



Environmental sustainability and human development: perspectives from the Arab region



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Economic and Social Commission for Western Asia

Environmental sustainability and human development: perspectives from the Arab region



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Author: Marlene Tomaszewicz, Radia Sedaoui and Phoebe Ishak.

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Introduction

Environmental sustainability is a key element of human development and well-being. We depend upon ecosystems to provide the water we drink, the food we eat, and the wood we use to heat our homes. Reliance on these resources necessitates a delicate balance, however. Use too little of those resources and our capacity to meet basic human needs is at risk. Use too much and severe adverse environmental repercussions will likely ensue, including the depletion of resources, ecosystem collapse and increased emissions. Such risks are amplified due to rapid globalization, urbanization, wealth generation, and climate change. Hence, it is not enough to solely evaluate our environment: attention must also be given to the sustainability of the environment.

Frequent assessments are essential to evaluate whether countries are moving towards or away from environmental sustainability. The simplest approach in that regard is to aggregate selected indicators to formulate an index. The resultant index can then be used to evaluate countries' progress towards environmental improvement or decline and highlight specific areas of strengths or weaknesses.

Several researchers have proposed environmental sustainability indices either as stand-alone diagnostic tools or as components of a broader human development appraisal process. One widely-utilized approach is to monitor countries' ecological footprint, which measures the demand placed upon a given environmental system by calculating the quantity of productive land and water required to support a population at its present level of consumption and resource-use efficiency (Ceballos and others, 2005; Monfreda and

others, 2004). An ecological footprint is often countered by biocapacity, which measures environmental system supply, and specifically the productive capacity of the biosystem sphere (Moran and others, 2008).

Another popular approach is to monitor the Environmental Performance Index (EPI) (Esty and others, 2006; Wendling and others, 2020). The EPI is one of the more comprehensive tools that can be used to assess environmental sustainability. It is based upon 32 indicators, encompassing 11 issue categories divided into two broad spheres, namely ecosystem vitality and environmental health (Wendling and others, 2020).

Other researchers have monitored selected environmental indicators in tandem with the Human Development Index (HDI), developed by the United Nations Development Programme (UNDP) (UNDP 1990, 2019). Bravo (2014) suggested the formulation of a Human Sustainable Development Index (HSDI) by augmenting the HDI with carbon dioxide (CO₂) emissions per capita. Both the Human Green Development Index (HGDI) (Li and others, 2014) and the National Sustainable Development Index (NSDI) further augment the HDI with additional socioeconomic and environmental indicators. The HGDI includes 12 indicators, 6 of which are environment-centric: CO₂ emissions, PM₁₀ (airborne particles less than 10 microns in diameter), forest cover, proportion of threatened animals, proportion of land conservation area, and utilization of primary energy. Similarly, the NSDI includes 12 indicators, including 7 that describe the environment: CO₂ emissions, PM_{2.5} (airborne particles less than 2.5 microns in diameter), forest cover, arable land per capita,

renewable energy consumption, population using improved drinking water sources, and population using improved sanitation services. Most recently, authors have enhanced the HDI by incorporating indicators on CO₂ emissions and countries' material footprint to formulate indices known as the Planetary Pressures-adjusted Human Development Index (PHDI) (UNDP, 2020) and the Sustainable Development Index (SDI) (Hickel, 2019).

Environmental indices are often of limited use due to a lack of relevant data. Environmental sustainability is highly multidimensional but is often reduced to a limited number of indicators (Bravo, 2014; Dahl, 2012; UNDP, 2020). UNDP has sought to address that challenge by including indicators via a supplemental dashboard that facilitates reporting on certain facets of human development, particularly those presenting data challenges and which are not incorporated into the HDI. A selection of 12 indicators to describe both environmental sustainability and threats are included. The former comprise fossil fuel energy consumption, renewable energy consumption, carbon dioxide emissions (expressed in two ways), forest area (expressed in two ways), freshwater withdrawals, and natural resource depletion as a percentage of gross national income. The latter comprise mortality rates attributed to household and ambient air pollution and to unsafe water, sanitation and hygiene services, degraded land, and the International Union for Conservation of Nature (IUCN) Red List Index (IUCN, 2020), which measures aggregate extinction risk across groups of species (UNDP, 2019).

Countries in the Arab region¹ often perform poorly on aggregated environmental indices due to carbon emissions in Arab oil producing countries (Global Footprint Network, 2020; UNDP, 2020; Hickel, 2019; Yumashev and others, 2020) or the overexploitation of natural resources. As illustrated in figure 1, 5 of the 15 countries with the largest ecological footprint are in the Arab region due to their elevated carbon land footprint and their limited capacity to mitigate CO₂ and other greenhouse gas emissions. Similarly, the recently-launched PHDI reduces Arab countries' human development scores by up to 32 per cent because of their high CO₂ emissions (UNDP, 2020). Threats in the Arab region, such as rapid urban expansion, water scarcity, and food security (El-Zein and others, 2014), have also resulted in low environmental index scores. Overexploitation of natural resources is responsible for low NSDI scores in Qatar, the United Arab Emirates and Saudi Arabia, despite those countries' considerable financial resources.

This paper proposes the formulation of a comprehensive environmental sustainability index (ESI), applicable globally, but developed from an Arab regional perspective. The EPI reveals the below-average environmental performance of most Arab countries. This is particularly the case among Arab least developed countries,² partly due to the perceived unimportance of environmental issues in the region (Ismail and others, 2019). Confronting environmental threats is critical, however, for the region's survival (El-Zein and others, 2014). The aim of the proposed ESI is not to artificially elevate the region's

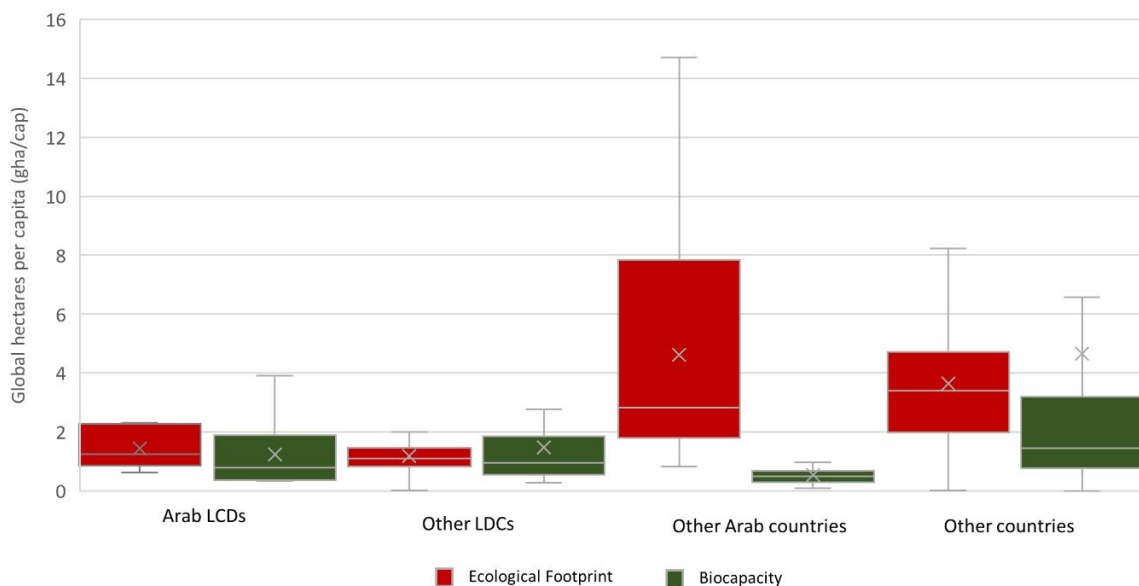
¹ Countries in the Arab region include the 22 members of the Arab League, namely Algeria, Bahrain, the Comoros, Djibouti, Egypt, Iraq, Jordan, Kuwait, Lebanon, Libya, Mauritania, Morocco, Oman, State of Palestine, Qatar, Saudi Arabia, Somalia, Sudan, the Syrian Arab Republic, Tunisia, the United Arab Emirate and Yemen.

² Least developed countries exhibit the lowest HDI values. As of December 2020, 46 countries are classified as least developed countries (Department of Economic and Affairs (DESA), 2020).

environmental performance in comparison to other countries, but rather to draw attention to

the environmental factors that are most relevant to the region within a global context.

