq	-	58.76	1.92	8.36	2.95	56.18	1.15	93.69	1.01	93.94	93.71	100.00	16.02
Macao	-	100.00	27.98	-	-	-	-	-	-	-	-	-	60.49
North Korea	-	-	65.83	-	1.54	94.57	-	-	-	93.19	-	100.00	47.25
Palestine	-	86.34	25.52	-	13.63	25.24	-	-	10.52	94.19	-	-	-
Syria	-	-	2.81	12.22	1.30	1.00	-	100.00	2.20	96.69	-	100.00	-
Tajikistan	-	70.44	77.03	13.64	1.26	27.71	-	93.09	2.55	89.93	78.36	100.00	51.36
Timor-Leste	-	92.40	36.41	-	1.78	93.53	-	-	100.00	84.92	39.76	-	29.44
Turkmenistan	-	8.86	1.11	15.91	1.50	1.00	-	-	-	98.20	86.26	76.06	64.68
United Arab Emirates	-	74.95	1.50	65.91	28.48	1.00	-	-	11.21	42.33	97.57	37.19	44.14
Yemen	-	-	9.22	11.24	2.85	1.00	28.04	100.00	-	97.19	77.52	100.00	11.07
Taiwan	-	-	-	54.38	-	-	-	-	-	-	-	-	-
EUROPE													
Sweden	1	78.94	100.00	69.03	74.93	100.00	1.33	76.24	100.00	89.68	98.17	60.96	72.42
Austria	2	86.78	66.19	68.16	39.48	100.00	-	67.15	100.00	83.92	98.68	60.07	79.50
Czech Republic	3	75.47	29.36	56.98	43.32	100.00	-	64.52	100.00	94.44	96.80	74.45	73.56
Denmark	4	91.22	69.05	67.05	98.68	92.22	2.95	71.08	87.92	87.05	98.57	71.81	67.03
Switzerland	5	94.77	47.62	64.13	100.00	100.00	-	26.09	89.22	76.90	100.00	61.12	70.45
Slovakia	6	76.65	24.92	35.87	52.48	100.00	-	80.07	84.24	96.44	96.95	57.13	65.79
Germany	7	86.41	31.42	73.83	42.53	83.17	1.10	62.36	62.04	84.42	98.92	74.36	76.70
Finland	8	67.85	86.16	66.32	43.18	100.00	1.70	82.49	100.00	91.93	96.92	55.92	75.75
United Kingdom	9	89.81	22.27	66.90	100.00	100.00	1.42	41.56	23.18	82.92	99.84	74.18	76.46
Italy	10	89.15	33.89	58.89	19.33	90.10	1.24	75.59	100.00	86.67	99.64	76.86	76.72
Hungary	11	80.13	27.07	48.53	10.28	100.00	-	81.97	33.89	97.44	95.16	86.39	65.70
Estonia	12	65.86	56.55	45.06	6.05	100.00	3.05	84.91	100.00	96.44	91.79	66.48	77.64
Latvia	13	82.57	80.46	28.85	53.37	100.00	2.72	87.73	100.00	97.19	95.61	75.66	74.06
Lithuania	14	83.68	65.52	35.56	59.38	100.00	1.89	83.12	68.67	96.94	94.15	56.46	74.58
Portugal	15	87.96	54.19	55.78	12.09	100.00	3.32	70.97	50.60	88.18	96.68	80.43	71.54
France	16	82.42	30.38	62.29	31.87	100.00	1.42	68.41	60.07	85.67	99.36	76.41	64.96
Croatia	17	84.05	64.27	38.36	23.32	100.00	2.70	69.21	58.85	94.94	96.92	84.99	69.72
Romania	18	88.70	45.39	-	11.33	100.00	1.30	99.53	21.24	95.94	86.06	83.37	81.40
Slovenia	19	80.20	41.46	45.17	16.92	100.00	1.01	49.80	66.03	88.18	97.82	73.41	72.90
Spain	20	86.93	34.49	61.87	14.63	65.23	2.33	82.97	72.38	92.94	99.29	73.27	71.92
Norway	21	81.31	100.00	57.51	45.97	100.00	14.18	47.12	40.12	74.40	98.89	52.53	76.94

Table 18 Normalized values of green growth indicators for efficient and sustainable resource use (continued)

Country	Regional Rank	Indicators											
		EE1	EE2	EE3	EW1	EW2	EW3	SL1	SL2	SL3	ME1	ME2	ME3
Poland	22	80.27	22.69	52.43	18.17	83.72	1.21	68.08	28.79	93.94	93.40	73.41	77.77
Netherlands	23	84.19	15.22	67.94	34.58	100.00	1.57	-	30.22	52.60	100.00	68.29	79.17
Belarus	24	60.83	14.91	21.24	13.28	100.00	-	74.17	-	92.94	82.97	100.00	77.55
Luxembourg	25	90.03	31.87	55.36	100.00	100.00	-	9.12	37.58	67.38	99.79	1.00	75.16
Greece	26	85.52	35.40	41.60	7.31	100.00	2.07	89.46	68.14	93.44	97.84	69.13	55.50
Bulgaria	27	70.66	38.61	36.09	4.14	70.10	1.11	85.94	22.30	98.20	85.42	89.63	66.35
Belgium	28	79.31	21.54	68.58	41.08	52.34	1.18	11.02	55.68	60.87	99.21	73.16	81.82
Serbia	29	68.22	41.73	29.85	3.14	100.00	-	97.43	5.63	94.94	87.94	78.53	72.63
Ireland	30	96.98	21.69	51.49	86.47	100.00	1.56	-	22.87	64.88	99.07	76.46	75.87
Albania	31	88.85	74.70	23.99	4.78	100.00	-	80.70	1.53	88.43	90.83	91.46	71.75
Ukraine	32	51.88	14.30	29.50	3.38	100.00	-	97.68	7.22	99.20	73.69	90.75	72.28
Iceland	33	11.44	100.00	42.26	23.51	100.00	44.15	-	5.09	98.95	97.18	57.60	75.93
Russia	34	47.37	7.13	27.13	8.12	100.00	-	98.85	3.34	98.95	91.90	93.38	82.45
Moldova	35	69.78	50.59	17.40	3.89	100.00	-	97.39	7.32	98.45	85.88	100.00	58.91
Montenegro	36	81.98	79.21	26.77	9.10	-	1.00	-	15.43	93.69	-	70.97	67.19
Andorra	-	-	-	36.64	-	-	-	-	-	1.09	-	-	-	-
Bosnia and Herzegovina	-	59.20	69.18	28.80	-	100.00	1.00	78.50	1.34	96.19	88.66	94.48	70.61
Faeroe Islands	-	-	12.28	-	-	-	100.00	-	70.33	32.31	-	-	-
Gibraltar	-	-	1.00	-	-	-	-	-	-	-	-	-	-
Guernsey	-	-	1.00	-	-	-	-	-	-	-	-	-	-
Isle of Man	-	-	5.06	-	-	-	-	-	-	-	-	-	-
Jersey	-	-	34.50	-	-	-	-	-	-	-	-	-	-
Liechtenstein	-	-	100.00	-	-	-	-	-	100.00	-	-	-	-
Macedonia	-	83.38	41.20	25.45	4.66	99.47	-	87.65	3.61	95.69	90.22	87.93	67.33
Malta	-	97.35	15.38	28.97	67.59	1.00	1.17	32.16	3.40	75.65	98.15	68.34	56.77
Kosovo	-	-	52.82	-	-	-	-	-	-	-	-	-	-
OCEANIA													
New Zealand	1	76.65	60.78	63.30	13.78	100.00	11.64	-	8.06	72.14	96.91	71.50	76.98
Australia	2	75.40	19.58	59.28	27.10	100.00	-	93.19	83.73	98.45	96.68	45.35	68.04
Fiji	3	92.25	54.68	14.03	16.97	100.00	11.28	96.43	81.56	94.69	92.24	96.78	57.43
American Samoa	-	-	6.50	-	-	-	-	-	-	-	-	-	-
Cook Islands	-	-	9.57	-	-	-	6.18	-	14.31	97.70	-	-	-
French Polynesia	-	-	15.55	-	-	-	35.04	-	29.89	96.94	-	-	63.72

Table 18 Normalized values of green growth indicators for efficient and sustainable resource use (continued)

Country	Regional Rank	Indicators											
		EE1	EE2	EE3	EW1	EW2	EW3	SL1	SL2	SL3	ME1	ME2	ME3
Guam	-	-	6.85	-	-	-	-	-	-	-	-	-	-
Kiribati	-	62.97	80.20	-	-	-	-	-	40.15	-	-	-	51.29
Marshall Islands	-	33.11	23.57	-	-	-	100.00	-	-	-	-	-	-
Micronesia, Fed. Sts.	-	66.30	4.37	-	-	-	100.00	-	-	87.42	-	-	-
Nauru	-	69.41	2.27	-	-	-	-	-	-	-	-	-	-
New Caledonia	-	-	9.54	-	-	-	-	-	1.42	93.44	-	-	57.09
Niue	-	-	45.96	-	-	-	-	-	8.15	100.00	-	-	-
Northern Mariana Islands	-	-	1.00	-	-	-	-	-	-	-	-	-	-
Palau	-	39.69	1.10	-	-	-	26.08	-	-	-	-	-	-
Papua New Guinea	-	73.62	96.44	8.29	-	100.00	-	94.40	35.66	99.20	74.39	100.00	61.85
Pitcairn	-	-	-	-	-	-	-	-	-	-	-	-	-
Samoa	-	76.13	71.53	-	-	-	46.88	-	100.00	88.18	-	96.20	66.74
Solomon Islands	-	71.33	94.42	21.13	-	-	-	-	34.52	98.45	-	-	57.37
Tokelau	-	-	-	-	-	-	-	-	-	-	-	-	-
Tonga	-	85.23	4.29	-	-	-	34.43	100.00	17.16	94.44	-	-	-
Tuvalu	-	85.38	20.03	-	-	-	-	-	-	-	-	-	-
Vanuatu	-	79.54	60.28	-	-	-	9.18	-	100.00	85.67	-	96.41	55.28
Wallis and Futuna Islands	-	-	2.29	-	-	-	-	-	-	-	-	-	-

Definitions:
EE1: Ratio of total primary energy supply to GDP (MJ per $ 2017 PPP GDP)
EE2: Share renewable to total final energy consumption (Percent)
EE3: Efficiency in sustainable transport (Index)
EW1: Water use efficiency (USD per m3)
EW2: Share of freshwater withdrawal to available freshwater resources (Percent)
EW3: Sustainable fisheries as a proportion of GDP (Percent)
SL1: Soil nutrient budget (Nitrogen kilogram per hectare)
SL2: Share agriculture organic to total agriculture land area (Percent)
SL3: Share of ruminant livestock population to agricultural area (Percent)
ME1: Total domestic material consumption (DMC) per unit of GDP (Kilogram per GDP)
ME2: Total material footprint (MF) per capita population (Tons per capita)
ME3: Share of food loss to production and food waste to food consumption (Percent)

Table 19 Normalized values of green growth indicators for natural capital protection

Country	Regional Rank	Indicators											
		EQ1	EQ2	EQ3	GE1	GE2	GE3	BE1	BE2	BE3	CV1	CV2	CV3
AFRICA													
Tanzania	1	78.74	57.64	86.57	99.16	83.80	65.02	49.66	100.00	12.22	49.42	25.21	100.00
Morocco	2	74.82	89.92	85.81	91.51	91.43	87.06	41.11	75.66	10.18	80.25	62.75	100.00
Botswana	3	85.40	63.46	92.61	83.08	69.08	30.44	35.06	100.00	36.85	95.81	-	100.00
Cabo Verde	4	72.38	87.48	81.64	94.82	94.86	94.42	13.58	66.20	22.94	83.72	100.00	1.11
Mauritius	5	95.03	98.77	75.29	85.02	50.67	96.66	12.11	100.00	29.68	1.00	66.92	1.08
Uganda	6	54.86	55.54	85.73	99.46	88.42	78.76	69.44	71.29	23.17	58.72	-	100.00
Kenya	7	79.29	39.09	90.42	98.45	92.26	73.45	38.24	37.95	47.28	65.99	23.00	78.04
Senegal	8	65.79	35.52	88.70	97.21	85.60	78.68	22.48	100.00	11.23	89.47	22.98	100.00
Ghana	9	72.45	63.94	88.35	97.59	84.47	89.99	59.92	100.00	23.32	72.40	11.27	58.16
Ethiopia	10	67.70	18.12	95.42	99.48	89.80	68.33	18.95	89.77	29.11	74.05	-	100.00
South Africa	11	83.17	71.39	74.57	65.27	77.91	83.95	36.26	83.20	20.77	62.08	35.93	76.24
Tunisia	12	69.17	96.17	82.76	88.06	85.60	88.01	41.73	27.23	14.57	95.15	50.52	39.19
Malawi	13	84.88	30.89	94.50	99.72	86.87	87.90	51.44	100.00	19.17	66.95	-	100.00
Cameroon	14	30.01	1.00	89.29	98.58	31.25	83.94	34.52	100.00	62.21	72.28	14.17	77.14
Zimbabwe	15	86.34	49.91	91.80	96.17	86.21	76.07	81.84	100.00	22.93	64.43	-	100.00
Rwanda	16	62.98	52.80	73.77	99.71	96.60	91.45	38.66	65.68	34.70	79.95	-	67.84
Angola	17	75.05	30.25	88.08	95.95	83.46	58.35	37.49	100.00	8.00	87.72	4.26	37.70
Gambia	18	73.27	59.64	89.54	98.95	89.75	82.68	60.74	100.00	10.65	96.42	41.24	11.02
Madagascar	19	86.02	1.00	89.27	99.52	95.67	72.91	32.75	100.00	38.69	56.49	29.36	18.20
Burundi	20	67.79	1.00	80.23	99.87	96.43	90.84	70.18	64.41	28.57	81.31	-	56.67
Lesotho	21	79.91	1.00	97.42	94.46	76.77	80.60	17.32	7.62	18.02	89.92	-	2.91
Eswatini	22	92.01	31.68	88.47	95.66	76.87	73.85	31.26	100.00	18.60	67.78	-	32.04
Egypt	23	14.18	89.91	82.99	88.84	86.41	90.53	37.59	1.26	28.71	86.03	43.58	85.71
Nigeria	24	31.12	1.00	87.30	97.00	86.33	88.10	57.51	100.00	32.12	74.65	8.51	86.14
Niger	25	6.31	1.00	85.00	99.67	85.88	59.58	71.26	6.08	9.87	88.93	-	100.00
Algeria	-	67.81	96.18	78.28	83.34	66.80	91.10	52.28	5.72	7.79	84.51	16.93	53.11
Benin	-	67.68	38.63	91.21	97.03	91.53	85.06	23.00	100.00	24.92	83.75	8.66	100.00
British Indian Ocean Territory	-	-	-	-	-	-	-	99.97	-	-	66.48	42.07	-
Burkina Faso	-	63.29	1.00	89.92	99.11	95.51	64.35	72.57	100.00	12.42	97.71	-	100.00
Central African Republic	-	47.80	1.00	82.57	99.80	1.00	1.00	73.33	100.00	51.13	88.95	-	100.00
Chad	-	37.55	1.00	91.92	99.80	84.18	1.00	59.97	21.97	22.08	85.27	-	100.00
Comoros	-	88.24	46.70	91.72	98.66	98.77	89.37	61.16	100.00	16.24	58.59	24.82	1.92
Congo Republic	-	59.16	42.73	87.91	97.24	87.00	77.51	48.50	100.00	46.91	94.13	11.11	100.00
Cote d'Ivoire	-	82.29	52.93	84.52	98.34	92.82	92.74	80.30	57.08	22.81	83.04	24.71	100.00
Djibouti	-	60.38	57.03	89.07	97.74	92.75	77.17	1.55	2.42	21.60	68.11	48.61	10.03
DR Congo	-	61.09	37.41	87.03	100.00	90.67	82.65	48.59	100.00	54.35	79.50	1.00	100.00

Table 19 Normalized values of green growth indicators for natural capital protection (continued)