Figure 1. Biocapacity and ecological footprint per capita for Arab countries, least developed countries (LDCs), and other countries (2017 data)



Source: Author calculations on the basis of data contained in Global Footprint Network (2020).

Notes: Outliers are excluded from the data. If biocapacity (green) is less than the ecological footprint (red), the status quo is deemed to be unsustainable.

1. Conceptual framework

Environmental sustainability, one of three pillars of sustainability,³ was formally introduced as a broad fundamental concept by Goodland (1995). It can be defined as the capacity to sustain global life support systems indefinitely by ensuring that natural resources adequately meet human life requirements. Natural resources include oil, natural gas, air, soil, water and animals, all of which are finite if not satisfactorily maintained. Moreover, the idea of environmental sustainability transcends a simple supply-demand balance by simultaneously considering waste assimilation, and steps taken to minimize environmental degradation and promote biodiversity conservation. However, the scope of environmental sustainability presents a challenge when attempts are made to quantify the concept using selected indicators.

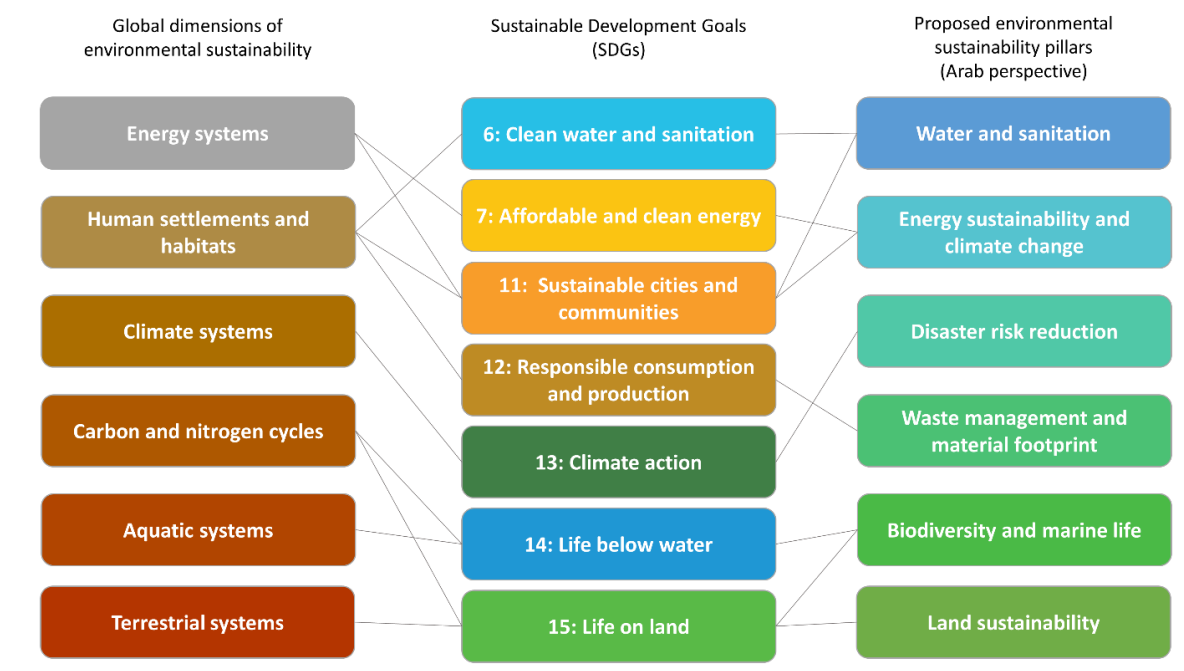
Different regions and sectors focus on different aspects of environmental sustainability. As illustrated in figure 2, the concept is now expressed in terms of the following six interlinked global dimensions: energy systems, human settlements and habitats, climate systems, carbon and nitrogen cycles, aquatic systems and terrestrial systems (Moldan and others, 2012). In that context, energy systems encompass usage, conservation, renewable energy, efficiency and bioenergy. Human settlements and habitats encompass cities, urbanization and transport. Climate systems encompass present and future climate scenarios, including climate risk management,

mitigation and adaptation. Carbon and nitrogen cycles encompass sources and sinks, feedback processes and links to other systems. Aquatic systems include both fresh and marine water ecosystems, fisheries and biodiversity. Terrestrial systems include land ecosystems, forestry, agriculture and biodiversity. Each of the global environmental sustainability dimensions are interlinked to several of the Sustainable Development Goals, the key United Nations framework adopted to promote the establishment of a sustainable planet by 2030.

Pillar selection for the environmental sustainability index (ESI) was conducted via a consultative process with environmental experts from the Arab region. The global dimensions, Sustainable Development Goals and existing indices (particularly the EPI) provided a basis for the selection process. Emphasis was placed on certain aspects of environmental stability that are particularly important in the Arab region, such as adequate access to basic services to counteract local environmental threats, including water scarcity and urbanization, while concurrently de-emphasizing other aspects, such as forestry, due to regional limitations. The consensus resulted in six ESI pillars: water and sanitation, energy sustainability and climate change, disaster risk reduction, waste management and material footprint, biodiversity and marine life and land sustainability. The pillars and their relationship with the Sustainable Development Goals is outlined in figure 2.

³ The three pillars include economic, social and environmental sustainability.

Figure 2. Interlinkages among global dimensions of environmental sustainability, the Sustainable Development Goals and the pillars of the proposed environmental sustainability index



The six ESI pillars are evaluated by means of a number of carefully defined indicators that were formulated with input from regional experts to ensure that they met specific criteria, namely:

- **Relevance:** are the indicators applicable to the respective pillar?
- **Data availability:** do the indicators include data for all countries?
- **Measurability:** can the indicators be quantified?
- **Homogeneity:** are the indicator data from a single source?

- **Data period:** are indicator data current (2015 or later)?

Some indicators failed to meet all requirements but were still deemed contextually significant. In these cases, they were included for comparative analysis, but were not incorporated into the ESI. Through a consultative process with environmental experts in the Arab region, 23 indicators were selected. Those indicators are set out in table 1. The most recent available data was used to inform those indicators.

Table 1. Pillars and indicators for the proposed environmental sustainability index

Pillar	Indicator	Data Source
Water and sanitation	Access to drinking water	World Health Organization (WHO) and United Nations Children's Fund (UNICEF) (2017)
	Access to sanitation	WHO and UNICEF (2017)
	Access to hygiene	WHO and UNICEF (2017)
	Level of water stress	Food and Agriculture Organization of the United Nations (FAO) (2017)
Energy sustainability and climate change	Access to clean fuels and technologies	WHO (2020)
	Energy efficiency	International Energy Agency (IEA) (2017a)
	Renewable energy	IEA (2017b)
	CO ₂ emissions per capita	Appalachian Energy Center (2017)
	Black carbon	Community Emissions Data System (CEDS) (2014)
	Methane emissions	European Commission Joint Research Centre (JRC) Emissions database for global atmospheric research (EDGAR) (2015)
Disaster risk reduction	Global Climate Risk Index	Eckstein and others (2018)
	World Risk Index	Bündnis Entwicklung Hilft (BEH) and Ruhr University Bochum – Institute for International Law of Peace and Armed Conflict (IFHV) (2019)
Waste management and material footprint	Material footprint per capita	Environment Live (2015)
	Food loss index	The Economist Intelligence Unit Global Food Security Index (2019)
	Total municipal solid waste per capita	World Bank (2018)
Biodiversity and marine life	Marine protected areas	Environment Live (2017)
	Marine key biodiversity areas	IUCN (2019)
	Exclusive economic zones managed using ecosystem-based approaches	United Nations Environment Programme (UNEP) (2020)
	Forested areas	FAO (2020)
	Terrestrial and freshwater biodiversity	UNEP (2019)
	Red List Index	IUCN (2020)
Land sustainability	Cereal productivity	FAO (2019)
	Organic carbon density in soil	JRC (2012)
	Land degradation	United Nations Convention to Combat Desertification (UNCCD) Knowledge Hub (2015)

A. Water and sanitation

Access to clean drinking water and sanitation is recognized as a human right. Basic uses include drinking, personal sanitation, the washing of clothes, food preparation, and hygiene. The coronavirus disease (COVID-19) pandemic has highlighted the significance of access to clean drinking water and sanitation in the prevention of disease and the protection of human health. However, water, sanitation and hygiene (WASH) infrastructure in several developing areas are undermined by insufficient funding, service intermittency, limited coverage, non-revenue network water losses, and damage and destruction stemming from regional conflicts. Global WASH priorities include managing untreated wastewater, ending open defecation, addressing inequalities among marginalized populations and achieving universal access (Setty and others, 2020). WASH priorities are addressed by three of the proposed indicators, namely access to drinking water, access to sanitation, and access to hygiene.

Access is undermined by freshwater scarcity, one of primary ecological threats in the Arab region (El-Zein and others, 2014) and a challenge that is exacerbated by increasing groundwater extraction, freshwater ecosystem degradation, deteriorating water quality, limited renewable water resources and pressures on transboundary basins. Collectively, the total water withdrawal is eight times the total renewable water resources per capita in the Arab region, with some oil-producing countries at a significantly higher deficit (FAO, 2016). Inadequate access is compounded by population growth, economic development and the impact of climate change. Moreover, scarcity contributes toward increased pressures on human settlements and ecosystems, impacting health and welfare, particularly among vulnerable groups. Water

demand in the region is often met using desalination, which is not sustainable due to cost, dependence on other resources and adverse environmental impacts or non-renewable groundwater (Aleisa and Al-Zubari, 2017). Water scarcity is not unique to the Arab world, however. Indeed, an estimated two thirds of the global population is susceptible to severe water scarcity during at least part of the year, with half of those so affected in China and India (Mekonnen and Hoekstra, 2016). Water stress is therefore proposed as an indicator.

B. Energy sustainability and climate change

Progress in sustainable energy and climate action are closely interlinked. Combined, the two development objectives also go hand in hand in facilitating progress across a range of other development goals, including the promotion of human health, gender equality, the creation of safe, resilient living spaces and the protection of natural resources, both on land and at sea (ESCWA, 2019).

Climate change is one of the key challenges of the twenty-first century, and has impacts upon multiple environmental sectors and on human health. Repercussions for water resources include declining availability, salt-water intrusion induced by over-extraction and rising sea levels, and increased agricultural demand to meet food security. Although precipitation is expected to be highly variable, some geographic locations are expected to experience sharp rainfall reductions. For example, winter precipitation in the Moroccan Highlands is projected to decline by some 40 per cent by the end of the century (ESCWA and others, 2017). Climate change also affects ecosystems due to weather extremes such as heat waves, droughts, and floods. Higher sea

temperatures alter marine ecosystems, potentially leading to declining fish stocks, coral bleaching and species migration. Climate change also has adverse impacts upon crop production, particularly for rain-fed crops (Cramer and others, 2018). For example, rain-fed cereal yields are expected to decrease up to 24 per cent in Yemen by mid-century (ESCWA and others, 2019).

From a human development perspective, least developed countries are particularly vulnerable to climate change (UNDP, 2020). Least developed countries in the Arab region are particularly vulnerable due to their low levels of adaptive capacity, despite increasing precipitation and only moderate increases in temperature relative to other part of the region (ESCWA and others, 2017).

Climate change indicators are often based on modelling projections, such as projected changes in temperature or precipitation, and are used in vulnerability assessments (ESCWA and others, 2017). Although useful for planners, those indicators present challenges because they are based on projected data rather than on observed measurements, because they demonstrate wide subnational variability, and because they often require extensive data analysis. Because of those shortcomings, proxies such as greenhouse gas emissions are often used to assess climate change (Dahl, 2012). For this reason, climate change is expressly linked with energy sustainability in the ESI pillars. Climate change is also indirectly addressed under the other proposed pillars and indicators.

Extractive industries and countries' overreliance on fossil fuels and minerals has also contributed to the growing global carbon footprint and is addressed primarily in the proposed environmental sustainability index by three indicators, namely CO₂ emissions,

methane emissions and black carbon. Methane emissions are generated during the production and transport of hydrocarbons, by livestock and agricultural practices and by the decay of organic waste in municipal solid waste landfills. Black carbon, produced both naturally and as a result of the incomplete combustion of fossil fuels, biofuels, and biomass, is now understood to be a major contributor to global climate change and, after CO₂, is perhaps the most important driver of that change. Reducing exposure to black carbon provides public health co-benefits, especially in developing countries.

Although climate change mitigation measures often focus on reducing greenhouse emissions generated in power generation, energy plays a pivotal role in human development and economic growth. Energy consumption of some 30 to 40 gigajoules per capita annually is estimated to be the minimum required for a decent standard of living. At the household level, energy is used for heating, cooling, lighting, cleaning, cooking, and food preservation. Communities are connected together through energy use, including through means of communication, transport, and public services (Lamb and Steinburger, 2017). Unsustainable and inefficient energy consumption patterns, including energy access based on poor quality fuels and inefficient appliances, affect millions of people in developing countries and have a negative impact on their health, their education and their socioeconomic prospects. This is especially so for vulnerable people facing gender inequality, conflict and those in remote locations, where sustainable energy transition can be a just transition to new levels of equality and well-being. The sustainability of the energy sector is assessed in the context of the proposed environmental sustainability index using three indicators, namely access to clean fuels and technologies, energy efficiency, and renewable energy.

C. Disaster risk reduction

Natural disasters, including floods, droughts, earthquakes, forest fires, and other calamities, imperil environmentally sustainable development. Rapid urbanization, climate change, and rising sea levels are expected to exacerbate disaster risks in the Arab region and beyond (El-Kholei, 2019). Disasters can adversely affect all countries, independently of their income status, although most deaths occur in least developed countries: there are, in fact, nearly 1.5 times more deaths from natural disasters in least developed countries than in other countries and the figure may be higher due to underreporting (United Nations Office for Disaster Risk Reduction (UNDRR) and Centre for Research on the Epidemiology of Disasters (CRED), 2018). Sound disaster risk reduction practices demonstrate adaptation to climate change and good urban governance (El-Kholei, 2019). Nonetheless, previous environmental indices have not specifically addressed disasters (Mochizuki and Naqvi, 2019).

Disaster risk reduction can be viewed as an indirect function of each of the three core elements of the HDI: education, health, and income (Mochizuki and Naqvi, 2019; Maini and others, 2017). Educational facilities often act as emergency shelters, or conversely, settings for mass casualties due to inadequate construction. Schools also are proxies for knowledge resources and gender equality (Mochizuki and Naqvi, 2019). With regard to health, the scope of what constitutes a disaster has sometimes been extended to include epidemics and pandemics (Maini and others, 2017), particularly in the wake of the COVID-19 pandemic (UNDP, 2020). More commonly, health and disasters are linked through mortality rates, access to medical facilities, and institutional frameworks (Maini and others, 2017). Lastly, although wealth does not prevent

disasters, economic resources can help greatly with recovery efforts (Mochizuki and Naqvi, 2019).

Although mortality rates are associated with disasters and health, that indicator can also be used in the context of the proposed environmental sustainability index. That indicator is likewise used to measure progress towards the achievement of Sustainable Development Goal 13 on climate action (UNDRR, 2018). Mortality figures can also be used to assess the severity of a disaster (Paul, 2021) and ecosystem resilience (Bosher and Chmutina, 2017).

Despite the aforementioned justifications for doing so, no currently-used environmental indices incorporate disaster risk reduction indicators. This is, in part, because much of the data used to measure progress towards the achievement of Sustainable Development Goal 13 is reported inconsistently and the few countries that suffer the effects of disasters in a given year may be unfairly penalized in an index (Mochizuki and Naqvi, 2019). Thus, two widely accepted multi-faceted disaster risk indices are proposed for use as indicators: the Global Climate Risk Index (Eckstein and others, 2018) and the World Risk Index (Bündnis Entwicklung Hilft (BEH)) and Ruhr University Bochum – Institute for International Law of Peace and Armed Conflict (IFHV).

D. Waste management and material footprint

Increasing urbanization and population growth increases the strain on municipal services, including municipal waste management services. Municipal solid waste includes discarded household materials, commercial refuse, construction and demolition debris, dead animals and abandoned vehicles. Most

commonly, it includes paper, food by-products, plastics, metals, textiles, rubber, and glass. The refuse that is not recycled or reused ultimately ends in landfills or, worse still, in illegal dumps or waterways.