Country	Regional Rank	Indicators											
		EQ1	EQ2	EQ3	GE1	GE2	GE3	BE1	BE2	BE3	CV1	CV2	CV3
Equatorial Guinea	-	51.80	82.42	88.47	76.11	1.00	99.53	100.00	100.00	50.54	65.49	17.09	13.94
Eritrea	-	57.61	1.00	88.47	98.97	83.72	56.63	8.43	62.21	17.73	81.62	47.46	22.69
French Southern Territories	-	-	-	-	-	-	-	89.29	-	-	67.90	-	-
Gabon	-	61.67	78.80	84.41	89.92	71.73	92.07	72.85	100.00	52.56	91.97	4.56	100.00
Guinea	-	82.10	24.87	94.85	98.99	87.13	52.06	74.77	100.00	31.30	81.54	8.27	100.00
Guinea-Bissau	-	77.96	1.00	88.40	99.35	93.06	65.45	55.53	100.00	20.40	86.03	23.33	86.21
Liberia	-	91.10	15.57	88.60	98.84	60.82	96.77	38.13	100.00	48.43	83.17	19.29	9.88
Libya	-	50.67	95.91	75.29	60.03	1.00	86.48	1.00	1.72	12.38	94.48	5.90	3.11
Mali	-	68.20	7.06	91.44	98.74	94.87	45.07	4.99	64.46	11.71	96.53	-	61.36
Mauritania	-	58.29	38.40	90.83	95.87	96.33	34.35	12.98	2.83	13.18	95.79	19.72	8.92
Mayotte	-	-	-	-	-	-	-	68.24	-	-	77.55	53.88	-
Mozambique	-	87.41	51.05	93.53	99.13	91.13	58.18	47.93	100.00	24.41	65.85	14.23	99.62
Namibia	-	82.88	59.47	88.32	92.01	86.76	20.26	88.30	48.96	16.57	94.76	43.15	100.00
Reunion	-	-	-	-	-	-	-	70.14	-	29.87	28.36	-	-
Sao Tome and Principe	-	79.34	87.65	90.53	97.02	93.95	98.56	77.27	100.00	38.53	63.16	62.27	2.79
Seychelles	-	88.65	95.05	61.20	70.98	61.49	100.00	55.29	100.00	40.91	45.00	100.00	1.37
Sierra Leone	-	87.04	27.91	92.07	99.52	92.87	83.90	50.08	100.00	19.94	87.92	8.17	25.18
Somalia	-	75.44	1.00	88.47	99.91	92.96	54.82	1.00	57.94	24.67	83.99	47.65	7.06
South Sudan	-	60.35	1.00	82.94	99.55	81.73	1.00	44.49	66.96	-	87.91	-	100.00
St. Helena	-	-	-	-	-	-	-	39.62	-	-	41.51	35.24	-
Sudan	-	49.43	69.58	94.86	97.87	91.61	44.79	17.28	59.90	13.93	87.56	9.35	21.19
Togo	-	71.32	1.00	89.12	98.79	89.86	88.58	80.70	100.00	28.93	75.64	17.10	100.00
Western Sahara	-	-	-	-	-	-	-	-	-	10.18	89.02	29.67	-
Zambia	-	80.56	36.84	87.02	98.04	87.59	21.90	56.53	100.00	11.16	78.77	-	100.00
THE AMERICAS													
Mexico	1	87.83	96.42	69.92	82.72	77.84	76.49	44.76	100.00	13.11	45.63	92.65	100.00
Brazil	2	96.98	94.81	72.96	91.04	86.90	27.74	47.65	100.00	40.70	82.81	26.71	100.00
Canada	3	100.00	99.85	49.56	28.22	37.11	50.11	32.42	100.00	21.88	93.88	50.66	48.50
United States	4	100.00	99.88	42.00	30.26	49.20	64.50	31.75	100.00	22.86	71.54	44.80	100.00
Paraguay	5	97.87	94.82	80.50	94.49	61.42	1.00	47.87	100.00	17.13	92.06	-	100.00
Peru	6	83.52	93.71	80.79	92.24	87.39	74.99	39.59	100.00	55.91	53.66	20.34	97.37
Chile	7	87.70	99.04	72.39	79.19	83.70	83.13	36.95	100.00	51.67	60.88	32.08	100.00
El Salvador	8	83.87	92.66	80.96	95.61	87.73	88.55	49.20	100.00	27.24	67.39	26.30	16.78
Dominican Republic	9	95.85	88.67	72.48	89.22	88.74	74.09	84.41	100.00	20.10	54.57	38.24	100.00
Ecuador	10	94.55	95.38	76.62	89.40	79.65	77.93	47.21	100.00	41.88	46.68	23.56	100.00
Colombia	11	92.72	96.45	81.36	92.91	78.81	62.11	51.60	100.00	43.52	55.47	19.34	100.00

Table 19 Normalized values of green growth indicators for natural capital protection (continued)

Country	Regional Rank	Indicators											
		EQ1	EQ2	EQ3	GE1	GE2	GE3	BE1	BE2	BE3	CV1	CV2	CV3
Bolivia	12	87.11	91.21	85.29	90.96	84.65	21.82	52.93	100.00	31.31	79.65	-	100.00
Costa Rica	13	93.62	97.64	78.14	92.54	81.86	75.68	45.79	100.00	46.26	67.99	55.27	23.26
Nicaragua	14	91.51	92.79	81.03	96.39	89.48	47.31	66.91	100.00	22.02	69.85	29.65	100.00
Bahamas	15	91.79	95.77	51.26	72.86	76.50	97.64	20.83	100.00	10.19	49.08	100.00	63.74
Uruguay	16	100.00	98.57	73.82	91.47	75.70	1.00	32.95	67.18	23.98	75.22	79.71	17.83
Argentina	17	96.31	98.23	70.28	81.69	66.71	11.34	39.43	62.27	43.73	73.03	28.36	55.30
Honduras	18	88.15	84.16	83.12	95.37	85.73	76.68	71.62	100.00	25.41	56.51	32.86	80.67
Panama	19	98.44	93.18	73.56	88.79	73.51	74.21	38.08	100.00	34.51	54.01	55.72	39.39
Guatemala	20	84.32	78.78	87.96	95.04	89.03	81.08	32.07	100.00	29.65	52.04	16.16	75.22
Anguilla	-	-	-	-	-	-	-	7.67	-	49.50	87.09	100.00	-
Antigua and Barbuda	-	90.39	94.79	77.48	74.53	1.00	93.70	28.71	100.00	49.50	81.65	93.27	2.89
Aruba	-	-	-	38.98	-	-	-	31.23	14.59	-	92.89	100.00	2.03
Barbados	-	85.42	95.75	55.52	79.93	1.00	94.73	3.28	86.32	-	82.70	90.87	1.06
Belize	-	85.50	91.90	79.91	91.83	66.02	68.19	44.77	100.00	49.73	61.35	99.93	100.00
Bermuda	-	98.16	96.13	9.55	-	-	-	28.70	100.00	-	33.87	100.00	1.00
Bonaire, Saint Eustatius and Saba	-	-	-	-	-	-	-	68.32	-	-	79.65	-	-
British Virgin Islands	-	-	-	26.97	-	-	-	11.08	100.00	49.50	59.51	100.00	1.17
Cayman Islands	-	-	-	27.54	-	-	-	55.05	100.00	-	69.10	96.20	1.76
Cuba	-	89.18	95.12	83.05	89.94	86.13	71.54	73.53	100.00	27.23	42.62	17.58	53.69
Curacao	-	-	-	88.61	-	-	-	45.35	1.92	19.24	74.83	100.00	2.89
Dominica	-	89.42	94.05	87.08	88.48	89.40	83.13	17.50	100.00	-	42.29	75.22	5.94
Falkland Islands	-	-	-	-	-	-	-	14.39	-	1.00	53.78	46.57	-
French Guiana	-	-	-	-	-	-	-	79.23	-	85.29	89.20	30.31	-
Greenland	-	98.21	99.74	37.22	-	-	-	30.53	1.00	-	84.56	41.66	100.00
Grenada	-	85.82	94.45	80.06	87.63	1.00	94.57	43.06	100.00	26.26	46.28	100.00	2.63
Guadeloupe	-	-	-	-	-	-	-	89.53	-	81.14	35.03	-	-
Guyana	-	86.21	86.09	82.92	85.59	88.62	12.64	4.87	100.00	100.00	78.55	27.27	39.91
Haiti	-	94.40	40.00	84.86	98.73	95.18	87.82	23.41	75.70	22.84	52.61	9.94	3.59
Jamaica	-	96.21	95.60	73.98	86.67	91.88	94.13	24.24	100.00	38.16	43.26	81.48	11.31
Martinique	-	-	-	-	-	-	-	98.34	-	71.67	58.62	-	-
Montserrat	-	-	-	-	-	-	-	29.24	-	-	67.91	100.00	-
Puerto Rico	-	100.00	95.46	14.17	-	-	-	41.10	100.00	18.89	46.03	-	15.79
Saint-Martin	-	-	-	64.32	-	-	-	74.50	100.00	29.75	88.56	97.62	100.00
Sint Maarten	-	-	-	-	-	-	-	6.68	64.37	-	98.48	100.00	60.39

Table 19 Normalized values of green growth indicators for natural capital protection (continued)

Country	Regional Rank	Indicators											
		EQ1	EQ2	EQ3	GE1	GE2	GE3	BE1	BE2	BE3	CV1	CV2	CV3
South Georgia and South Sandwich Is.	-	-	-	-	-	-	-	1.00	-	-	82.79	-	-
St. Barths	-	-	-	-	-	-	-	64.07	-	29.75	98.33	-	-
St. Kitts and Nevis	-	-	91.86	56.74	77.09	51.61	94.22	54.73	100.00	49.50	54.47	100.00	2.84
St. Lucia	-	86.18	93.45	68.76	90.17	58.20	93.35	45.49	100.00	66.98	66.91	100.00	7.82
St. Pierre and Miquelon	-	-	-	-	-	-	-	2.62	-	7.06	21.24	46.59	-
St. Vincent and the Grenadines	-	86.40	92.70	79.47	88.34	86.21	94.52	49.03	100.00	51.61	58.60	95.40	4.42
Suriname	-	83.53	88.83	89.41	83.33	55.01	64.73	52.91	100.00	84.80	97.73	12.98	63.21
Trinidad and Tobago	-	84.27	95.97	60.88	41.39	12.58	93.53	22.18	100.00	21.88	66.99	27.90	15.77
Turks and Caicos Islands	-	-	-	-	-	-	-	28.46	65.49	31.54	74.29	99.41	3.84
United States Virgin Islands	-	99.70	95.79	1.00	-	-	-	33.36	100.00	11.93	70.78	-	8.21
Venezuela	-	92.19	94.12	76.69	77.68	50.31	57.47	50.00	100.00	48.28	70.16	18.21	100.00
Asia	-	-	-	-	-	-	-	-	-	-	-	-	-
Japan	1	98.10	99.86	75.94	59.72	88.21	94.86	66.21	100.00	27.10	60.20	23.96	74.53
Thailand	2	81.88	93.67	72.11	83.08	67.31	69.72	62.54	100.00	33.92	61.53	70.35	92.74
Cyprus	3	91.87	99.86	54.16	71.87	79.73	89.30	60.66	100.00	10.30	98.61	60.79	13.37
Georgia	4	86.41	96.93	84.70	88.40	63.98	82.75	39.55	100.00	28.56	80.80	78.32	48.25
China	5	52.45	98.15	79.91	66.11	75.32	85.51	10.54	100.00	15.52	56.08	43.38	100.00
Philippines	6	91.01	87.95	89.97	93.94	93.14	82.51	43.90	100.00	52.47	46.02	100.00	24.03
Singapore	7	89.88	99.83	76.64	61.16	13.46	99.89	13.08	100.00	32.34	75.55	55.30	19.06
Vietnam	8	78.12	96.57	92.22	87.74	87.41	77.34	37.22	100.00	15.48	51.91	40.72	22.48
Indonesia	9	92.75	74.59	82.23	90.10	82.51	71.88	30.18	100.00	42.33	60.61	35.96	39.63
Turkey	10	61.76	95.49	69.76	77.53	88.02	82.26	3.75	100.00	12.11	79.74	19.24	2.40
Malaysia	11	93.27	95.90	69.37	64.93	57.70	84.96	31.95	100.00	49.47	51.59	58.98	66.89
Nepal	12	1.00	76.43	95.73	98.13	88.01	71.72	48.42	100.00	41.83	71.63	-	100.00
Brunei Darussalam	13	100.00	99.65	63.53	22.68	1.00	91.52	42.24	100.00	58.04	75.17	20.30	66.92
Kyrgyz Republic	14	85.80	95.60	86.73	91.99	93.14	74.63	30.86	39.83	12.12	97.18	-	50.15
Armenia	15	74.89	98.56	87.97	91.45	82.43	82.18	26.24	68.27	19.64	70.65	-	100.00
South Korea	16	83.24	99.76	71.74	43.74	63.95	91.74	33.98	100.00	29.62	49.55	12.94	30.26
Laos	17	83.16	76.96	96.32	87.71	96.84	55.78	42.51	100.00	29.06	68.13	-	100.00
Israel	18	87.31	99.88	53.99	67.53	32.11	94.51	21.68	38.68	2.78	52.70	16.50	63.94
Cambodia	19	82.60	86.86	95.00	96.92	92.15	55.14	61.50	100.00	17.00	64.23	100.00	100.00

Table 19 Normalized values of green growth indicators for natural capital protection (continued)

Country	Regional Rank	Indicators											
		EQ1	EQ2	EQ3	GE1	GE2	GE3	BE1	BE2	BE3	CV1	CV2	CV3
Kazakhstan	20	95.74	97.74	80.24	43.93	60.58	57.73	16.44	8.33	20.05	77.50	-	24.59
Azerbaijan	21	88.93	95.31	78.37	85.15	1.00	77.41	36.20	79.12	-	84.95	-	41.47
Mongolia	22	66.44	93.95	31.55	68.72	80.45	1.00	43.39	54.01	13.68	92.71	-	100.00
Sri Lanka	23	98.77	95.38	91.22	95.81	91.02	91.99	42.58	100.00	19.28	27.80	52.65	25.77
Myanmar	24	71.51	82.95	92.84	97.32	95.88	51.57	29.12	100.00	29.99	66.39	20.31	34.87
Lebanon	25	77.02	95.41	74.05	81.34	78.37	96.46	15.91	81.91	15.15	88.23	47.72	8.64
India	26	9.86	57.31	90.06	91.79	95.87	83.84	22.51	100.00	16.87	45.77	51.58	26.51
Bangladesh	27	43.33	76.73	93.31	97.76	95.64	83.56	19.80	85.26	15.51	56.80	11.22	36.85
Maldives	28	100.00	94.39	63.11	83.31	78.49	100.00	1.00	16.92	32.18	73.29	99.38	1.38
Jordan	29	74.36	97.39	78.58	88.93	75.42	96.48	15.37	7.40	14.14	94.07	50.41	14.24
Qatar	30	9.51	97.93	66.15	1.00	15.31	96.54	60.39	1.00	1.00	69.64	55.92	35.63
Saudi Arabia	31	13.12	96.70	63.53	28.84	11.30	94.30	21.67	3.65	7.15	83.58	38.09	34.21
Oman	32	65.32	95.29	68.76	30.30	62.74	89.00	12.25	1.05	25.87	80.47	41.97	8.46
Uzbekistan	33	79.43	97.32	90.49	84.31	32.36	67.10	23.05	49.09	12.13	95.21	-	25.75
Kuwait	34	43.44	97.96	58.33	3.17	1.00	96.33	42.44	3.04	-	73.65	15.70	81.66
Pakistan	35	46.18	46.06	88.71	95.59	95.59	73.77	30.82	29.77	18.39	77.10	13.45	72.83
Afghanistan	-	47.71	79.80	88.48	99.19	48.03	87.88	5.37	11.78	-	71.87	-	1.77
Bahrain	-	32.21	96.37	52.30	7.21	1.00	99.02	1.00	5.93	-	58.72	39.86	13.36
Bhutan	-	68.87	84.88	88.50	91.61	81.13	78.68	43.49	100.00	63.20	65.45	-	100.00
Hong Kong	-	-	-	44.47	-	-	-	39.37	-	-	72.66	-	100.00
Iran	-	67.70	95.97	84.16	64.61	48.27	87.84	48.39	39.35	32.89	73.72	13.40	57.22
Iraq	-	42.45	95.08	74.06	78.19	87.03	94.14	5.16	12.07	12.97	65.80	11.85	12.23
Macao	-	-	-	55.92	-	-	-	1.00	-	-	86.67	-	-
North Korea	-	75.47	96.78	-	96.85	81.28	94.07	1.00	100.00	15.39	86.91	22.03	10.24
Palestine	-	74.11	96.00	75.57	-	-	-	15.90	9.87	-	82.34	-	-
Syria	-	62.37	96.42	84.64	92.75	82.74	88.88	1.00	17.56	12.55	89.94	9.74	5.86
Tajikistan	-	59.70	85.11	84.46	96.35	95.90	78.45	22.15	18.70	-	97.86	-	100.00
Timor-Leste	-	89.68	77.09	96.50	97.76	6.99	77.41	39.27	100.00	35.64	75.63	52.41	33.43
Turkmenistan	-	86.88	95.59	93.43	43.13	1.00	52.07	14.86	52.14	1.98	96.14	-	24.55
United Arab Emirates	-	65.54	96.88	58.96	3.15	1.00	93.60	62.82	27.02	18.19	74.65	56.14	100.00
Yemen	-	54.91	62.93	87.55	98.59	96.28	91.23	25.28	7.06	4.23	72.65	3.02	5.44
Taiwan	-	-	99.07	77.70	-	-	-	-	-	-	-	26.06	-
EUROPE													
Sweden	1	100.00	99.92	67.97	84.09	92.41	78.90	64.31	100.00	17.56	98.66	40.32	100.00
Austria	2	97.24	99.94	58.02	67.39	87.58	74.93	68.00	100.00	40.33	81.95	-	100.00
Czech Republic	3	93.23	98.91	64.32	55.56	67.44	80.95	94.90	100.00	38.13	94.91	-	100.00
Denmark	4	99.97	99.90	39.70	73.82	90.12	47.17	91.84	92.22	27.02	95.53	26.55	100.00