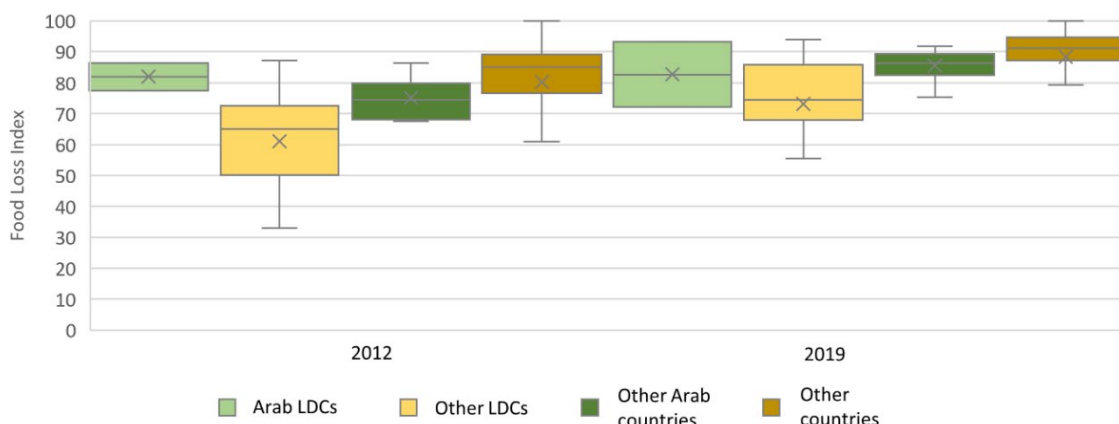
Integrated solid waste management involves service providers and institutional frameworks in addition to waste generators. Elements include the collection, transfer, transportation, and treatment of waste. Benefits of an integrated approach include the conservation of natural resources, reduced quantities of waste in landfills and recycling facilities, decreased pollution, reduced waste toxicity and lower waste collection costs. To ensure sustainability, an integrated approach to waste management for a specific locality must also encompass financial, social, political, legal, environmental, and institutional considerations relevant to that locality (Khatib, 2011).

Sustainable economic growth and development require a reduction in the size of a country's ecological footprint, which can be achieved by re-evaluating how commodities are produced and consumed. Sustainable

Development Goal 12 calls, inter alia, for efficient waste management including by encouraging industries, businesses and consumers to recycle and reduce waste and by fostering sustainable patterns of consumption in developing countries. In the Arab region, however, the material footprint is expanding due to several factors, including rapid population growth, political unrest and the displacement of populations.

The indicator "material footprint" is defined as the global allocation of extracted raw material that is used to support the final demand of an economy. It is distinguished from other ecological footprint indicators that consider land use, water use, threats to species, greenhouse gas emissions and other environmental pressures. Total material footprint encompasses the sum of biomass, fossil fuels, metal ores, and non-metal ores. Countries' unsustainable material footprints are illustrated by the recently-launched PHDI, in which more than 50 countries were excluded from the high human development category due to the size of their material footprint per capita and fossil fuel dependency (UNDP, 2020).

Figure 3. Food Loss Index for Arab and other countries, 2012 and 2019 (Higher values are favourable)



Source: The Economist Intelligence Unit Global Food Security Index (2019).

Food waste has often been overlooked as an environmental sustainability indicator despite an increasing global focus on its systemic impact. Food waste reflects overexploitation of resources, including cropland, fertilizers, pesticides and water (Conrad and others, 2018; Abiad and Meho, 2018). As illustrated in figure 3, food loss, defined as a decrease in quantity or quality that makes that food unsuitable for human consumption (Grolleaud, 2002) is declining overall. Although most food is wasted during the final consumption phase, particularly in industrialized countries (Secondi and others, 2015), globally, least developed countries exhibit greater food loss due to limited post-harvest infrastructure and technologies and weak market integration (Parfitt and others, 2010). Arab least developed countries demonstrate less food loss than other countries in the region however (The Economist Intelligence Unit, 2019), partly due to the significant food wastage that occurs during social and religious gatherings, which are prevalent in wealthier countries and areas (Abiad and Meho, 2018).

E. Biodiversity and marine life

Biodiversity encompasses multiple components that serve as the basis of ecosystem processes. It is closely related to human development through the provision of physical and mental well-being (Naeem and others, 2016). However, the linkage can also be negatively correlated; increasing wealth can result in natural habitat conversion stemming from urbanization (Jha and Bawa, 2006). Nonetheless, the promotion of biodiversity is a key prerequisite for clean air and water, an endowment of natural resources (Naeem and others, 2016) and resilience against pandemics (Terraube and Fernández-Llamazares, 2020).

Biodiversity indicators in environmental indices are often limited to the size of forested areas (Wendling and others, 2020; Li and others, 2014).

However, it is best to select a wide range of indicators to reduce regional biases, although data availability can be a challenge (Martínez-Jauregui and others, 2021; Bockstaller and others, 2011). For this reason, six biodiversity indicators have been proposed for the ESI: these represent potential areas for improvement and impending threats. The latter is represented by the Red List Index (IUCN, 2020), which measures aggregate extinction risk across groups of species.

Life underwater is frequently overlooked in assessments of biodiversity, although oceans comprise some 70 percent of the earth's surface. Fisheries are critical for diet diversification, food security and human well-being, particularly in the Arab region (Fathelrahman and others, 2014). Moreover, coastal environments support mangrove forests, seagrass beds and coral reefs, key habitats for certain charismatic species at risk in the region such as dugongs and turtles (Lamine and others, 2020). However, marine life is increasingly threatened by overfishing, escalating salinity, rising ocean temperatures and coastal development (Wabnitz and others, 2018).

F. Land sustainability

The scope of biodiversity extends into agriculture, but the vital role played by arable land in sustaining crops and ruminants and achieving food security means that land sustainability should be assessed as a separate pillar. Arable landscapes are threatened by changes in land use, desertification and the intensification and simplification of cropping systems. In turn, those threats may undermine rural and urban livelihoods and overall human development (Abahussain and others, 2002; Bockstaller and others, 2011).

Land degradation and desertification stem from drought, erosion, salinization, nutrient loss,

pollution and agricultural intensification (Abahussain and others, 2002; Borgomeo and others, 2020). Erosion ensues from soil exposure to rain and wind energy, exacerbated by poor management practices and sloping lands. It can result in the removal of fertile topsoil and, due to wind, can spread sands onto arable lands (Abahussain and others, 2002). Sources of soil pollution include heavy metals, wastewater irrigation, livestock waste, pesticides, industrial activities and fertilizer overuse (Abahussain and others, 2002; Delang, 2017). Pollution stemming from water-soluble salt accumulation is known as salinization.

A way to mitigate land degradation is to enhance the organic matter content of soils (Darwish and Fadel, 2017). Created from decomposing natural materials, soil organic carbon is crucial for sustainable land management and carbon sequestration (Darwish and Fadel, 2017; Chotte and others, 2019; Paustian and others, 2019). Organic carbon density in soil has therefore been selected as one of the three key indicators to assess land sustainability. Soil organic carbon enhances soil productivity, nutrient cycling and the provision of clean water, and prevents erosion (Chotte and others, 2019; Paustian and others, 2019). Losses often coincide with land use changes, soil degradation and drought. Moreover, best soil management practices augmenting soil organic carbon can help remove CO₂ from the atmosphere (Chotte and others, 2019; Morais and others, 2019; Paustian and others, 2019).

Agricultural productivity is estimated as the ratio of agricultural output over a specified agricultural input. Agricultural productivity determines the availability of food but also the distribution of income and scarce resources, including land, water and specialized knowledge. Improving agricultural productivity

requires the enhanced management of resources and biodiversity to meet current and future human needs. Since cereals, including wheat, rice, maize and barley, are the most widely grown crops all over the world and the source of most food energy, they are often used as proxies for estimating the performance of the agriculture sector. As such, cereal productivity is also a good proxy for land sustainability as fluctuations in cereal productivity are, to a certain extent, attributable to the condition and availability of resources, meaning that resource degradation, notably in low-input environments, will substantially affect productivity.

Population growth and higher levels of affluence will lead to higher food demand, leading in turn to the production of more food to ensure food security at local, national, regional and global levels. For cereals, global production will have to increase by some 40 per cent overall between now and 2050 (FAO, 2009). This will require good soils, which will need to be used sustainably to ensure the continued productivity of agricultural land. The Arab region has lower cereal yields than other parts of the world due to climatic conditions and scarce natural resources, particularly water and land suitable for agriculture, and as a result the region is heavily dependent on cereal imports. Indeed, the region imported some 65 per cent of its cereals between 2014 and 2016. Increasing production will necessitate higher production efficiency rather than an expansion of the area under cultivation because of the scarcity of water resources and suitable land in the region (ESCWA and FAO, 2017). Production increases can be achieved through the adoption of integrated approaches to land and water management that enhance the sustainable management of scarce land resources and conserve water, inter alia, by increasing water retention in soils, reducing runoff and limiting evaporation losses (Perniola and others, 2015).

2. Methodology

A. Indicator selection and normalization

The most recent available indicator data were used. Because of differences in magnitude and units of measurement, most indicators were normalized using min-max scaling (Equation 1). Minimum and maximum values for the evaluated indicators were obtained from the entire dataset, not just the latest available year.

$$x_{normalized} = \frac{x - x_{min}}{x_{max} - x_{min}} \quad \text{Equation 1}$$

Resulting x_{scaled} values range from 0.0, representing the most unfavourable condition, to 1.0, signifying the most favourable condition. Indicators with values that range from 0 to 100 (i.e. percentages) were simply rescaled from 0.0 to 1.0 for normalization. Higher reported normalized values represent more favourable environmental sustainability; for this reason, some values are inverted (1-normalized value). Other indicators necessitated log transformation to reduce skewness. Original and normalized values for each indicator are provided in the annex. All indicators were based on percentage or per capita values.

Although all proposed indicators are useful in contextualizing environmental sustainability, not all indicators were deemed suitable for incorporation into the proposed ESI. Several indicators do not have adequate global

coverage while other indicators, such as organic carbon density in soil, require complex geospatial analysis. Data gaps meant that freshwater biodiversity was dropped from the proposed index, leaving only terrestrial biodiversity. Of the 195 countries studied, 154 were assessed under the ESI using 17 indicators. Figure 4 sets out the indicators used and their relative weightings.

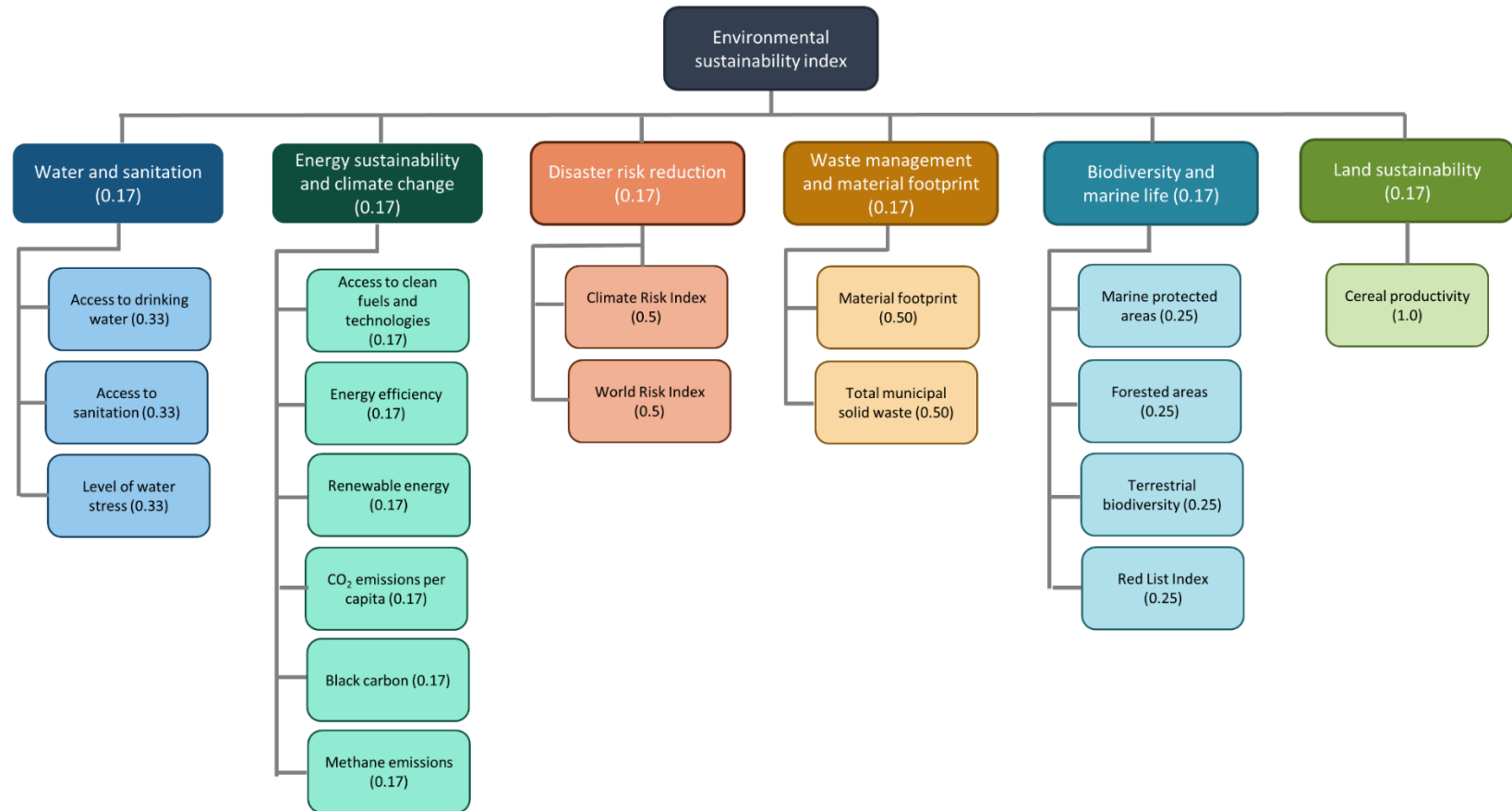
B. Indicator weighting and aggregation

Indicator weighting denotes both the relative importance of each indicator within the composite index and their compensatory relationships with one another. The latter is undesirable: full compensability suggests that the poor performance of certain indicators can be offset by sufficiently high values of other indicators. In terms of weighting, several approaches can be considered: equal weights, budget allocation processes, analytic hierarchy processes, multiple linear regression analysis, and principal component analysis (Greco and others, 2019; Gan and others, 2017). The most common and simplest method is equal weighting, which is justifiable when all indicators are equally important (Gan and others, 2017). However, when indicators are categorized into pillars, the equal weighting of indicators within each pillar does not necessarily mean that each indicator is equally important (Greco and others, 2019). Nevertheless, the use of pillars combined with indicators does facilitate efforts to assess all aspects of sustainability in a balanced manner.

Aggregation into the ESI was conducted using a two-step process. Firstly, the normalized values of indicators for a given pillar were aggregated using their equal weights to obtain the arithmetic mean. Secondly, the resultant composite normalized value for each of the six pillars were aggregated to calculate the ESI.

Use of the arithmetic mean for the index calculation is the most commonly used aggregation method, but extreme values of one or more indicators can greatly affect results (Guijarro and Poyatos, 2018). Results of the ESI were therefore redistributed to maximize the range.

Figure 4. Environmental sustainability index indicator aggregation and weighting scheme



Note: the number given in each box designates the relative weight of that indicator at the relevant aggregation level.

3. Results and concluding remarks

An environmental sustainability index (ESI) was calculated for 154 countries on the basis of six pillars and their respective indicators. Global coverage was conducted to the maximum extent possible, in line with available data, and at least one indicator was required for each pillar. Data gaps unfortunately resulted in the exclusion of some Arab countries, namely Bahrain, the Comoros, the State of Palestine, Somalia and the Syrian Arab Republic.