Table 19 Normalized values of green growth indicators for natural capital protection (continued)

Country	Regional Rank	Indicators											
		EQ1	EQ2	EQ3	GE1	GE2	GE3	BE1	BE2	BE3	CV1	CV2	CV3
Switzerland	5	99.66	99.95	49.37	79.70	91.03	80.30	44.60	100.00	45.37	95.28	-	71.88
Slovakia	6	91.57	98.86	69.97	72.21	79.72	85.91	87.83	100.00	40.52	91.76	-	100.00
Germany	7	97.74	99.92	56.52	60.83	88.38	78.87	78.84	100.00	42.82	96.85	92.94	100.00
Finland	8	100.00	99.95	59.60	63.18	80.76	67.65	76.52	100.00	14.80	98.27	23.50	100.00
United Kingdom	9	99.47	99.94	66.97	75.15	83.75	76.91	87.95	77.38	27.56	93.42	64.70	100.00
Italy	10	92.48	99.91	64.39	75.30	82.12	84.05	78.13	100.00	26.54	82.27	85.09	99.01
Hungary	11	93.39	98.44	72.41	78.27	82.58	75.97	83.07	100.00	25.80	76.70	-	100.00
Estonia	12	100.00	98.22	73.69	44.08	85.25	57.93	95.19	100.00	27.76	97.50	42.08	100.00
Latvia	13	96.18	98.04	68.69	81.65	82.73	56.84	97.00	100.00	30.32	98.02	33.15	100.00
Lithuania	14	97.93	98.00	66.32	80.98	78.93	46.88	89.96	100.00	31.40	98.07	17.09	100.00
Portugal	15	100.00	99.78	63.39	77.79	75.40	79.30	72.27	100.00	10.45	77.09	97.12	100.00
France	16	97.98	99.88	60.89	78.97	85.17	66.95	79.61	100.00	31.63	73.97	64.50	100.00
Croatia	17	91.19	98.74	68.26	81.44	80.01	79.27	78.75	100.00	40.83	82.07	100.00	100.00
Romania	18	94.86	97.67	80.06	82.41	76.01	75.92	76.77	100.00	48.92	76.74	23.06	100.00
Slovenia	19	93.29	99.27	64.03	68.76	81.68	76.39	75.12	100.00	59.10	87.71	41.43	100.00
Spain	20	100.00	99.89	66.04	74.62	85.25	73.28	63.61	100.00	13.90	73.81	68.79	100.00
Norway	21	100.00	99.93	44.57	67.55	76.84	70.71	61.12	100.00	15.42	90.96	64.85	38.11
Poland	22	87.88	98.96	76.06	62.12	70.21	74.45	90.15	100.00	38.07	94.75	20.16	100.00
Netherlands	23	97.73	99.95	63.75	59.41	86.92	67.39	87.97	64.58	13.44	90.11	65.30	100.00
Belarus	24	90.23	98.46	67.83	71.64	77.72	34.74	50.70	100.00	36.00	94.61	-	69.59
Luxembourg	25	99.59	99.91	43.50	28.56	89.51	67.43	60.07	100.00	41.55	97.35	-	100.00
Greece	26	93.07	99.95	62.60	71.94	72.68	77.78	86.31	100.00	8.91	71.67	100.00	81.87
Bulgaria	27	89.80	98.08	70.98	73.14	75.12	77.49	97.89	100.00	40.49	88.92	26.90	100.00
Belgium	28	96.78	99.88	70.40	62.26	86.96	75.12	70.17	100.00	40.79	97.11	26.26	100.00
Serbia	29	83.59	98.43	75.91	70.07	59.06	75.35	27.50	100.00	37.25	91.65	-	49.49
Ireland	30	100.00	99.95	57.31	65.14	86.26	1.00	81.05	66.43	25.64	85.47	24.27	30.64
Albania	31	90.86	96.52	72.84	91.20	86.44	68.78	64.57	100.00	-	73.36	62.56	100.00
Ukraine	32	88.51	97.61	75.86	80.98	66.68	79.57	28.01	98.27	32.87	89.00	8.80	29.46
Iceland	33	100.00	99.93	53.16	71.47	59.99	46.48	27.55	3.89	6.04	76.90	87.64	19.38
Russia	34	93.13	97.69	70.12	48.62	1.00	78.44	28.35	100.00	18.69	91.76	10.36	56.85
Moldova	35	93.03	96.58	19.94	85.60	73.54	81.00	1.00	69.44	22.56	90.51	-	31.44
Montenegro	36	87.98	97.90	62.17	82.05	64.25	80.12	22.29	100.00	23.37	67.21	51.75	31.51
Aland Islands	-	-	-	-	-	-	-	-	-	-	97.78	-	-
Andorra	-	99.66	99.95	62.77	72.57	60.74	100.00	26.82	100.00	36.56	84.72	-	100.00
Bosnia and Herzegovina	-	80.22	97.98	74.83	68.33	84.18	76.46	48.33	100.00	37.11	82.76	22.20	11.23
Faeroe Islands	-	-	-	10.73	-	-	-	17.07	1.33	-	77.80	40.27	1.17
Gibraltar	-	-	-	64.02	-	-	-	1.00	1.00	1.00	89.10	91.95	97.50
Guernsey	-	-	-	-	-	-	-	-	-	-	-	42.05	-
Isle of Man	-	-	-	55.31	-	-	-	-	36.35	-	-	-	32.01

Table 19 Normalized values of green growth indicators for natural capital protection (continued)

Country	Regional Rank	Indicators											
		EQ1	EQ2	EQ3	GE1	GE2	GE3	BE1	BE2	BE3	CV1	CV2	CV3
Jersey	-	-	-	-	-	-	-	-	-	-	-	42.78	-
Liechtenstein	-	-	-	36.69	83.01	86.65	-	80.99	100.00	56.98	98.43	-	88.52
Macedonia	-	78.01	98.13	78.56	83.77	78.28	80.59	46.51	100.00	17.54	94.72	-	71.80
Malta	-	95.64	99.94	50.44	85.06	78.77	94.30	84.68	9.37	-	78.09	100.00	48.00
Monaco	-	-	99.96	12.98	-	-	-	-	1.00	1.00	57.38	69.92	100.00
San Marino	-	-	99.95	63.09	-	-	-	-	98.06	22.01	97.40	-	-
Svalbard and Jan Mayen Islands	-	-	-	-	-	-	-	77.25	-	1.00	74.21	-	-
Vatican	-	-	-	-	-	-	-	-	-	1.00	88.61	-	-
Kosovo	-	-	-	87.43	-	-	-	-	-	-	-	-	-
OCEANIA													
New Zealand	1	100.00	99.48	48.18	70.48	64.51	1.00	38.82	100.00	69.05	37.21	100.00	100.00
Australia	2	100.00	99.67	59.96	28.45	29.44	1.00	56.69	100.00	20.39	70.31	58.31	100.00
Fiji	3	99.06	85.40	84.47	90.19	83.92	87.32	9.25	100.00	47.88	49.12	100.00	8.26
American Samoa	-	97.24	92.52	75.66	-	-	-	13.99	100.00	35.06	76.66	74.86	64.94
Christmas Island	-	-	-	-	-	-	-	63.26	-	-	9.53	87.14	-
Cocos (Keeling) Islands	-	-	-	-	-	-	-	100.00	-	-	63.45	87.59	-
Cook Islands	-	-	94.80	-	-	-	-	25.95	-	-	60.97	82.24	-
French Polynesia	-	-	-	61.64	-	-	-	1.00	100.00	35.39	50.73	82.25	1.04
Guam	-	98.18	93.78	36.81	-	-	-	3.91	100.00	26.86	1.26	-	1.52
Heard and McDonald Islands	-	-	-	-	-	-	-	100.00	-	-	85.99	-	-
Kiribati	-	99.29	47.27	77.75	96.90	95.60	97.38	37.10	9.48	-	60.36	-	87.69
Marshall Islands	-	99.73	83.39	88.42	85.02	78.30	100.00	9.89	100.00	31.51	73.88	60.37	2.98
Micronesia, Fed. Sts.	-	98.57	86.26	82.34	92.69	95.49	81.15	1.54	100.00	100.00	40.03	-	1.11
Nauru	-	-	89.41	66.15	70.22	100.00	100.00	1.00	1.00	1.00	61.99	62.18	-
New Caledonia	-	-	-	72.26	-	-	-	40.07	100.00	34.72	37.89	92.26	100.00
Niue	-	-	92.10	-	-	-	-	95.32	-	26.88	68.02	77.76	-
Norfolk Island	-	-	-	-	-	-	-	54.86	-	-	49.20	86.84	-
Northern Mariana Islands	-	100.00	92.38	56.71	-	-	-	35.28	100.00	-	23.67	-	100.00

Table 19 Normalized values of green growth indicators for natural capital protection (continued)

Country	Regional Rank	Indicators											
		EQ1	EQ2	EQ3	GE1	GE2	GE3	BE1	BE2	BE3	CV1	CV2	CV3
Palau	-	-	90.51	68.73	24.97	57.54	100.00	60.60	100.00	97.12	51.64	67.33	100.00
Papua New Guinea	-	97.44	48.13	90.87	96.07	68.14	82.69	6.47	100.00	41.64	71.76	4.18	5.82
Pitcairn	-	-	-	-	-	-	-	57.04	-	-	52.71	79.12	-
Samoa	-	98.27	92.46	89.65	92.56	78.05	69.17	46.16	100.00	25.25	59.59	78.38	2.77
Solomon Islands	-	97.91	42.49	77.25	97.47	80.78	96.25	3.58	100.00	27.82	59.83	37.79	2.14
Tokelau	-	-	91.37	-	-	-	-	1.00	-	1.00	74.73	76.49	-
Tonga	-	99.12	93.74	88.35	91.55	82.75	76.47	15.93	73.39	45.90	52.76	74.43	12.16
Tuvalu	-	-	87.93	74.37	96.08	100.00	73.61	-	100.00	-	72.32	73.52	1.06
United States Minor Outlying Islands	-	-	-	-	-	-	-	57.68	-	-	54.46	-	-
Vanuatu	-	98.16	65.19	81.52	97.24	81.87	49.90	4.31	100.00	-	44.72	99.89	1.66
Wallis and Futuna Islands	-	-	-	-	-	-	-	1.00	-	45.48	76.06	78.12	-

Definitions:
EQ1: PM2.5 air pollution, mean annual population-weighted exposure (Micrograms per m3)
EQ2: DALY rate due to unsafe water sources (DALY lost per 100,000 persons)
EQ3: Municipal solid waste (MSW) generation per capita (Tons per year per capita)
GE1: Ratio of CO2 emissions to population, including AFOLU (Tons per capita)
GE2: Ratio non-CO2 emissions (CH4, N2O and F-gas) excluding AFOLU to population (CO2eq tons per capita)
GE3: Ratio non-CO2 emissions (CH4, N2O and F-gas) in Agriculture and LUCF to population (CO2eq tons per capita)
BE1: Average proportion of Key Biodiversity Areas covered by protected areas (Percent)
BE2: Share forest area to total land area (Percent)
BE3: Share forest area to total land area (Percent)
CV1: Red list index (Score)
CV2: Tourism and recreation in coastal and marine areas (Score)
CV3: Share of terrestrial and marine protected areas to total territorial areas (Percent)

Table 20 Normalized values of green growth indicators for green economic opportunities

Country	Regional Rank	Indicators			
		GV1	GT1	GJ1	GN1
AFRICA					
Tanzania	1	78.76	29.71	51.71	-
Morocco	2	80.52	7.87	17.23	19.60
Botswana	3	84.68	1.76	10.76	-
Cabo Verde	4	80.97	1.10	45.88	-
Mauritius	5	61.03	4.29	10.96	-
Uganda	6	53.09	4.13	68.70	-
Kenya	7	50.97	8.96	26.77	-
Senegal	8	73.34	4.02	23.80	-
Ghana	9	62.82	5.39	7.44	-
Ethiopia	10	70.46	5.63	50.72	-
South Africa	11	53.73	46.55	24.95	5.30
Tunisia	12	63.20	40.71	50.64	26.03
Malawi	13	51.39	2.67	23.20	-
Cameroon	14	58.09	4.75	8.60	-
Zimbabwe	15	33.04	2.09	14.02	-
Rwanda	16	49.82	2.60	1.40	-
Angola	17	53.88	2.14	14.89	-
Gambia	18	46.98	2.67	1.00	-
Madagascar	19	57.95	3.32	19.17	-
Burundi	20	25.79	1.81	4.89	-
Lesotho	21	67.08	7.00	1.36	-
Eswatini	22	65.84	2.40	22.59	-
Egypt	23	56.98	15.46	54.79	34.52
Nigeria	24	52.27	1.29	1.00	-
Niger	25	67.55	2.14	1.00	-
Algeria	-	84.90	5.00	-	-
Benin	-	57.37	5.24	-	-
Burkina Faso	-	53.67	2.65	-	-
Central African Republic	-	-	2.90	-	-
Comoros	-	53.04	1.25	-	-
Congo Republic	-	60.05	7.28	-	-
Cote d'Ivoire	-	71.89	3.48	-	-
Djibouti	-	81.77	-	-	-
DR Congo	-	54.77	1.24	-	-
Eritrea	-	-	-	1.00	-
Gabon	-	80.61	-	-	-
Guinea	-	28.79	4.32	-	-
Guinea-Bissau	-	55.72	-	-	-
Liberia	-	1.00	-	-	-
Libya	-	100.00	1.61	-	-
Mali	-	59.12	2.75	-	-
Mauritania	-	78.08	1.00	-	-

Table 20 Normalized values of green growth indicators for green economic opportunities (continued)