As illustrated in figure 5, the resultant values for each of the pillars range from 0.32 to 0.82. Aggregated values for biodiversity and marine life tend to be lower, whereas the values for land sustainability tend to be higher. Countries' performance for each of the pillars varied widely. For example, Iceland scored highly for the water and sanitation pillar but significantly lower for the waste management and material footprint pillar. Similarly, Qatar scored highly for disaster risk reduction but much lower for the energy sustainability and climate change pillar.

Table 2. Top ranked countries (in green) and bottom ranked countries (in red) for each of the six environmental sustainability index pillars

Water and sanitation	Energy sustainability and climate change	Disaster risk reduction	Waste management and material footprint	Biodiversity and marine life	Land sustainability
Iceland	Grenada	Qatar	Ethiopia	Palau	Saint Vincent and the Grenadines
Fiji	Saint Kitts and Nevis	Malta	Malawi	Gabon	United Arab Emirates
Croatia	Malta	Saint Vincent and the Grenadines	Madagascar	Equatorial Guinea	Jordan
Norway	Dominica	Grenada	Myanmar	Estonia	Bahamas
Slovakia	Saint Vincent and the Grenadines	Viet Nam	Yemen	Latvia	Kuwait
Madagascar	China	Costa Rica	Mongolia	Iraq	Mozambique
Eritrea	Turkey	Philippines	United States of America	Djibouti	Somalia
South Sudan	Qatar	Bangladesh	Luxembourg	Bahrain	Vanuatu
Chad	Libya	Vanuatu	Singapore	Nauru	Gambia
Ethiopia	Trinidad and Tobago	Viet Nam	Iceland	Mauritius	Cabo Verde

Due to the aggregation of several values, the overall ESI ranges from 0.51 to 0.70. Scores higher than 0.62 indicate high environmental sustainability and are achieved by 51 countries. The countries with the highest scores include Estonia, Gabon, Lithuania, Suriname and Sweden. Among Arab States, Egypt, Jordan and Morocco achieve high ESI scores. Conversely, scores lower than 0.58 indicate low

environmental sustainability. The countries with the lowest scores include Bangladesh, Haiti, Iran, Madagascar and the Niger.

As illustrated in figure 6, Arab States in general achieve lower environmental sustainability scores than other countries. This is due, primarily, to water scarcity and threats to biodiversity.

Figure 5. Comparison of the scores achieved by 154 countries for the six environmental sustainability index pillars

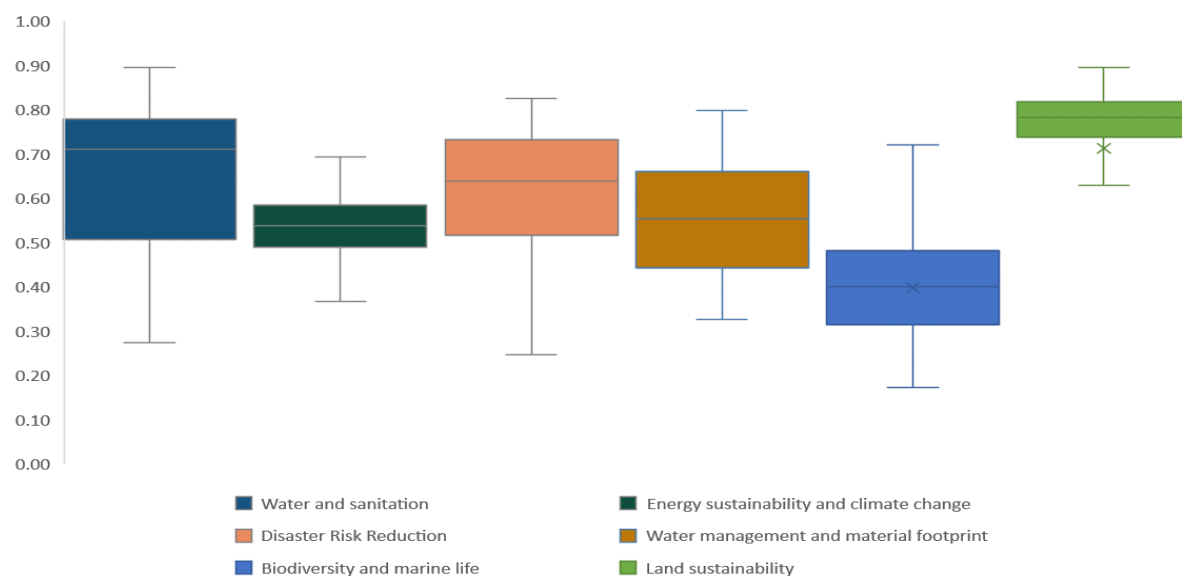
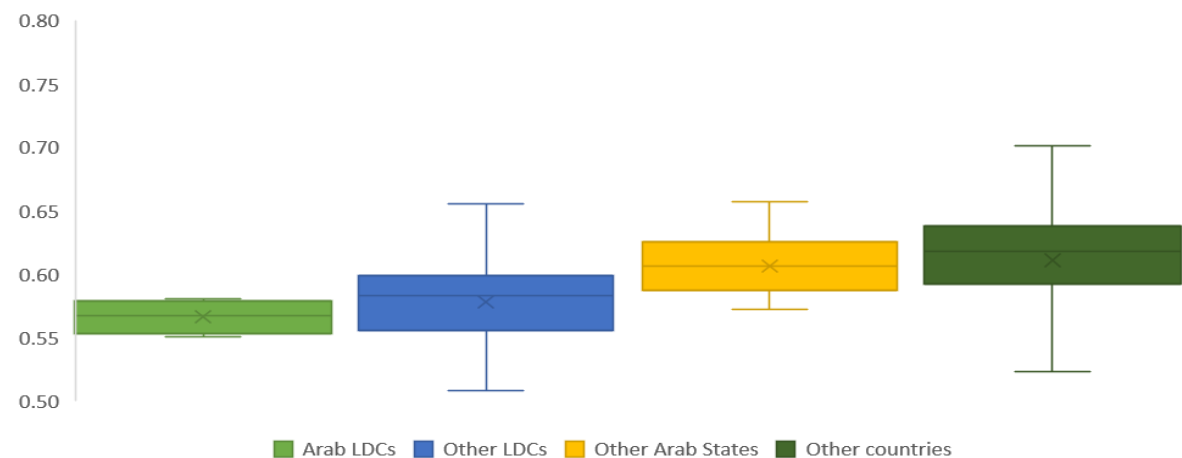


Figure 6. Environmental sustainability index score ranges for Arab least developed countries, other least developed countries, other Arab States and other countries



Annex

Table A.1 Water and sanitation indicators

Country	Access to drinking water		Access to sanitation		Access to hygiene		Level of water stress	
	%	Norm	%	Norm	%	Norm	%	Inv. log Norm
Afghanistan	67.1	0.67	43.4	0.43	37.7	0.38	54.8	0.30
Albania	91.0	0.91	97.7	0.98	-	-	7.1	0.46
Algeria	93.6	0.94	87.6	0.88	83.7	0.84	137.9	0.22
Andorra	100.0	1.00	100.0	1.00	-	-	-	-
Angola	55.8	0.56	49.9	0.50	26.7	0.27	1.9	0.57
Antigua and Barbuda	96.7	0.97	87.5	0.88	-	-	8.5	0.45
Argentina	99.1	0.99	94.3	0.94	-	-	10.5	0.43
Armenia	99.9	1.00	93.6	0.94	94.0	0.94	57.8	0.29
Australia	100.0	1.00	100.0	1.00	-	-	6.4	0.47
Austria	100.0	1.00	100.0	1.00	-	-	9.6	0.44
Azerbaijan	91.4	0.91	92.5	0.93	83.2	0.83	56.4	0.29
Bahamas	98.9	0.99	94.9	0.95	-	-	-	-
Bahrain	100.0	1.00	100.0	1.00	-	-	133.7	0.22
Bangladesh	41.6	0.42	48.2	0.48	34.8	0.35	5.7	0.48
Barbados	98.5	0.98	97.3	0.97	88.5	0.88	87.5	0.26
Belarus	96.5	0.96	97.8	0.98	-	-	4.6	0.50
Belgium	100.0	1.00	99.5	0.99	-	-	49.1	0.31
Belize	98.0	0.98	87.9	0.88	90.1	0.90	1.3	0.60
Benin	66.4	0.66	16.5	0.16	11.0	0.11	1.0	0.62
Bhutan	61.1	0.61	69.3	0.69	79.8	0.80	1.4	0.60
Bolivia (Plurinational State of)	92.8	0.93	60.7	0.61	25.4	0.25	1.2	0.61

Country	Access to drinking water		Access to sanitation		Access to hygiene		Level of water stress	
	%	Norm	%	Norm	%	Norm	%	Inv. log Norm
Bosnia and Herzegovina	96.1	0.96	95.4	0.95	97.2	0.97	2.7	0.54
Botswana	90.3	0.90	77.3	0.77	-	-	2.0	0.57
Brazil	98.2	0.98	88.3	0.88	-	-	3.1	0.53
Brunei Darussalam	99.9	1.00	96.3	0.96	-	-	3.5	0.52
Bulgaria	99.1	0.99	86.0	0.86	-	-	41.8	0.32
Burkina Faso	47.9	0.48	19.4	0.19	11.9	0.12	7.8	0.46
Burundi	60.8	0.61	45.8	0.46	6.1	0.06	10.2	0.43
Cabo Verde	87.1	0.87	73.9	0.74	-	-	8.4	0.45
Cambodia	78.5	0.79	59.2	0.59	66.2	0.66	1.0	0.62
Cameroon	60.4	0.60	39.1	0.39	9.4	0.09	1.6	0.59
Canada	99.4	0.99	99.3	0.99	-	-	3.7	0.52
Central African Republic	46.3	0.46	25.3	0.25	16.6	0.17	0.3	0.72
Chad	38.7	0.39	8.3	0.08	5.8	0.06	4.3	0.50
Chile	99.8	1.00	100.0	1.00	-	-	9.0	0.44
China	92.8	0.93	84.8	0.85	-	-	43.2	0.32
China, Hong Kong SAR	100.0	1.00	96.4	0.96	-	-	-	-
Colombia	97.3	0.97	89.6	0.90	65.4	0.65	1.8	0.58
Comoros	80.2	0.80	35.9	0.36	15.6	0.16	0.8	0.64
Congo	73.2	0.73	20.2	0.20	48.0	0.48	0.0	1.00
Costa Rica	99.7	1.00	97.8	0.98	83.8	0.84	5.5	0.48
Côte d'Ivoire	72.9	0.73	32.1	0.32	19.4	0.19	5.1	0.49
Croatia	99.6	1.00	96.5	0.97	-	-	1.5	0.59
Cuba	95.3	0.95	92.8	0.93	85.2	0.85	23.9	0.36
Cyprus	99.6	1.00	99.2	0.99	-	-	29.5	0.35
Czechia	99.9	1.00	99.1	0.99	-	-	24.8	0.36
Democratic People's Republic of Korea	94.5	0.95	83.2	0.83	-	-	26.5	0.36

Country	Access to drinking water		Access to sanitation		Access to hygiene		Level of water stress	
	%	Norm	%	Norm	%	Norm	%	Inv. log Norm
Democratic Republic of the Congo	43.2	0.43	20.5	0.20	4.5	0.04	0.2	0.76
Denmark	100.0	1.00	99.6	1.00	-	-	20.0	0.38
Djibouti	75.6	0.76	63.6	0.64	-	-	6.3	0.47
Dominica	96.5	0.97	77.9	0.78	-	-	10.0	0.44
Dominican Republic	96.7	0.97	83.9	0.84	55.2	0.55	50.3	0.30
Ecuador	94.0	0.94	88.0	0.88	80.6	0.81	6.8	0.47
Egypt	99.1	0.99	94.2	0.94	89.8	0.90	117.3	0.23
El Salvador	97.4	0.97	87.4	0.87	90.6	0.91	13.2	0.41
Equatorial Guinea	64.7	0.65	66.3	0.66	24.6	0.25	0.2	0.76
Eritrea	51.8	0.52	11.9	0.12	-	-	11.2	0.43
Estonia	99.7	1.00	99.1	0.99	-	-	19.3	0.38
Eswatini	69.0	0.69	58.4	0.58	24.1	0.24	77.6	0.27
Ethiopia	41.1	0.41	7.3	0.07	8.0	0.08	32.3	0.34
Fiji	93.8	0.94	95.1	0.95	-	-	0.3	0.72
Finland	100.0	1.00	99.4	0.99	-	-	15.6	0.40
France	100.0	1.00	98.7	0.99	-	-	23.1	0.37
Gabon	85.8	0.86	47.4	0.47	-	-	0.5	0.68
Gambia	78.0	0.78	39.2	0.39	7.9	0.08	2.2	0.56
Georgia	98.4	0.98	90.0	0.90	-	-	5.9	0.48
Germany	100.0	1.00	99.2	0.99	-	-	33.5	0.34
Ghana	81.5	0.81	18.5	0.18	41.0	0.41	6.3	0.47
Greece	100.0	1.00	99.0	0.99	-	-	22.7	0.37
Grenada	95.6	0.96	91.5	0.91	-	-	7.1	0.46
Guatemala	94.2	0.94	65.1	0.65	76.7	0.77	5.7	0.48
Guinea	61.9	0.62	22.7	0.23	17.4	0.17	0.9	0.63
Guinea-Bissau	66.6	0.67	20.5	0.21	6.4	0.06	1.5	0.59
Guyana	95.5	0.96	85.8	0.86	77.2	0.77	3.3	0.53
Haïti	65.5	0.65	34.7	0.35	22.9	0.23	13.4	0.41

Country	Access to drinking water		Access to sanitation		Access to hygiene		Level of water stress	
	%	Norm	%	Norm	%	Norm	%	Inv. log Norm
Honduras	94.8	0.95	81.3	0.81	84.2	0.84	4.6	0.50
Hungary	100.0	1.00	98.0	0.98	-	-	7.8	0.46
Iceland	100.0	1.00	98.8	0.99	-	-	0.4	0.70
India	92.7	0.93	59.5	0.60	59.5	0.60	66.5	0.28
Indonesia	89.3	0.89	73.1	0.73	64.2	0.64	29.7	0.35
Iran (Islamic Republic of)	3.4	0.03	88.4	0.88	-	-	81.3	0.26
Iraq	96.5	0.97	94.1	0.94	94.6	0.95	54.1	0.30
Ireland	97.4	0.97	91.2	0.91	-	-	3.6	0.52
Italy	99.4	0.99	98.8	0.99	-	-	30.0	0.35
Jamaica	90.6	0.91	87.3	0.87	66.4	0.66	12.5	0.42
Japan	99.0	0.99	99.9	1.00	-	-	37.3	0.33
Jordan	98.9	0.99	97.3	0.97	-	-	100.1	0.25
Kazakhstan	95.6	0.96	97.9	0.98	99.0	0.99	31.1	0.34
Kenya	58.9	0.59	29.1	0.29	24.7	0.25	33.2	0.34
Kiribati	71.6	0.72	47.8	0.48	-	-	-	-
Kuwait	100.0	1.00	100.0	1.00	-	-	2,075	0.00
Kyrgyzstan	87.5	0.87	96.5	0.97	89.2	0.89	50.0	0.30
Lao People's Democratic Republic	82.1	0.82	74.5	0.74	49.8	0.50	4.8	0.50
Latvia	98.6	0.99	92.1	0.92	-	-	1.1	0.62
Lebanon	92.6	0.93	98.5	0.98	-	-	58.8	0.29
Lesotho	68.6	0.69	42.8	0.43	2.1	0.02	2.6	0.55
Liberia	72.9	0.73	17.0	0.17	1.2	0.01	0.3	0.72
Libya	98.5	0.99	100.0	1.00	-	-	817.1	0.08
Liechtenstein	100.0	1.00	100.0	1.00	-	-	-	-
Lithuania	97.5	0.98	93.4	0.93	-	-	1.9	0.57
Luxembourg	99.9	1.00	97.6	0.98	-	-	3.8	0.51
Madagascar	54.4	0.54	10.5	0.11	50.5	0.51	11.4	0.43