Country	Regional Rank	Indicators			
		GV1	GT1	GJ1	GN1
Mozambique	-	45.35	1.82	-	-
Namibia	-	59.64	5.69	-	-
Sao Tome and Principe	-	-	11.16	-	-
Seychelles	-	-	1.97	-	-
Sierra Leone	-	32.86	2.55	-	-
South Sudan	-	38.64	-	-	-
Sudan	-	76.69	1.03	-	-
Togo	-	64.00	19.19	-	-
Zambia	-	76.93	7.39	-	-
THE AMERICAS					
Mexico	1	62.53	44.53	54.56	9.35
Brazil	2	67.52	15.96	23.48	12.69
Canada	3	61.88	24.73	69.67	10.58
United States	4	61.43	46.55	76.50	3.79
Paraguay	5	80.28	2.44	46.10	-
Peru	6	68.82	5.33	35.37	21.57
Chile	7	63.70	3.44	39.66	18.70
El Salvador	8	57.75	13.96	-	33.64
Dominican Republic	9	79.43	9.58	16.20	8.78
Ecuador	10	66.92	3.07	53.60	7.57
Colombia	11	58.07	5.49	33.74	20.38
Bolivia	12	59.88	2.38	22.75	-
Costa Rica	13	75.53	12.29	31.65	2.17
Nicaragua	14	79.04	2.14	-	14.88
Bahamas	15	76.81	22.62	8.86	-
Uruguay	16	64.23	3.02	15.98	3.39
Argentina	17	60.04	6.27	27.34	7.91
Honduras	18	77.85	3.64	-	7.80
Panama	19	91.03	10.79	1.00	1.79
Guatemala	20	55.97	7.21	1.01	5.14
Antigua and Barbuda	-	-	10.01	-	-
Aruba	-	-	17.96	-	-
Barbados	-	50.99	13.64	-	-
Belize	-	49.50	11.74	-	-
Bermuda	-	-	33.22	18.78	-
Cuba	-	-	-	1.00	7.69
Greenland	-	-	1.35	-	-
Grenada	-	-	23.64	-	-
Guadeloupe	-	-	-	-	-
Guyana	-	-	7.72	-	-
Haiti	-	61.10	-	-	-
Jamaica	-	78.40	12.39	-	-
Martinique	-	-	-	-	-

Table 20 Normalized values of green growth indicators for green economic opportunities (continued)

Country	Regional Rank	Indicators			
		GV1	GT1	GJ1	GN1
Montserrat	-	-	1.76	-	-
St. Lucia	-	-	9.24	-	-
St. Vincent and the Grenadines	-	-	6.99	-	-
Suriname	-	87.43	2.40	-	-
Trinidad and Tobago	-	-	96.27	10.43	-
Venezuela	-	63.02	1.79	-	-
ASIA					
Japan	1	62.80	58.36	45.24	8.17
Thailand	2	70.77	30.20	46.40	-
Cyprus	3	61.41	11.75	38.10	49.76
Georgia	4	56.57	24.98	27.26	23.48
China	5	89.63	34.01	49.01	23.27
Philippines	6	85.21	18.80	34.00	13.48
Singapore	7	100.00	31.00	52.14	10.65
Vietnam	8	69.18	9.83	30.98	-
Indonesia	9	70.48	10.58	25.30	-
Turkey	10	70.99	26.06	51.27	8.54
Malaysia	11	61.64	29.28	34.14	15.13
Nepal	12	100.00	2.70	25.65	-
Brunei Darussalam	13	100.00	6.37	36.97	-
Kyrgyz Republic	14	52.53	10.86	45.16	-
Armenia	15	56.98	6.21	40.93	-
South Korea	16	82.34	41.20	73.93	14.34
Laos	17	52.94	3.05	5.78	-
Israel	18	76.24	41.80	17.46	2.97
Cambodia	19	71.33	3.28	1.06	-
Kazakhstan	20	63.39	3.05	39.46	-
Azerbaijan	21	62.48	2.15	71.47	-
Mongolia	22	59.30	1.69	20.54	-
Sri Lanka	23	85.37	12.69	16.89	-
Myanmar	24	83.34	5.16	1.64	-
Lebanon	25	24.08	14.20	38.78	-
India	26	78.87	22.75	48.27	14.88
Bangladesh	27	88.06	2.43	13.53	-
Maldives	28	76.79	1.07	1.00	-
Jordan	29	62.12	13.03	39.94	23.33
Qatar	30	83.80	1.00	21.89	-
Saudi Arabia	31	76.79	6.44	48.71	27.70
Oman	32	29.06	13.16	51.84	-
Uzbekistan	33	81.09	2.08	25.41	-
Kuwait	34	77.43	2.72	12.38	-
Pakistan	35	60.45	4.03	18.73	-

Table 20 Normalized values of green growth indicators for green economic opportunities (continued)

Country	Regional Rank	Indicators			
		GV1	GT1	GJ1	GN1
Afghanistan	-	-	3.86	1.00	-
Bahrain	-	81.14	7.09	-	-
Bhutan	-	83.58	-	-	-
Hong Kong	-	-	16.68	35.47	1.00
Iran	-	-	6.79	64.57	-
Iraq	-	53.64	-	1.00	-
Macao	-	-	1.45	1.00	-
Palestine	-	-	5.75	35.59	-
Syria	-	-	-	34.21	-
Tajikistan	-	73.96	-	1.00	-
Timor-Leste	-	36.18	4.39	-	-
Turkmenistan	-	-	-	3.20	-
United Arab Emirates	-	-	12.35	54.52	-
Yemen	-	-	4.82	32.30	-
EUROPE					
Sweden	1	77.92	41.60	62.97	37.80
Austria	2	71.15	56.75	67.68	16.99
Czech Republic	3	65.91	58.32	87.47	27.97
Denmark	4	80.23	48.51	94.80	18.96
Switzerland	5	76.56	33.79	100.00	6.97
Slovakia	6	64.53	40.42	80.26	33.58
Germany	7	72.95	75.86	88.53	13.75
Finland	8	64.96	40.47	69.85	38.03
United Kingdom	9	57.27	46.92	64.29	12.90
Italy	10	59.82	55.49	60.41	15.21
Hungary	11	72.54	58.71	63.95	20.53
Estonia	12	71.75	38.30	43.58	59.46
Latvia	13	57.73	22.41	42.57	29.04
Lithuania	14	66.42	38.08	43.16	32.67
Portugal	15	59.76	37.60	47.98	22.99
France	16	65.07	35.63	49.23	16.36
Croatia	17	70.75	23.42	54.42	26.73
Romania	18	61.19	61.97	49.09	25.37
Slovenia	19	64.54	39.49	59.69	19.21
Spain	20	67.79	24.27	57.19	23.85
Norway	21	80.03	25.08	49.18	13.79
Poland	22	67.54	37.42	58.79	32.77
Netherlands	23	78.43	30.65	53.69	24.19
Belarus	24	69.73	17.63	49.75	-
Luxembourg	25	73.53	35.76	18.34	15.43
Greece	26	45.70	15.94	32.25	26.10
Bulgaria	27	67.51	24.16	48.33	30.68
Belgium	28	69.28	29.37	47.51	7.44

Table 20 Normalized values of green growth indicators for green economic opportunities (continued)

Country	Regional Rank	Indicators			
		GV1	GT1	GJ1	GN1
Serbia	29	50.97	29.46	66.95	8.38
Ireland	30	75.30	11.37	19.37	21.51
Albania	31	53.71	1.70	7.59	-
Ukraine	32	56.19	11.26	62.50	14.02
Iceland	33	75.71	6.12	30.77	100.00
Russia	34	63.90	9.03	49.54	18.87
Moldova	35	66.04	12.49	30.62	12.44
Montenegro	36	-	8.87	24.47	3.61
Andorra	-	-	9.38	-	-
Bosnia and Herzegovina	-	-	30.77	31.69	-
Liechtenstein	-	-	-	1.00	-
Macedonia	-	77.44	100.00	-	-
Malta	-	-	23.76	2.79	-
Monaco	-	-	-	-	92.10
OCEANIA					
New Zealand	1	72.41	8.95	45.02	6.93
Australia	2	61.80	8.99	52.25	10.39
Fiji	3	65.94	4.37	84.72	-
French Polynesia	-	-	5.14	-	-
Kiribati	-	-	4.56	-	-
Micronesia, Fed. Sts.	-	-	1.59	-	-
New Caledonia	-	-	2.68	-	-
Palau	-	-	1.66	-	-
Samoa	-	-	3.17	-	-
Solomon Islands	-	64.85	1.44	-	-
Tonga	-	65.54	5.58	1.00	-
Vanuatu	-	87.70	-	-	-

Definitions:
GV1: Ratio of adjusted net savings to GNI, including particulate emission damange (5 yrs moving ave.)
GT1: Share export of environmental goods (OECD and APEC class.) to total export (Percent)
GJ1: Share of green employment in total manufacturing employment (Percent)
GN1: Share of patent publications in environmental technology to total patents (7 yrs moving ave.)

Table 21 Normalized values of green growth indicators for social inclusion

Country	Regional Rank	Indicators											
		AB1	AB2	AB3	GB1	GB2	GB3	SE1	SE2	SE3	SP1	SP2	SP3
AFRICA													
Tanzania	1	17.46	59.57	22.81	74.06	96.21	100.00	83.18	68.74	71.67	6.45	24.72	58.39
Morocco	2	76.49	93.68	27.27	41.61	75.05	50.50	84.29	99.63	-	-	60.30	90.45
Botswana	3	60.30	51.25	15.87	19.85	96.58	75.25	52.55	76.43	36.90	100.00	48.44	-
Cabo Verde	4	86.42	72.63	35.20	47.75	-	75.25	80.04	99.88	41.37	84.95	58.98	-
Mauritius	5	97.39	90.35	47.98	23.95	98.91	100.00	88.19	100.00	61.98	100.00	51.07	-
Uganda	6	16.59	-	24.19	70.02	95.69	100.00	79.18	86.59	43.36	12.09	27.35	49.88
Kenya	7	40.97	58.74	18.54	44.12	98.23	100.00	82.97	94.85	73.95	14.07	40.53	51.75
Senegal	8	34.61	87.52	16.17	85.49	96.34	25.75	83.55	86.41	37.09	30.60	27.35	69.39
Ghana	9	35.35	89.85	22.91	26.92	97.44	50.50	77.56	96.86	42.03	19.81	29.99	68.45
Ethiopia	10	13.93	75.71	29.25	77.74	93.06	25.75	90.14	82.58	80.03	4.86	19.45	33.27
South Africa	11	84.85	90.85	25.98	84.71	99.60	100.00	1.00	98.75	40.32	81.69	58.98	73.43
Tunisia	12	87.33	95.01	47.39	63.05	89.58	25.75	93.28	100.00	-	85.55	60.30	91.49
Malawi	13	9.45	71.22	19.24	34.01	95.39	100.00	75.95	1.00	37.47	3.28	28.67	32.44
Cameroon	14	39.92	91.18	21.12	62.60	94.78	25.75	70.48	68.38	67.68	19.12	28.67	65.03
Zimbabwe	15	28.69	-	25.09	64.06	97.51	75.25	76.71	64.25	14.87	21.59	39.21	65.24
Rwanda	16	14.67	41.43	30.64	100.00	95.92	75.25	77.54	71.65	37.66	4.07	43.17	56.31
Angola	17	44.88	74.29	18.74	60.40	89.49	50.50	58.40	1.00	-	15.36	20.77	49.57
Gambia	18	32.22	79.78	29.94	19.67	-	75.25	89.47	79.57	5.75	17.83	26.04	71.88
Madagascar	19	11.45	28.12	10.02	39.04	96.56	25.75	79.46	-	87.05	5.55	4.95	36.49
Burundi	20	3.87	-	34.50	72.99	98.05	75.25	85.92	1.00	88.19	4.96	23.40	50.50
Lesotho	21	35.61	60.90	18.64	47.19	99.29	75.25	74.58	84.88	-	94.06	31.31	44.38
Eswatini	22	64.47	80.70	24.10	13.18	98.55	50.50	48.38	97.29	32.53	100.00	51.07	66.69
Egypt	23	86.07	91.02	31.53	30.56	92.65	1.00	93.92	100.00	48.49	38.62	57.66	94.60
Nigeria	24	26.34	82.78	19.14	12.01	84.95	50.50	90.80	75.46	40.32	11.89	23.40	44.07
Niger	25	9.10	-	6.35	34.58	85.92	50.50	91.61	68.69	52.10	6.74	16.81	38.98
Algeria	-	70.61	100.00	39.26	52.00	84.32	50.50	97.82	99.89	60.08	63.96	70.84	-
Benin	-	19.02	87.85	21.62	15.32	88.08	50.50	66.53	68.94	-	11.89	20.77	38.98
Burkina Faso	-	9.36	79.12	9.43	27.51	91.73	25.75	89.97	1.00	22.09	3.67	20.77	40.75
Central African Republic	-	5.70	19.80	17.45	17.97	85.37	25.75	41.65	1.00	-	5.65	11.54	1.00
Chad	-	3.09	47.26	2.69	30.47	83.76	50.50	78.08	1.00	29.49	1.99	4.95	9.82
Comoros	-	43.06	-	23.01	13.00	92.57	100.00	73.92	97.18	47.54	-	36.58	29.02
Congo Republic	-	40.09	37.27	-	23.29	91.71	25.75	64.62	47.87	-	22.88	19.45	50.40
Cote d'Ivoire	-	42.18	75.21	10.91	24.66	94.72	50.50	81.50	86.38	33.86	8.62	29.99	37.63
Djibouti	-	32.26	73.05	13.69	26.21	84.72	50.50	80.89	79.32	-	15.06	29.99	33.07
DR Congo	-	9.75	32.95	12.30	18.70	97.77	-	80.57	1.00	-	15.85	22.08	19.58
Equatorial Guinea	-	42.53	-	14.58	42.58	-	100.00	-	1.00	-	-	27.35	32.65
Eritrea	-	26.34	-	7.84	44.56	-	75.25	-	88.41	-	-	18.13	-
Gabon	-	89.03	73.88	-	30.28	96.80	25.75	87.25	66.08	-	39.41	32.63	62.02
Guinea	-	20.07	-	13.98	44.42	93.44	50.50	92.32	50.50	-	2.98	16.81	48.01
Guinea-Bissau	-	14.32	-	6.25	28.19	-	1.00	61.01	65.31	-	1.20	20.77	22.79
Liberia	-	12.75	38.35	21.22	25.41	90.64	100.00	90.58	47.75	74.90	4.37	19.45	27.05

Table 21 Normalized values of green growth indicators for social inclusion (continued)

Country	Regional Rank	Indicators											
		AB1	AB2	AB3	GB1	GB2	GB3	SE1	SE2	SE3	SP1	SP2	SP3
Libya	-	43.06	-	13.19	32.60	96.84	75.25	-	1.00	-	42.58	52.39	-
Mali	-	20.42	88.35	10.12	18.50	86.93	25.75	93.20	48.30	49.25	8.23	18.13	51.02
Mauritania	-	42.01	85.61	3.58	50.84	88.14	25.75	93.64	1.00	32.53	10.21	22.08	24.04
Mayotte	-	92.69	-	-	-	-	-	-	-	-	-	-	-
Mozambique	-	13.80	48.09	15.87	79.41	90.58	50.50	51.77	1.00	-	52.98	28.67	19.89
Namibia	-	48.28	67.06	24.39	85.57	99.99	100.00	25.34	85.62	39.56	100.00	49.76	56.10
Reunion	-	95.30	-	-	-	-	-	-	-	-	-	-	-
Sao Tome and Principe	-	33.78	80.20	18.94	37.00	-	1.00	45.12	97.02	-	71.79	40.53	11.07
Seychelles	-	97.39	-	59.18	43.00	-	75.25	94.07	100.00	60.27	100.00	61.61	-
Sierra Leone	-	9.10	56.41	19.34	25.55	89.58	50.50	89.64	1.00	80.79	7.93	19.45	38.67
Somalia	-	20.07	1.00	1.00	49.23	94.99	50.50	-	45.00	-	-	1.00	25.18
South Sudan	-	1.00	-	-	57.35	71.87	1.00	71.06	82.40	-	1.00	8.91	5.15
St. Helena	-	88.51	-	-	-	-	-	-	-	-	-	-	-
Sudan	-	51.41	80.20	3.08	55.75	82.55	1.00	91.30	88.15	-	11.89	26.04	8.26
Togo	-	18.63	66.06	44.12	35.81	93.00	100.00	78.72	68.83	52.29	19.81	24.72	43.65
Zambia	-	26.34	-	8.63	34.20	95.19	100.00	33.56	48.14	18.10	8.72	37.90	43.34
THE AMERICAS													
Mexico	1	68.39	89.77	43.92	85.35	96.01	75.25	74.48	99.78	65.21	100.00	68.20	83.40
Brazil	2	80.54	100.00	42.73	22.23	98.65	75.25	49.45	99.78	55.33	91.59	72.16	83.08
Canada	3	94.25	100.00	42.23	53.69	99.96	100.00	92.90	100.00	76.42	100.00	85.33	99.99
United States	4	97.39	100.00	70.88	39.45	99.84	75.25	81.81	100.00	75.09	100.00	78.74	-
Paraguay	5	71.79	86.94	16.07	30.70	98.09	100.00	73.34	99.89	65.59	64.95	58.98	82.25
Peru	6	67.48	85.52	32.32	60.40	91.84	100.00	80.54	97.56	68.06	36.34	69.52	65.65
Chile	7	91.90	94.93	34.01	35.68	98.45	75.25	76.11	100.00	68.63	71.79	60.30	90.87
El Salvador	8	92.69	85.86	32.22	64.64	90.79	75.25	85.74	99.16	46.97	20.90	68.20	76.75
Dominican Republic	9	94.51	88.19	29.94	54.14	98.67	75.25	80.71	99.51	53.05	12.19	65.57	84.64
Ecuador	10	74.14	79.37	47.59	79.05	92.96	100.00	72.98	99.72	66.73	60.99	69.52	79.14
Colombia	11	69.96	87.52	16.36	38.01	97.20	50.50	58.53	99.17	54.38	51.09	68.20	71.15
Bolivia	12	74.23	79.04	19.73	100.00	99.64	100.00	79.61	96.62	80.60	100.00	57.66	49.67
Costa Rica	13	75.45	94.84	32.22	70.48	95.93	25.75	67.66	99.89	65.97	56.64	69.52	95.95
Nicaragua	14	64.47	67.89	10.02	90.32	91.33	75.25	71.94	95.51	97.31	29.31	64.25	56.21
Bahamas	15	97.39	-	20.33	26.38	-	75.25	-	100.00	-	89.70	66.89	-
Uruguay	16	97.39	100.00	41.34	43.00	98.04	50.50	84.29	100.00	64.45	100.00	73.47	-
Argentina	17	81.19	93.51	34.01	77.95	98.43	50.50	81.33	100.00	63.50	89.90	68.20	84.75
Honduras	18	60.12	77.54	20.63	42.76	96.14	50.50	63.17	97.88	46.59	11.59	53.71	59.94
Panama	19	95.30	87.52	31.93	37.25	96.58	50.50	61.54	98.50	68.25	30.01	72.16	77.07
Guatemala	20	65.17	72.05	32.62	27.94	98.27	50.50	67.12	99.65	48.11	17.53	40.53	67.83
Anguilla	-	100.00	-	-	-	-	-	-	-	-	44.86	-	-
Antigua and Barbuda	-	97.39	-	-	23.00	-	75.25	-	100.00	-	76.04	64.25	-
Aruba	-	100.00	-	-	-	-	-	-	100.00	-	97.53	-	-
Barbados	-	97.39	92.93	54.13	34.01	-	50.50	-	100.00	-	63.87	69.52	-
Belize	-	87.46	90.18	28.75	19.57	96.84	50.50	-	98.75	48.11	50.40	52.39	94.81

Table 21 Normalized values of green growth indicators for social inclusion (continued)

Country	Regional Rank	Indicators											
		AB1	AB2	AB3	GB1	GB2	GB3	SE1	SE2	SE3	SP1	SP2	SP3
Bermuda	-	100.00	-	-	-	-	-	-	100.00	-	100.00	-	-
British Virgin Islands	-	100.00	-	-	-	-	-	-	100.00	-	-	-	-
Cayman Islands	-	100.00	-	-	-	-	-	-	100.00	-	-	-	-
Cuba	-	67.09	100.00	43.72	97.74	-	-	-	99.89	-	3.67	77.43	93.15
Curacao	-	100.00	-	-	-	-	-	-	100.00	90.28	100.00	-	-
Dominica	-	91.64	90.68	25.19	50.50	-	50.50	-	-	-	60.70	-	-
French Guiana	-	89.55	-	-	-	-	-	-	-	-	47.23	-	89.10
Greenland	-	96.17	-	-	-	-	-	-	100.00	-	-	-	-
Grenada	-	89.90	-	31.33	66.99	-	100.00	-	-	-	48.32	62.93	93.77
Guadeloupe	-	97.91	-	-	-	-	-	-	-	-	72.97	-	94.40
Guyana	-	83.80	91.35	25.58	64.12	-	100.00	-	99.14	31.96	100.00	62.93	67.73
Haiti	-	21.64	22.13	16.96	6.03	97.00	100.00	82.01	1.00	-	1.40	32.63	31.61
Jamaica	-	91.38	87.19	22.11	35.57	99.68	50.50	-	99.89	-	40.90	53.71	40.75
Martinique	-	98.96	-	-	-	-	-	-	-	-	64.46	-	-
Montserrat	-	-	-	-	-	-	-	-	-	-	-	-	-
Puerto Rico	-	76.66	-	-	-	98.04	75.25	-	100.00	-	100.00	-	-
Saint-Martin	-	98.43	-	-	-	-	-	-	100.00	-	61.19	-	-
Sint Maarten	-	100.00	-	-	-	-	-	-	100.00	-	-	-	-
St. Barths	-	100.00	-	-	-	-	-	-	-	-	-	-	-
St. Kitts and Nevis	-	97.39	-	-	27.39	-	50.50	-	100.00	-	62.68	-	-
St. Lucia	-	96.60	-	25.78	34.01	-	100.00	57.34	99.77	37.09	33.18	57.66	88.38
St. Pierre and Miquelon	-	82.24	-	-	-	-	-	-	-	-	100.00	-	-
St. Vincent and the Grenadines	-	97.39	90.68	38.47	26.82	-	50.50	-	99.89	-	42.58	61.61	-
Suriname	-	66.83	85.52	28.16	51.47	-	75.25	-	99.66	72.05	100.00	61.61	93.88
Trinidad and Tobago	-	97.39	88.85	24.99	62.28	96.62	75.25	-	100.00	1.00	91.19	65.57	94.40
Turks and Caicos Islands	-	100.00	-	-	-	-	-	-	100.00	-	68.72	-	-
United States Virgin Islands	-	98.96	-	-	-	-	-	-	100.00	-	100.00	-	-
Venezuela	-	71.44	54.41	16.26	44.88	98.23	75.25	75.08	100.00	56.66	59.81	65.57	54.24
Asia	-	-	-	-	-	-	-	-	-	-	-	-	-
Japan	1	93.47	100.00	69.49	20.62	99.93	50.50	93.06	100.00	94.08	100.00	77.43	-
Thailand	2	66.56	86.36	48.38	12.39	99.17	50.50	89.30	100.00	71.67	89.21	73.47	75.41
Cyprus	3	92.69	100.00	41.14	36.36	99.48	75.25	92.84	100.00	73.95	97.82	70.84	-
Georgia	4	71.14	86.19	57.80	28.90	98.51	75.25	89.77	100.00	50.58	90.99	55.03	64.61
China	5	77.01	100.00	34.30	48.47	98.30	25.75	86.28	100.00	-	100.00	72.16	74.47
Philippines	6	60.16	84.36	33.02	56.36	95.00	100.00	80.31	99.53	64.26	21.30	48.44	55.48
Singapore	7	98.69	-	83.07	48.52	99.40	75.25	-	100.00	92.18	49.41	81.38	-
Vietnam	8	81.19	88.85	39.26	53.91	99.56	50.50	89.99	99.89	81.36	41.49	66.89	85.68
Indonesia	9	90.07	89.18	31.93	41.29	98.12	75.25	86.60	99.78	-	14.96	43.17	68.25

Table 21 Normalized values of green growth indicators for social inclusion (continued)

Country	Regional Rank	Indicators											
		AB1	AB2	AB3	GB1	GB2	GB3	SE1	SE2	SE3	SP1	SP2	SP3
Turkey	10	90.60	100.00	47.98	30.52	91.01	75.25	81.50	100.00	53.81	100.00	65.57	91.08
Malaysia	11	91.12	94.68	50.76	21.51	98.88	50.50	82.11	100.00	76.23	20.60	64.25	-
Nepal	12	43.19	92.01	23.80	65.81	96.57	50.50	92.95	99.38	32.72	84.36	31.31	48.84
Brunei Darussalam	13	97.39	100.00	58.89	19.00	-	75.25	-	100.00	61.79	90.99	74.79	-
Kyrgyz Republic	14	83.67	88.02	21.02	38.96	98.98	25.75	97.63	100.00	61.03	100.00	60.30	89.93
Armenia	15	86.81	94.34	58.29	29.50	93.83	75.25	94.36	100.00	40.89	65.55	58.98	90.35
South Korea	16	98.43	100.00	71.48	35.23	99.94	25.75	94.94	100.00	-	100.00	81.38	-
Laos	17	44.36	91.18	-	55.49	96.26	75.25	85.49	100.00	20.00	7.24	35.26	78.10
Israel	18	96.60	100.00	58.49	54.63	99.66	50.50	85.29	100.00	72.05	100.00	76.11	-
Cambodia	19	47.93	89.68	18.25	41.25	99.75	75.25	-	98.91	88.38	7.53	47.12	53.20
Kazakhstan	20	94.43	100.00	34.30	54.66	98.99	25.75	97.54	100.00	81.93	99.60	68.20	-
Azerbaijan	21	74.92	100.00	40.55	34.28	98.94	1.00	-	100.00	-	73.07	53.71	-
Mongolia	22	56.12	92.85	29.05	34.88	99.22	75.25	93.30	99.66	62.55	100.00	49.76	60.25
Sri Lanka	23	63.95	88.69	35.20	12.44	99.90	25.75	84.48	100.00	54.00	36.34	55.03	-
Myanmar	24	51.41	87.35	15.77	21.12	99.98	50.50	95.04	93.36	71.67	15.75	48.44	41.78
Lebanon	25	52.63	88.44	33.12	7.20	87.71	50.50	94.40	100.00	55.33	10.70	64.25	36.59
India	26	66.22	75.96	28.16	24.70	98.59	1.00	89.32	99.66	43.93	43.08	40.53	63.47
Bangladesh	27	50.11	83.86	24.49	41.17	86.36	25.75	93.24	98.89	47.92	38.62	31.31	51.02
Maldives	28	97.39	-	29.55	12.64	-	75.25	94.65	100.00	55.33	100.00	49.76	68.76
Jordan	29	88.77	84.19	28.16	31.45	81.03	25.75	91.98	100.00	29.11	57.73	68.20	75.72
Qatar	30	96.87	-	39.66	20.32	98.07	50.50	-	100.00	-	20.21	57.66	-
Saudi Arabia	31	82.93	93.76	11.31	40.34	93.46	25.75	-	100.00	69.39	33.87	65.57	83.19
Oman	32	94.60	86.36	16.96	3.34	94.59	25.75	-	100.00	-	47.43	58.98	-
Uzbekistan	33	80.50	100.00	28.85	32.68	98.88	25.75	-	100.00	-	100.00	64.25	45.83
Kuwait	34	98.69	100.00	33.31	7.10	97.72	1.00	-	100.00	-	27.14	68.20	-
Pakistan	35	50.89	78.54	20.33	41.77	33.27	25.75	93.83	91.53	41.08	6.74	27.35	58.39
Afghanistan	-	51.07	61.40	20.23	55.87	63.46	1.00	-	99.66	20.19	25.45	16.81	26.63
Bahrain	-	96.08	-	49.77	15.85	97.54	1.00	-	100.00	-	73.47	69.52	-
Bhutan	-	68.26	-	22.11	17.85	93.05	100.00	88.13	100.00	-	19.61	49.76	-
Hong Kong	-	100.00	100.00	-	-	99.77	75.25	-	100.00	-	73.47	-	-
Iran	-	96.17	90.85	27.76	12.64	99.10	50.50	80.69	100.00	38.99	22.09	62.93	73.75
Iraq	-	72.96	37.61	17.65	53.35	94.49	50.50	96.36	100.00	-	18.62	48.44	52.58
Macao	-	100.00	92.85	-	-	-	-	-	100.00	-	44.96	-	-
North Korea	-	39.40	29.45	-	33.27	-	-	-	95.02	-	-	61.61	-
Palestine	-	79.80	-	-	-	80.19	-	92.66	100.00	36.52	31.69	-	56.10
Syria	-	92.03	-	28.56	25.55	93.77	1.00	-	96.81	-	17.53	47.12	60.67
Tajikistan	-	77.71	-	21.12	38.72	95.98	50.50	91.88	100.00	-	93.76	57.66	73.02
Timor-Leste	-	51.94	60.65	20.43	77.15	-	-	96.84	99.04	60.08	100.00	36.58	65.34
Turkmenistan	-	96.52	93.18	7.15	52.10	95.12	-	-	100.00	-	-	60.30	-
United Arab Emirates	-	97.91	93.84	40.35	45.55	96.38	1.00	99.78	100.00	-	23.37	68.20	-
Yemen	-	48.45	24.46	11.90	1.65	1.00	25.75	88.62	94.23	14.87	7.93	23.40	31.30
Taiwan	-	-	-	-	-	-	100.00	-	-	-	-	-	-

Table 21 Normalized values of green growth indicators for social inclusion (continued)

Country	Regional Rank	Indicators											
		AB1	AB2	AB3	GB1	GB2	GB3	SE1	SE2	SE3	SP1	SP2	SP3
EUROPE													
Sweden	1	97.39	100.00	87.33	87.23	99.91	100.00	96.56	100.00	89.52	100.00	81.38	100.00
Austria	2	98.43	100.00	91.30	65.38	99.92	100.00	95.37	100.00	86.48	100.00	72.16	-
Czech Republic	3	97.39	100.00	61.66	45.55	98.92	100.00	99.88	100.00	89.14	91.39	68.20	-
Denmark	4	95.82	100.00	66.22	75.11	99.97	100.00	97.40	100.00	85.34	100.00	74.79	100.00
Switzerland	5	97.13	100.00	92.89	65.35	99.85	100.00	92.92	100.00	88.19	100.00	77.43	-
Slovakia	6	93.73	93.34	60.18	40.60	99.55	75.25	100.00	100.00	80.41	90.69	69.52	-
Germany	7	97.91	100.00	92.39	62.72	99.98	75.25	94.37	100.00	89.14	100.00	77.43	99.99
Finland	8	94.51	100.00	63.25	84.16	99.93	100.00	98.17	100.00	84.40	100.00	70.84	-
United Kingdom	9	98.17	100.00	78.91	62.38	99.89	100.00	90.68	100.00	80.03	100.00	82.70	-
Italy	10	96.60	100.00	65.53	62.28	99.16	100.00	89.91	100.00	65.59	94.46	76.11	-
Hungary	11	93.73	100.00	74.25	21.00	98.59	75.25	96.57	100.00	79.08	90.60	65.57	85.89
Estonia	12	95.82	100.00	57.90	57.85	99.86	100.00	96.53	100.00	82.40	100.00	66.89	-
Latvia	13	93.21	100.00	56.11	36.64	99.72	100.00	90.88	100.00	84.97	92.08	61.61	-
Lithuania	14	95.82	100.00	58.09	45.23	99.14	100.00	90.34	100.00	83.45	97.13	64.25	-
Portugal	15	93.47	100.00	79.21	69.86	99.32	100.00	92.38	100.00	84.78	90.50	76.11	96.26
France	16	92.95	100.00	92.39	79.23	98.94	100.00	93.22	100.00	79.84	100.00	70.84	-
Croatia	17	88.16	100.00	52.44	39.04	98.53	100.00	96.63	100.00	77.56	89.90	61.61	-
Romania	18	89.55	100.00	72.17	41.93	97.20	-	90.62	100.00	72.05	93.57	65.57	87.44
Slovenia	19	90.86	100.00	54.53	73.61	99.79	75.25	100.00	100.00	86.67	100.00	72.16	96.16
Spain	20	97.65	100.00	82.38	81.33	99.21	100.00	91.65	100.00	76.99	98.22	77.43	94.29
Norway	21	89.29	100.00	80.10	80.68	99.91	100.00	98.24	100.00	90.85	100.00	82.70	100.00
Poland	22	95.56	100.00	85.25	57.83	99.49	100.00	95.81	100.00	84.59	83.76	66.89	99.99
Netherlands	23	97.91	100.00	91.10	73.60	99.93	100.00	97.47	100.00	91.80	100.00	81.38	-
Belarus	24	90.60	100.00	75.44	69.41	99.91	50.50	99.67	100.00	-	100.00	68.20	65.55
Luxembourg	25	97.65	100.00	52.84	57.09	99.80	100.00	90.64	100.00	89.33	100.00	77.43	-
Greece	26	95.95	100.00	66.72	38.96	99.62	100.00	93.33	100.00	76.23	95.84	66.89	96.89
Bulgaria	27	87.81	95.01	67.31	44.73	99.27	100.00	82.00	100.00	73.95	94.06	55.03	-
Belgium	28	95.17	100.00	63.35	77.56	99.94	100.00	98.38	100.00	82.31	100.00	78.74	-
Serbia	29	63.17	93.51	44.81	69.11	99.33	100.00	89.97	100.00	70.15	63.87	53.71	96.26
Ireland	30	93.47	100.00	80.20	42.36	99.99	100.00	94.68	100.00	80.79	100.00	68.20	-
Albania	31	73.62	93.51	29.35	59.43	98.24	100.00	93.31	100.00	50.96	77.23	45.80	-
Ukraine	32	88.51	100.00	68.20	25.14	98.97	1.00	98.63	100.00	68.63	96.24	57.66	80.28
Iceland	33	94.51	100.00	57.00	76.44	-	100.00	98.89	100.00	91.04	71.69	78.74	-
Russia	34	80.67	100.00	59.78	32.24	99.81	50.50	87.49	100.00	76.42	100.00	65.57	-
Moldova	35	88.85	-	57.60	46.08	99.36	25.75	99.26	100.00	46.21	75.45	58.98	38.57
Montenegro	36	71.79	100.00	42.23	47.45	99.59	25.75	86.51	100.00	67.11	90.69	57.66	71.88

Table 21 Normalized values of green growth indicators for social inclusion (continued)

Country	Regional Rank	Indicators											
		AB1	AB2	AB3	GB1	GB2	GB3	SE1	SE2	SE3	SP1	SP2	SP3
Aland Islands	-	-	-	-	-	-	-	-	-	-	-	-	-
Andorra	-	96.34	-	-	71.72	-	-	-	100.00	-	-	-	-
Bosnia and Herzegovina	-	67.09	100.00	27.27	43.43	97.38	50.50	93.38	100.00	59.70	69.81	48.44	92.11
Faeroe Islands	-	100.00	-	-	-	-	-	-	100.00	-	-	-	-
Gibraltar	-	100.00	-	-	-	-	-	-	100.00	-	-	-	-
Isle of Man	-	98.43	-	-	-	-	-	-	100.00	-	-	-	-
Liechtenstein	-	99.65	-	-	24.76	-	-	-	100.00	-	100.00	-	-
Macedonia	-	64.47	95.51	37.77	71.12	98.26	50.50	93.86	100.00	54.00	68.91	62.93	91.39
Malta	-	96.60	100.00	56.21	26.11	99.86	75.25	97.18	100.00	84.78	100.00	76.11	-
Monaco	-	98.69	-	-	42.24	-	-	-	100.00	-	-	-	-
San Marino	-	90.86	-	-	52.15	-	75.25	-	100.00	-	-	-	-
Kosovo	-	-	-	-	-	-	-	96.41	-	-	-	-	-
OCEANIA													
New Zealand	1	93.73	100.00	60.57	81.84	99.94	75.25	-	100.00	77.94	100.00	82.70	-
Australia	2	88.33	100.00	58.39	61.31	99.89	100.00	91.61	100.00	83.07	100.00	82.70	-
Fiji	3	73.88	89.93	28.16	32.68	-	50.50	88.36	100.00	61.79	87.43	52.39	88.38
American Samoa	-	97.91	-	-	-	-	-	-	-	-	-	-	-
Cook Islands	-	88.51	-	-	-	-	-	-	-	76.04	100.00	-	-
French Polynesia	-	92.42	93.68	-	-	-	-	-	100.00	-	-	-	-
Guam	-	99.48	-	-	-	-	-	-	100.00	-	-	-	-
Kiribati	-	34.70	93.18	25.28	13.91	-	100.00	87.97	98.64	10.88	93.86	22.08	-
Marshall Islands	-	80.15	-	-	19.00	-	75.25	-	99.54	-	63.07	-	-
Micronesia, Fed. Sts.	-	44.62	-	31.13	1.00	-	75.25	84.29	97.46	54.95	100.00	29.99	-
Nauru	-	97.39	-	-	21.85	-	-	91.14	100.00	30.82	95.74	-	-
New Caledonia	-	97.91	88.52	-	-	-	-	-	100.00	-	-	-	-
Niue	-	96.17	-	-	-	-	-	-	-	-	-	-	-
Northern Mariana Islands	-	95.30	-	-	-	-	-	-	100.00	-	-	-	-
Palau	-	95.12	-	-	25.75	-	75.25	-	100.00	75.47	100.00	-	-
Papua New Guinea	-	33.13	58.49	2.09	1.00	-	25.75	80.75	95.78	-	23.08	20.77	-
Pitcairn	-	-	-	-	-	-	-	-	-	-	-	-	-
Samoa	-	55.33	92.35	30.74	20.80	-	75.25	85.65	99.89	27.98	91.49	44.48	-

Table 21 Normalized values of green growth indicators for social inclusion (continued)

Country	Regional Rank	Indicators											
		AB1	AB2	AB3	GB1	GB2	GB3	SE1	SE2	SE3	SP1	SP2	SP3
Solomon Islands	-	36.79	72.55	9.33	4.96	-	25.75	88.25	98.54	86.67	21.30	29.99	-
Tokelau	-	-	-	-	-	-	-	-	-	-	-	-	-
Tonga	-	57.42	-	29.15	15.67	-	75.25	87.52	99.78	42.41	73.57	44.48	-
Tuvalu	-	56.46	-	-	14.21	-	-	85.39	100.00	44.88	-	-	-
United States Minor Outlying Islands	-	-	-	-	-	-	-	-	-	-	-	-	-
Vanuatu	-	33.65	84.53	24.59	1.00	-	50.50	87.21	91.65	-	9.42	31.31	-
Wallis and Futuna Islands	-	57.16	-	-	-	-	-	-	-	-	-	-	-

Definitions:
AB1: Population with access to basic services, i.e., water, sanitation, electricity, and clean fuels (Percent)
AB2: Prevalence of undernourishment (Percent)
AB3: Universal access to sustainable transport (Score)
GB1: Proportion of seats held by women in national parliaments (Percent)
GB2: Gender ratio of an account at a financial institution or mobile-money-service provider (Ratio)
GB3: Getting paid, laws and regulations for equal gender pay (Score)
SE1: Inequality in income based Palma ratio (Ratio)
SE2: Population with access to basic services by urban/rural, i.e. electricity (Ratio)
SE3: Share of youth (aged 15-24 years) not in education, employment or training (Percent)
SP1: Proportion population above statutory pensionable age receiving a pension (Percent)
SP2: Universal health coverage (UHC) service coverage index (Score)
SP3: Proportion of urban population living in slums (Percent)

Table 22 Data gaps in indicators by dimension and across all indicators

Country	Regional Rank	Missing Indicators in each Dimension				Missing across all indicators	
		Efficient and sustainable resource use	Natural capital protection	Green economic opportunities	Social Inclusion	Number	Percent
AFRICA							
Tanzania	1	1	0	1	0	2	5%
Morocco	2	0	0	0	2	2	5%
Botswana	3	2	1	1	1	5	13%
Cabo Verde	4	3	0	1	2	6	15%
Mauritius	5	1	0	1	1	3	8%
Uganda	6	1	1	1	1	4	10%
Kenya	7	0	0	1	0	1	3%
Senegal	8	0	0	1	0	1	3%
Ghana	9	0	0	1	0	1	3%
Ethiopia	10	1	1	1	0	3	8%
South Africa	11	0	0	0	0	0	0%
Tunisia	12	1	0	0	1	2	5%
Malawi	13	1	1	1	0	3	8%
Cameroon	14	0	0	1	0	1	3%
Zimbabwe	15	1	1	1	1	4	10%
Rwanda	16	1	1	1	0	3	8%
Angola	17	0	0	1	1	2	5%
Gambia	18	0	0	1	1	2	5%
Madagascar	19	0	0	1	1	2	5%
Burundi	20	2	1	1	1	5	13%
Lesotho	21	2	1	1	1	5	13%
Eswatini	22	3	1	1	0	5	13%
Egypt	23	1	0	0	0	1	3%
Nigeria	24	0	0	1	0	1	3%
Niger	25	1	1	1	1	4	10%
Zambia	-	1	1	2	1	5	13%
Algeria	-	1	0	2	1	4	10%
Burkina Faso	-	1	1	2	0	4	10%
Gabon	-	2	0	3	2	7	18%
Cote d'Ivoire	-	1	0	2	0	3	8%
Sao Tome and Principe	-	2	0	3	2	7	18%
DR Congo	-	3	0	2	2	7	18%
Guinea	-	0	0	2	2	4	10%
Mozambique	-	0	0	2	1	3	8%
Namibia	-	0	0	2	0	2	5%
Seychelles	-	5	0	3	3	11	28%
Benin	-	0	0	2	1	3	8%
Togo	-	0	0	2	0	2	5%
Guinea-Bissau	-	2	0	3	3	8	20%

Table 22 Data gaps in indicators by dimension and across all indicators

Country	Regional Rank	Missing Indicators in each Dimension				Missing across all indicators	
		Efficient and sustainable resource use	Natural capital protection	Green economic opportunities	Social Inclusion	Number	Percent
Congo Republic	-	1	0	2	2	5	13%
Liberia	-	2	0	3	0	5	13%
Sierra Leone	-	1	0	2	0	3	8%
South Sudan	-	7	2	3	3	15	38%
Equatorial Guinea	-	5	0	4	5	14	35%
Central African Republic	-	2	1	3	1	7	18%
Comoros	-	3	0	2	2	7	18%
Chad	-	3	1	4	0	8	20%
Eritrea	-	5	0	3	6	14	35%
Mali	-	1	1	2	0	4	10%
Somalia	-	6	0	4	3	13	33%
Sudan	-	1	0	2	1	4	10%
Djibouti	-	4	0	3	1	8	20%
Mauritania	-	3	0	2	0	5	13%
Libya	-	3	0	2	4	9	23%
British Indian Ocean Territory	-	12	9	4	12	37	93%
French Southern Territories	-	12	10	4	12	38	95%
Mayotte	-	10	9	4	11	34	85%
Reunion	-	9	9	4	11	33	83%
St. Helena	-	11	9	4	11	35	88%
Western Sahara	-	11	9	4	12	36	90%
THE AMERICAS							
Mexico	1	0	0	0	0	0	0%
Brazil	2	2	0	0	0	2	5%
Canada	3	0	0	0	0	0	0%
United States	4	1	0	0	1	2	5%
Paraguay	5	2	1	1	0	4	10%
Peru	6	0	0	0	0	0	0%
Chile	7	0	0	0	0	0	0%
El Salvador	8	0	0	1	0	1	3%
Dominican Republic	9	1	0	0	0	1	3%
Ecuador	10	0	0	0	0	0	0%
Colombia	11	0	0	0	0	0	0%
Bolivia	12	2	1	1	0	4	10%
Costa Rica	13	0	0	0	0	0	0%
Nicaragua	14	0	0	1	0	1	3%
Bahamas	15	3	0	1	5	9	23%
Uruguay	16	1	0	0	1	2	5%
Argentina	17	1	0	0	0	1	3%
Honduras	18	0	0	1	0	1	3%

Table 22 Data gaps in indicators by dimension and across all indicators

Country	Regional Rank	Missing Indicators in each Dimension				Missing across all indicators	
		Efficient and sustainable resource use	Natural capital protection	Green economic opportunities	Social Inclusion	Number	Percent
Panama	19	0	0	0	0	0	0%
Guatemala	20	0	0	0	0	0	0%
Trinidad and Tobago	-	1	0	2	1	4	10%
St. Vincent and the Grenadines	-	6	0	3	4	13	33%
St. Lucia	-	7	0	3	2	12	30%
Belize	-	2	0	2	1	5	13%
Suriname	-	2	0	2	2	6	15%
Dominica	-	5	1	4	6	16	40%
Jamaica	-	0	0	2	2	4	10%
Cuba	-	2	0	2	4	8	20%
Venezuela	-	2	0	2	0	4	10%
St. Kitts and Nevis	-	6	1	3	7	17	43%
Antigua and Barbuda	-	4	0	3	6	13	33%
Grenada	-	5	0	3	5	13	33%
Guyana	-	2	0	3	2	7	18%
Barbados	-	3	1	2	4	10	25%
Bermuda	-	9	4	2	9	24	60%
United States Virgin Islands	-	10	4	4	9	27	68%
Puerto Rico	-	6	4	4	7	21	53%
Haiti	-	1	0	3	1	5	13%
Greenland	-	10	4	3	10	27	68%
Anguilla	-	10	8	4	10	32	80%
Aruba	-	10	6	3	9	28	70%
Bonaire, Saint Eustatius and Saba	-	11	10	4	12	37	93%
British Virgin Islands	-	10	5	4	10	29	73%
Cayman Islands	-	9	6	4	10	29	73%
Curacao	-	10	5	4	8	27	68%
Falkland Islands	-	10	8	4	12	34	85%
French Guiana	-	11	8	4	9	32	80%
Guadeloupe	-	10	9	4	9	32	80%
Martinique	-	10	9	4	10	33	83%
Montserrat	-	10	9	3	12	34	85%
Saint-Martin	-	12	5	4	9	30	75%
Sint Maarten	-	10	7	4	10	31	78%
St. Barths	-	12	9	4	11	36	90%
St. Pierre and Miquelon	-	11	8	4	10	33	83%
Turks and Caicos Islands	-	9	6	4	9	28	70%
Bouvet Island	-	12	12	4	12	40	100%
South Georgia and South Sandwich Is.	-	12	10	4	12	38	95%

Table 22 Data gaps in indicators by dimension and across all indicators

Country	Regional Rank	Missing Indicators in each Dimension				Missing across all indicators	
		Efficient and sustainable resource use	Natural capital protection	Green economic opportunities	Social Inclusion	Number	Percent
ASIA							
Japan	1	1	0	0	1	2	5%
Thailand	2	0	0	1	0	1	3%
Cyprus	3	0	0	0	1	1	3%
Georgia	4	0	0	0	0	0	0%
China	5	2	0	0	1	3	8%
Philippines	6	0	0	0	0	0	0%
Singapore	7	4	0	0	3	7	18%
Vietnam	8	0	0	1	0	1	3%
Indonesia	9	0	0	1	1	2	5%
Turkey	10	1	0	0	0	1	3%
Malaysia	11	0	0	0	1	1	3%
Nepal	12	1	1	1	0	3	8%
Brunei Darussalam	13	4	0	1	3	8	20%
Kyrgyz Republic	14	1	1	1	0	3	8%
Armenia	15	1	1	1	0	3	8%
South Korea	16	1	0	0	2	3	8%
Laos	17	2	1	1	1	5	13%
Israel	18	1	0	0	1	2	5%
Cambodia	19	0	0	1	1	2	5%
Kazakhstan	20	1	1	1	1	4	10%
Azerbaijan	21	1	2	1	3	7	18%
Mongolia	22	2	1	1	0	4	10%
Sri Lanka	23	0	0	1	1	2	5%
Myanmar	24	0	0	1	0	1	3%
Lebanon	25	1	0	1	0	2	5%
India	26	0	0	0	0	0	0%
Bangladesh	27	0	0	1	0	1	3%
Maldives	28	5	0	1	2	8	20%
Jordan	29	1	0	0	0	1	3%
Qatar	30	4	0	1	4	9	23%
Saudi Arabia	31	1	0	0	1	2	5%
Oman	32	1	0	1	3	5	13%
Uzbekistan	33	1	1	1	2	5	13%
Kuwait	34	1	1	1	3	6	15%
Pakistan	35	0	0	1	0	1	3%
Tajikistan	-	1	2	2	2	7	18%
Afghanistan	-	2	2	2	1	7	18%
Bhutan	-	2	1	3	3	9	23%
Timor-Leste	-	4	0	2	2	8	20%

Table 22 Data gaps in indicators by dimension and across all indicators

Country	Regional Rank	Missing Indicators in each Dimension				Missing across all indicators	
		Efficient and sustainable resource use	Natural capital protection	Green economic opportunities	Social Inclusion	Number	Percent
Iran	-	0	0	2	0	2	5%
North Korea	-	6	1	4	7	18	45%
United Arab Emirates	-	2	0	2	2	6	15%
Turkmenistan	-	3	1	3	5	12	30%
Syria	-	4	0	3	3	10	25%
Yemen	-	2	0	2	0	4	10%
Iraq	-	0	0	2	1	3	8%
Bahrain	-	3	1	2	4	10	25%
Palestine	-	6	6	2	5	19	48%
Macao	-	9	9	2	8	28	70%
Hong Kong	-	7	8	1	6	22	55%
Taiwan	-	11	9	4	11	35	88%
EUROPE							
Sweden	1	0	0	0	0	0	0%
Austria	2	1	1	0	1	3	8%
Czech Republic	3	1	1	0	1	3	8%
Denmark	4	0	0	0	0	0	0%
Switzerland	5	1	1	0	1	3	8%
Slovakia	6	1	1	0	1	3	8%
Germany	7	0	0	0	0	0	0%
Finland	8	0	0	0	1	1	3%
United Kingdom	9	0	0	0	1	1	3%
Italy	10	0	0	0	1	1	3%
Hungary	11	1	1	0	0	2	5%
Estonia	12	0	0	0	1	1	3%
Latvia	13	0	0	0	1	1	3%
Lithuania	14	0	0	0	1	1	3%
Portugal	15	0	0	0	0	0	0%
France	16	0	0	0	1	1	3%
Croatia	17	0	0	0	1	1	3%
Romania	18	1	0	0	1	2	5%
Slovenia	19	0	0	0	0	0	0%
Spain	20	0	0	0	0	0	0%
Norway	21	0	0	0	0	0	0%
Poland	22	0	0	0	0	0	0%
Netherlands	23	1	0	0	1	2	5%
Belarus	24	2	1	1	1	5	13%
Luxembourg	25	1	1	0	1	3	8%
Greece	26	0	0	0	0	0	0%
Bulgaria	27	0	0	0	1	1	3%

Table 22 Data gaps in indicators by dimension and across all indicators

Country	Regional Rank	Missing Indicators in each Dimension				Missing across all indicators	
		Efficient and sustainable resource use	Natural capital protection	Green economic opportunities	Social Inclusion	Number	Percent
Belgium	28	0	0	0	1	1	3%
Serbia	29	1	1	0	0	2	5%
Ireland	30	1	0	0	1	2	5%
Albania	31	1	1	1	1	4	10%
Ukraine	32	1	0	0	0	1	3%
Iceland	33	1	0	0	2	3	8%
Russia	34	1	0	0	1	2	5%
Moldova	35	1	1	0	1	3	8%
Montenegro	36	3	0	1	0	4	10%
Bosnia and Herzegovina	-	1	0	2	0	3	8%
Malta	-	0	1	2	1	4	10%
Liechtenstein	-	10	4	3	8	25	63%
Andorra	-	10	1	3	9	23	58%
Macedonia	-	1	1	2	0	4	10%
Aland Islands	-	12	11	4	12	39	98%
Faeroe Islands	-	8	6	4	10	28	70%
Gibraltar	-	11	5	4	10	30	75%
Guernsey	-	11	11	4	12	38	95%
Isle of Man	-	11	9	4	10	34	85%
Jersey	-	11	11	4	12	38	95%
Kosovo	-	11	11	4	11	37	93%
Monaco	-	12	5	3	9	29	73%
San Marino	-	12	7	4	8	31	78%
Svalbard and Jan Mayen Islands	-	12	9	4	12	37	93%
Vatican	-	12	10	4	12	38	95%
OCEANIA							
New Zealand	1	1	0	0	2	3	8%
Australia	2	1	0	0	1	2	5%
Fiji	3	0	0	1	1	2	5%
Kiribati	-	8	2	3	2	15	38%
American Samoa	-	11	3	4	11	29	73%
Palau	-	9	1	3	6	19	48%
Northern Mariana Islands	-	11	5	4	10	30	75%
Marshall Islands	-	9	0	4	7	20	50%
Tonga	-	6	0	1	3	10	25%
Vanuatu	-	5	1	3	3	12	30%
Samoa	-	5	0	3	2	10	25%
Micronesia, Fed. Sts.	-	8	1	3	3	15	38%

Table 22 Data gaps in indicators by dimension and across all indicators

Country	Regional Rank	Missing Indicators in each Dimension				Missing across all indicators	
		Efficient and sustainable resource use	Natural capital protection	Green economic opportunities	Social Inclusion	Number	Percent
Solomon Islands	-	6	0	2	2	10	25%
Papua New Guinea	-	2	0	4	3	9	23%
Nauru	-	10	2	4	6	22	55%
Guam	-	11	4	4	10	29	73%
Christmas Island	-	12	9	4	12	37	93%
Cocos (Keeling) Islands	-	12	9	4	12	37	93%
Heard and McDonald Islands	-	12	10	4	12	38	95%
Cook Islands	-	8	8	4	9	29	73%
French Polynesia	-	7	5	3	9	24	60%
New Caledonia	-	8	5	3	9	25	63%
Niue	-	9	7	4	11	31	78%
Norfolk Island	-	12	9	4	12	37	93%
Pitcairn	-	12	9	4	12	37	93%
Tokelau	-	12	7	4	12	35	88%
Tuvalu	-	10	3	4	7	24	60%
United States Minor Outlying Islands	-	12	10	4	12	38	95%
Wallis and Futuna Islands	-	11	8	4	11	34	85%

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Appendices

Appendix 1

Summary of Methods for the Green Growth Index[1]

A. Index Development Process

A.1 Iterative Approach

GGGI adopted a thorough process in designing the Green Growth Index through iterative activities including expert consultations, assessment of expert feedback, and quality improvements. GGGI pursued two complementary strategies to enhance the relevance and practicality of the Index in policy making:

- A stepwise scientific approach through rigorous research to understand the complexity and multi-dimensionality of green growth; and
- A consultative process involving experts and other stakeholders to determine the policy relevance of the indicators at the national and regional contexts.

A.2 Participatory Approach

The stakeholder engagement process was initiated in 2016 and completed in early 2019. The three main phases included:

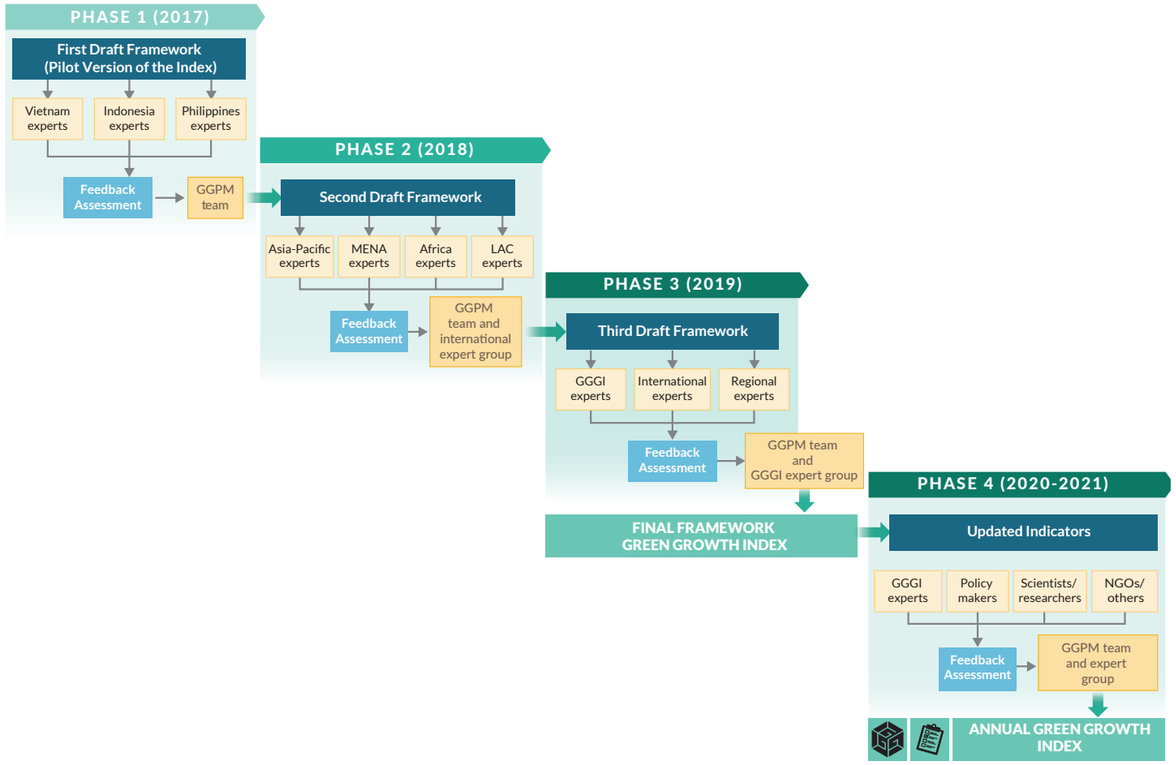
1. Phase 1 – Pilot: GGGI developed a pilot version of the Index covering 34 GGGI member and partner countries[2]. The Index was presented in an international expert workshop at GGGI headquarters in Seoul, South Korea, three in-country stakeholder workshops (in Vietnam, Indonesia, and the Philippines), and an international stakeholder consultation during Global Green Growth Week 2017 in Addis Ababa, Ethiopia. These consultative activities aimed to inform GGGI member countries about the ongoing process of developing the Index and collect initial feedback.
2. Phase 2 – Regional Consultations: GGGI presented the revised framework incorporating the preliminary feedback in 2018 in four regional consultation workshops for the Asia-Pacific Region (Bangkok), Middle East (Dubai), Africa (Addis Ababa), and Latin America and the Caribbean (Mexico City), as well as an international expert meeting in Geneva. These workshops served as a platform for dialogue and interaction among the stakeholders to ensure a transparent process for improving the Index. Outcomes of the workshops were presented during an international expert meeting in Rome, Italy.
3. Phase 3 – Expert Consultations: The last phase of the Index development process involved the circulation of the draft technical report on the concept, methods, and applications of the Index to the internal and external experts for their review and feedback. GGGI collected expert feedback through an online survey. GGGI also conducted two additional expert consultations—the first with GGGI thematic experts to align the Index to the priority areas of the Institute and the second with selected research institutions and international organizations[3] to validate the sustainability targets. These expert inputs from the online survey and consultations were used to finalize the Index.
4. Phase 4 – Annual Expert Consultations: The fourth phase of the Index development process is the expert consultations which are conducted every year to continuously improve the indicators of the Green Growth Index. As discussed in chapter 5.3 Next steps forward and as indicated in Table 4, missing green growth indicators will need to be included and proxy variables will still need to be replaced with more relevant indicators when data become available in the next years. Detailed description of this year's consultations is discussed in chapter 5 Expert consultations and Appendix 2.

[1]Information in this Appendix was adapted from Acosta, L.A., C.O. Balmes, R.J. Mamiit, P. Maharjan, K. Hartman, O. Anastasia, and N.M. Puyo. (2019). Assessment and Main findings on the Green Growth Index, GGGI Insight Brief No. 3, Green Growth Performance Measurement, Global Green Growth Institute, Seoul, South Korea. http://greengrowthindex.gggi.org/wp-content/uploads/2020/04/GGGI-Insight-Brief-No.-3_Final.pdf

[2]"Members" refer to countries that have submitted their instrument of accession to GGGI and formal membership has commenced while "partner countries" include countries where GGGI has operations and those that have formally communicated their intent to become a Member.

[3]IASS, PIK, FAO, SDSN and OECD.

Figure A Process for developing the framework of the Green Growth Index



B. Analytical and Empirical Methods

B.1 Stepwise Analytical Approach

In building the Green Growth Index, GGGI applied a stepwise approach that conforms to "good practices" in developing composite indices[4] (Figure B). A composite index combines a number of indicators into a single score, which facilitates the comparison, ranking, benchmarking, and monitoring of progress for multifaceted, complex phenomena.

The development of the Green Growth Index followed four key steps:

- Concept building entails defining the objectives of the Index, conceptualizing green growth, and identifying its dimensions and indicators;
- Empirical application requires addressing methodological issues such as indicator selection, data preparation (i.e., scaling, imputation, outliers, correlation), normalization, weights, and aggregation of indicators;
- Robustness check involves assessing the explanatory power of the Index through correlation analysis and changes in model inputs and its impacts on aggregation through sensitivity and uncertainty analyses; and
- Presentation focuses on communicating the results at the global, regional, and country scale using various diagrams and tables.

[4]*Nardo, M., Saisana, M., Saltelli, A., & Tarantola, S. (2005). Tools for Composite Indicators Building. Ispra, Italy: European Commission Joint Research Centre: Institute for the Protection and Security of the Citizen Econometrics and Statistical Support to Antifraud Unit; OECD & JRC 2008, op. cit.*

Figure B Stepwise approach for developing the Green Growth Index

B.2 Empirical Steps

The Green Growth Index was constructed through aggregation of the normalized indicators (metrics), indicator categories (pillars), and dimensions (goals) (Figure C). Prior to the aggregation, several steps were necessary to select, prepare, and validate the indicators included in constructing the Index:

1. Indicator selection: Several criteria were applied in the selection of indicators, including the relevance of the data to the green growth dimensions based on conceptual and empirical evidence, coverage of more than 140 countries (including most GGGI member and partner countries); availability of time-series data to allow updates of the Index on a regular interval; accessibility of the data to ensure replication of methods and credibility of their sources; and acceptable level of association with other indicators in the same dimension. In a few cases, however, the criteria for country coverage and time-series data were waived due to a significant lack of data. All data were collected from online sources, mainly published in the UNSTATS SDG database and databases from other international organizations (e.g. FAO, World Bank, WIPO, UN COMTRADE, etc.).
2. Data preparation: Scaling and imputation are the most important methods to prepare the data and improve the comparability of the indicators. Scaling the data with an appropriate denominator (e.g., GDP, land area, etc.) allows an objective comparison across small and large countries. Available data for all the indicators were scaled except for the GHG emissions, export of environmental goods, and patents of environmental technology. Imputing data based on the available time-series data helps improve the country coverage of the indicators. To minimize the effects of imputation on data uncertainty, the simple method of imputing data from the closest years was applied.
3. Data validation: The most important method to validate the statistical appropriateness of the indicator data is to check for outliers and correlation. Since outliers can distort statistical properties and normalized values of the indicators,[5] their values were capped using lower or upper fences based on the interquartile range from 75th and 25th percentiles. The aims of the correlation analysis are to identify redundant indicators with very strong correlation to improve the explanatory power of the indicators and verify whether indicators have acceptable levels of association in their respective dimensions. Indicators with very strong correlation were excluded from the framework and replaced with ones having acceptable levels of association.
4. Indicator weights: To reduce the larger impact of green economic opportunities, which have only four indicators as compared to twelve in other dimensions, weights were assigned at the dimension level. The weights were multiplied to the dimension scores as follows:

$$GGI = ((ESRU^{12})*(NCP^{12})*(GEO^{4})*(SI^{12}))^{1/40}$$

where GGI refers to the Green Growth Index
ESRU refers to efficient and sustainable resource use
NCP refers to natural capital protection
GEO refers to green economic opportunities
SI refers to social inclusion

5. Indicator normalization: To translate the indicators with different units into a common scale, it is necessary to apply a normalization method. Through normalization, the indicator values measured in different units can be adjusted to a single scale to make the data comparable across the indicators. The re-scaling method (min-max transformation) for normalization was applied for the following reasons: it is the simplest and most widely used method that will facilitate ease of comprehensibility and replication; the use of upper and lower bounds will reduce issues related to outliers; and the integration of the targets will allow benchmarking against sustainability targets.

The normalized indicators were used as inputs to the aggregation model (i.e., level 1) as presented. The two most common and simple methods of aggregation include linear aggregation using arithmetic mean and geometric aggregation using geometric mean. These two methods have different underlying assumptions. Linear aggregation allows full and constant compensability, i.e. low values in one indicator can be traded off (substituted) by high values in another. On the other hand, geometric aggregation allows only partial compensability, limiting the ability of the indicators with very low scores to be fully compensated by indicators with high scores. The two methods were applied in the different aggregation models so that, as the level of aggregation increases, the level of substitutability decreases:

1. Level 1: Arithmetic mean was applied to linearly aggregate the normalized indicators, allowing compensability of the individual indicators in each indicator category. Moreover, at Level 1 of aggregation, countries with more than 25% missing values were dropped.
2. Level 2: Geometric aggregation was applied to the indicator categories to allow only partial compensability between indicators in each dimension. Like in Level 1, the 25% rule on

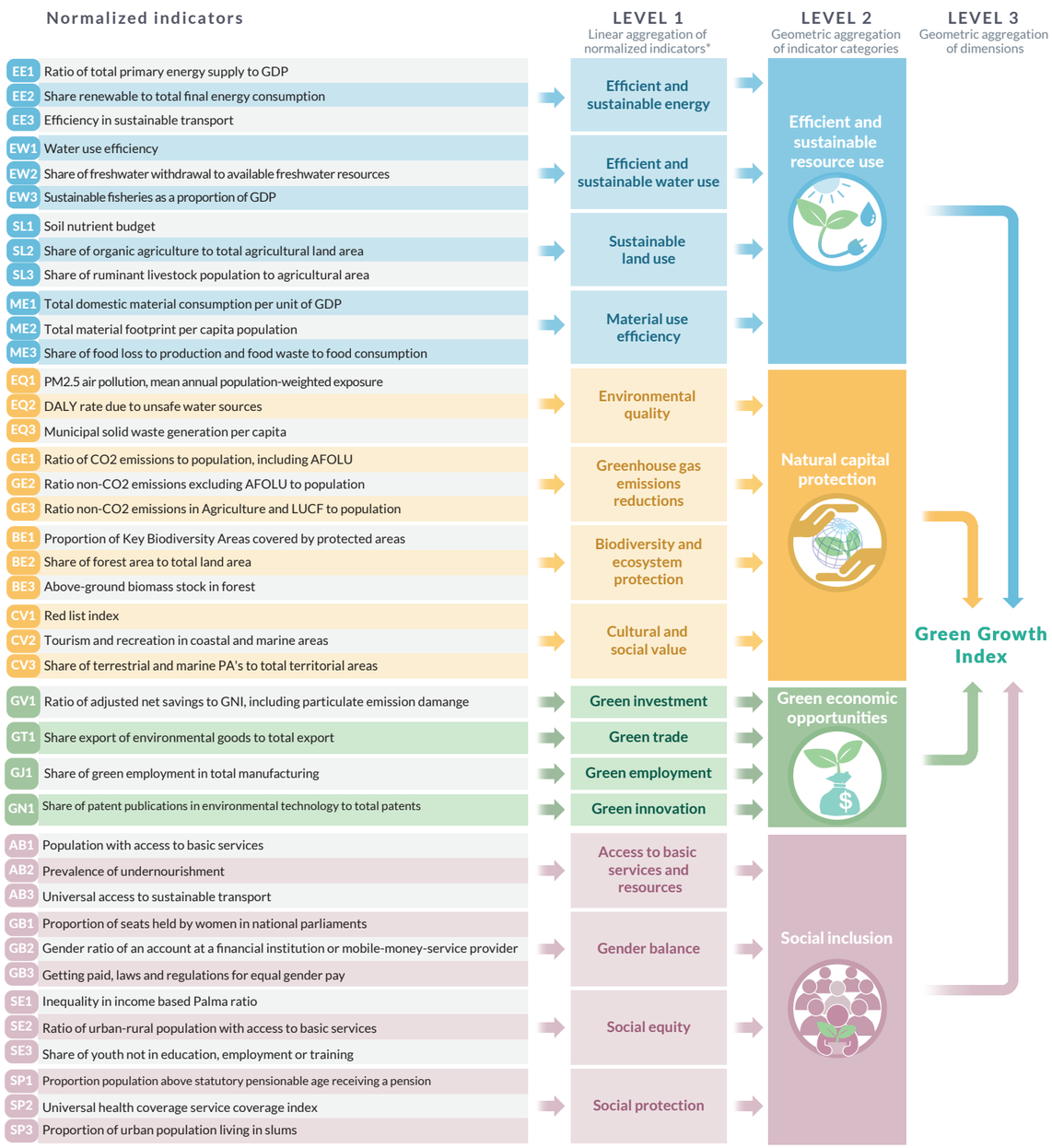
[5]*Mishra, S. K. (2008). Construction of Composite Indices in Presence of Outliers. SSRN Electronic Journal, 1–5. https://doi.org/10.2139/ssrn.1137644; OECD & JRC 2008, op. cit.; Ibid.*

missing values was applied to the dimensions with more than four indicator categories, i.e., resource efficiency and green economic opportunities.

3. Level 3: Geometric aggregation was applied on the dimensions and the 25% rule on missing values was not applied. At this level of aggregation, no dimension was allowed to easily substitute the other dimensions to improve the Green Growth Index.

Python software was used to conduct all the analysis described above, except for the correlation analysis which was done in Prism (GraphPad Software). Detailed discussion on the steps involved in constructing the Green Growth Index is provided in chapter 5 of GGGI Technical Report Number 5, Green Growth Index: Concepts, Methods, Applications (Acosta et al. 2019).

Figure C Methods of aggregation at the indicator, indicator category, and dimension levels



*No aggregation for indicators of green economic opportunities

C. Validating and Improving the Index

Composite indices often face criticism because they can be misleading if badly constructed and interpreted.[6] Thus, the final important step in developing a composite index is the evaluation of the confidence in the model and its underlying assumptions (i.e. robustness check).

Three different types of analyses were conducted to validate the robustness of the Green Growth Index:

- Explanatory power: Using regression models, the ability of the indicators and their aggregated values (i.e., indicator categories, dimensions) to explain the structure of the Index was analyzed.
- Sensitivity analysis: The sensitivity of the Green Growth Index to changes in the input variables of the aggregation model at Level 1 was analyzed.
- Uncertainty analysis: The uncertainty analysis evaluates the impact of the assumptions made and methods used to build the model on the Index.

The results from the regression models suggested that sufficient variation in the Green Growth Index is explained by the dimensions, indicator categories, and indicators, while those from sensitivity and uncertainty analyses showed that the Green Growth Index is robust with respect to changes in model inputs and assumptions. Details of the results for the 2019 Green Growth Index are provided in chapter 5 of GGGI Technical Report Number 5, Green Growth Index: Concepts, Methods, Applications (2019) and GGGI Technical Report Number 9, Green Growth Index: Robustness Check (2019). Those for 2020 Green Growth Index will be published in a technical report that will be dedicated to the validation of the Index and its updated list of green growth indicators.

[6] *Saisana, M., & Tarantola, S. (2002). State-of-the-art report on current methodologies and practices for composite indicator development. European Commission, pp. 1–72. https://doi.org/10.13140/RG.2.1.1505.1762*

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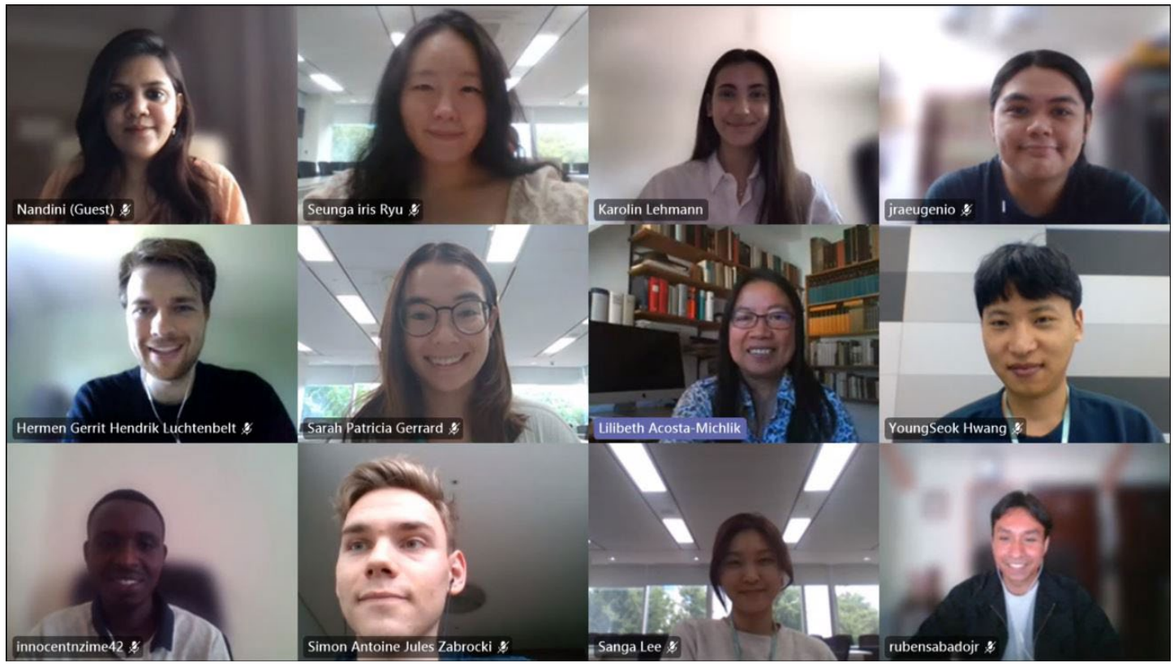
Appendix 4
The GGPM Team



The 2021 GGPM team members during one of the online meetings from their respective work locations. From left to right and from top to bottom: Nandini Sharma, Seunga Iris Ryu, Karolin Lehmann, Jeremiah Ross Eugenio, Hermen Gerrit Hendrik Luchtenbelt, Sarah Gerrard, Lilibeth Acosta, Young Seok Hwang, Innocent Nzimenyera, Simon Zabrocki, Sanga Lee, and Ruben Sabado, Jr.

Below are the details of the GGPM team members who contributed to this report:

Lilibeth Acosta is a Principal Specialist in GGGI's Climate Action and Inclusive Development Division and Program Manager for the Green Growth Performance Measurement. She joined GGGI in 2018. Lilibeth has over 15 years of experience in indicator development, integrated assessment and scenario modelling of climate change vulnerability and adaptation as well as sustainable development in the fields of ecosystem and biodiversity, agriculture and land use, and renewable energy. She worked as development specialist in the National Economic Development Authority in the Philippines, senior scientist in the Potsdam Institute for Climate Impact Research in Germany, and researcher in Environmental Science departments in the universities in Japan, Belgium, United Kingdom, and the Philippines. Before joining GGGI, she worked as consultant in the ADB, UNCCD and UNCTAD. She holds a PhD in Agricultural Policy from University of Bonn (Germany), MPhil in Economics and Politics of Development from University of Cambridge (England), and BSc in Agricultural Economics from the University of the Philippines.

Godwin Paul Adams joined GGPM as intern in June 2021 and as consultant in December 2021. He has an undergraduate in Theoretical Physics and a Masters in Energy and Sustainability (renewable energy, climate change, and waste resource management) from University of Southampton. He worked as an intern in Centre for science and environment in New Delhi and as a research intern in Lotus Project, UK. The research topic of his Master degree is on Rural electrification in Odisha, India. His specializations are in the field on renewable energy systems, bioenergy, GIS, climate design of buildings and cities.

Jeremiah Ross Eugenio is a GGPM researcher and member of the publication team of Sarena Grace Quiñones, who is coordinating editorial, layout, and research support to the GGPM. He has been part of Sarena's team since October 2019. His tasks include literature review and preparation of references in Mendeley software, encoding of results from the online survey and reviews of online tools and literature, preparation of graphics for and analysis of these results, and provide research support to the modelling team of the Green Growth Index and Simulation Tool. He earned his Bachelor of Science degree in Agricultural Economics with major in marketing and prices from the University of the Philippines in Los Baños. He participated in various seminars that are relevant to the Index and Tool including farm tourism in the Philippines, assessment of neighborhood and spillover effects of technical efficiency of irrigated rice farms, and responding to food security and inclusiveness concern in the ASEAN region.

Sarah Gerrard is a GGPM consultant involved in the work of the Simulation Tool and Green Growth Index. She joined GGGI in May 2020, focusing on the application and development of efficient and sustainable resource use and green economic opportunity models for the Simulation Tool, conducting result analysis for the Green Growth Index and being a lead author for the Phase 1 Simulation Tool and 2020 Green Growth Index technical reports. In 2021, she will continue to work on the Phase 2 development of the Simulation Tool as well as contributing to GGPM reports and articles. Before joining GGGI, she has previously worked in sustainable urban development by interning at the United Nations Economic and Social Commission for Asia and the Pacific (UN ESCAP). Sarah holds a Master of Environmental Science with a specialization in land and water management and a BSc in Environmental Science and Natural Resource Management, both from the University of Western Australia.

Sanga Lee joined the GGPM team as an intern in May 2021. Her main tasks include supporting data analysis for the Simulation Tool. Before joining GGPM team, she had worked as a research assistant at the Gyeonggi Research Institute for the balanced growth of Gyeonggi province. She got her master's degree in urban design and planning from University of Seoul and got a bachelor's degree in cultural management and business administration. As a research assistant at the University of Seoul, she had participated in various research projects with governments such as the Korean national administrative city government, Seoul city government, Eunpyeong-gu government, etc., using big data analysis and spatial analysis. Her main areas of interest are sustainable development, green growth, and a city for everyone.

Karolin Lehmann started her internship with the Green Growth Performance Measurement team in Spring 2021, assisting in research and reporting work. She continues to work as consultant in the GGPM supporting the work on the Green-Blue Growth Index. She worked as a Research Assistant at the University of Lund, where she is currently pursuing a Master's in Economic Development. Her main fields of interest surround female economic empowerment, wealth equality, financial inclusion and human capital measurements. Specifically, Karolin is writing her thesis on the relationship between financial inclusion and women's empowerment in Sub-Saharan Africa.

Hermen Luchtenbelt is a GGPM research consultant for the Green Growth Index and Simulation Tool. He joined the GGPM as an intern in May 2020 and as a consultant in November 2020. His main contributions to the simulation tool were with models related to natural capital protection, land-use, and greenhouse gas emissions. Other tasks included preparing the spatial maps in the 2020 Green Growth Technical Report. Before joining GGGI, he did field work at the Osotua foundation and supported in the development of a showcase for cattle, culture, and wildlife interactions in the Masai Mara. Hermen has a MSc in climate studies specialized in biogeochemical cycles and a MSc in Environmental Economics and Natural Resource Management at Wageningen University in the Netherlands. Before that he completed his BSc in Economics and Governance, specialized in Agricultural Economics at the same university.

Innocent Nzimenyera joined the GGPM Team as an Intern in June 2021. His main tasks are to support development team for data analysis and programming part. Before joining GGPM he worked as digital ambassador at Ministry of ICT and Innovation for developing the digital literacy of Rwandan citizens. He has a bachelor's degree in computer science from University of Rwanda, College of Science and Technology. He also certified in Artificial Intelligence with deep learning by FAST Foundation from Armenia. he enjoys being challenged and engaging with projects that require him to work outside his comfort and knowledge set, as he continues to learn new skills and development techniques that are important to him and the success of the organization. He is proactive, innovative, self-motivated and capable of working under minimum supervision.

Ruben Sabado, Jr. is a GGPM researcher and member of the publication team of Sarena Grace Quiñones, who is coordinating editorial, layout, and research support to the GGPM. He has been part of Sarena's team since July 2020. His tasks include literature review and preparation of references in Mendeley software, encoding of results from the online survey and reviews of online tools and literature, preparation of graphics for and analysis of these results, and provide research support to the modelling team of the Simulation Tool. He earned his Bachelor of Science degree in Agricultural Economics with major in marketing and prices from the University of the Philippines in Los Baños. He attended various seminars that are related to the Green Growth Index and Simulation tool such as the Philippine Rice Information System (PRISM) and success stories of the Farmer-Scientists RDE Training Program (FSTP).

Simon Zabrocki joined GGGI as programmer and modeler consultant in July 2020 and as Analyst in February 2021 , with main tasks of developing an automated collection and processing of data for the Green Growth Index computation, designing user-friendly dashboards to allow policy makers exploring and analyzing Green Growth data and scores, and contributing to a policy simulation tool development by implementing and integrating models and policy scenarios. Before joining GGGI, he worked as data scientist in HawaDawa company on air quality management in Germany and in Sanofi, Biologics Development R&D in the United States, Python developer for an applicant tracking system in Manatal in Thailand, and teacher in Bac Ninh high School for gifted students in Vietnam. He earned his Bachelor in Engineering and Master of Science in Applied Mathematics in École Polytechnique in France, and Master Mathematics for Data Science in the Technische Universität München in Germany.

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