Country	Access to drinking water		Access to sanitation		Access to hygiene		Level of water stress	
	%	Norm	%	Norm	%	Norm	%	Inv. log Norm
Malawi	68.8	0.69	26.2	0.26	8.7	0.09	17.5	0.39
Malaysia	96.7	0.97	99.6	1.00	-	-	3.4	0.52
Maldives	99.3	0.99	99.4	0.99	95.8	0.96	15.7	0.40
Mali	78.3	0.78	39.3	0.39	52.2	0.52	8.0	0.45
Malta	100.0	1.00	100.0	1.00	-	-	85.1	0.26
Marshall Islands	88.5	0.88	83.5	0.83	82.5	0.83	-	-
Mauritania	70.7	0.71	48.4	0.48	43.0	0.43	13.2	0.41
Mauritius	99.9	1.00	95.5	0.96	-	-	22.2	0.37
Mexico	99.3	0.99	91.2	0.91	87.8	0.88	32.9	0.34
Micronesia (Federated States of)	78.6	0.79	88.3	0.88	-	-	-	-
Monaco	100.0	1.00	100.0	1.00	-	-	-	-
Mongolia	83.3	0.83	58.5	0.58	71.2	0.71	3.4	0.52
Montenegro	97.0	0.97	97.8	0.98	-	-	-	-
Morocco	86.8	0.87	88.5	0.89	-	-	50.8	0.30
Mozambique	55.7	0.56	29.4	0.29	12.2	0.12	1.8	0.58
Myanmar	81.8	0.82	64.3	0.64	79.3	0.79	5.8	0.48
Namibia	82.5	0.83	34.5	0.35	44.6	0.45	0.9	0.63
Nauru	99.5	0.99	65.6	0.66	-	-	-	-
Nepal	88.8	0.89	62.1	0.62	47.8	0.48	8.3	0.45
Netherlands	100.0	1.00	97.7	0.98	-	-	15.2	0.40
New Zealand	100.0	1.00	100.0	1.00	-	-	8.0	0.45
Nicaragua	81.5	0.82	74.4	0.74	-	-	2.7	0.54
Niger	50.3	0.50	13.6	0.14	-	-	7.5	0.46
Nigeria	71.4	0.71	39.2	0.39	41.9	0.42	9.7	0.44
North Macedonia	93.1	0.93	99.1	0.99	-	-	12.7	0.42
Norway	100.0	1.00	98.1	0.98	-	-	2.0	0.57
Oman	91.9	0.92	100.0	1.00	97.4	0.97	116.7	0.24
Pakistan	91.5	0.91	59.9	0.60	59.6	0.60	122.7	0.23

Country	Access to drinking water		Access to sanitation		Access to hygiene		Level of water stress	
	%	Norm	%	Norm	%	Norm	%	Inv. log Norm
Palau	100.0	1.00	100.0	1.00	-	-	-	-
State of Palestine	96.8	0.97	96.9	0.97	-	-	41.1	0.32
Panama	96.4	0.96	83.3	0.83	-	-	0.9	0.63
Papua New Guinea	41.3	0.41	12.9	0.13	-	-	0.1	0.81
Paraguay	99.6	1.00	89.8	0.90	79.6	0.80	1.8	0.58
Peru	91.1	0.91	74.3	0.74	-	-	3.0	0.53
Philippines	93.6	0.94	76.5	0.77	78.5	0.78	28.4	0.35
Poland	99.7	1.00	98.8	0.99	-	-	34.9	0.33
Portugal	99.9	1.00	99.6	1.00	-	-	18.4	0.39
Qatar	99.6	1.00	100.0	1.00	-	-	432.4	0.13
Republic of Korea	99.8	1.00	100.0	1.00	-	-	85.2	0.26
Republic of Moldova	89.1	0.89	76.3	0.76	87.0	0.87	12.5	0.42
Romania	100.0	1.00	84.3	0.84	-	-	6.3	0.47
Russian Federation	97.1	0.97	90.5	0.90	-	-	4.1	0.51
Rwanda	57.7	0.58	66.6	0.67	4.6	0.05	6.1	0.48
Saint Kitts and Nevis	99.0	0.99	91.6	0.92	-	-	50.8	0.30
Saint Lucia	98.2	0.98	88.4	0.88	87.2	0.87	14.3	0.41
Saint Vincent and the Grenadines	95.1	0.95	87.2	0.87	-	-	7.9	0.46
Samoa	97.4	0.97	98.2	0.98	-	-	-	-
San Marino	100.0	1.00	100.0	1.00	-	-	-	-
Sao Tome and Principe	84.3	0.84	43.0	0.43	41.3	0.41	1.9	0.57
Saudi Arabia	100.0	1.00	100.0	1.00	-	-	883.3	0.07
Senegal	80.7	0.81	51.5	0.51	24.1	0.24	11.8	0.42
Serbia	85.5	0.86	97.6	0.98	97.7	0.98	6.1	0.48
Seychelles	96.2	0.96	100.0	1.00	-	-	-	-
Sierra Leone	60.8	0.61	15.7	0.16	19.3	0.19	0.5	0.68
Singapore	100.0	1.00	100.0	1.00	-	-	83.2	0.26

Country	Access to drinking water		Access to sanitation		Access to hygiene		Level of water stress	
	%	Norm	%	Norm	%	Norm	%	Inv. log Norm
Slovakia	99.8	1.00	97.9	0.98	-	-	2.4	0.55
Slovenia	99.5	1.00	99.1	0.99	-	-	6.3	0.47
Solomon Islands	67.8	0.68	33.5	0.34	35.9	0.36	-	-
Somalia	52.4	0.52	38.3	0.38	9.8	0.10	24.5	0.36
South Africa	92.7	0.93	75.7	0.76	44.0	0.44	62.1	0.29
South Sudan	40.7	0.41	11.3	0.11	-	-	4.2	0.51
Spain	99.9	1.00	99.9	1.00	-	-	42.6	0.32
Sri Lanka	89.4	0.89	95.8	0.96	-	-	90.8	0.26
Sudan	60.3	0.60	36.6	0.37	23.4	0.23	118.6	0.23
Suriname	95.4	0.95	84.5	0.84	67.8	0.68	4.0	0.51
Sweden	100.0	1.00	99.3	0.99	-	-	3.4	0.52
Switzerland	100.0	1.00	99.9	1.00	-	-	7.6	0.46
Syrian Arab Republic	97.2	0.97	91.2	0.91	70.6	0.71	126.0	0.23
Tajikistan	81.2	0.81	97.0	0.97	72.7	0.73	68.7	0.28
Thailand	99.9	1.00	98.8	0.99	83.9	0.84	23.0	0.37
Timor-Leste	78.3	0.78	53.5	0.54	28.2	0.28	28.3	0.35
Togo	65.1	0.65	16.1	0.16	10.5	0.10	3.4	0.52
Tonga	99.9	1.00	93.4	0.93	-	-	-	-
Trinidad and Tobago	98.2	0.98	93.4	0.93	89.4	0.89	20.3	0.38
Tunisia	96.3	0.96	90.9	0.91	78.7	0.79	121.1	0.23
Turkey	98.9	0.99	97.3	0.97	-	-	44.6	0.31
Turkmenistan	98.8	0.99	98.7	0.99	100.0	1.00	143.6	0.22
Tuvalu	99.3	0.99	84.1	0.84	-	-	-	-
Uganda	49.1	0.49	18.5	0.18	21.2	0.21	5.8	0.48
Ukraine	93.8	0.94	96.2	0.96	-	-	11.2	0.43
United Arab Emirates	98.0	0.98	98.6	0.99	-	-	1,708	0.02
United Kingdom of Great Britain and	100.0	1.00	99.1	0.99	-	-	14.4	0.41

Country	Access to drinking water		Access to sanitation		Access to hygiene		Level of water stress	
	%	Norm	%	Norm	%	Norm	%	Inv. log Norm
Northern Ireland of Great Britain and Northern Ireland								
United Republic of Tanzania	56.7	0.57	29.9	0.30	48.0	0.48	13.0	0.41
United States of America	99.3	0.99	100.0	1.00	-	-	28.2	0.35
Uruguay	99.4	0.99	96.6	0.97	-	-	9.8	0.44
Uzbekistan	97.8	0.98	100.0	1.00	-	-	168.9	0.20
Vanuatu	47.1	0.47	34.1	0.34	85.8	0.86	-	-
Venezuela (Bolivarian Republic of)	95.7	0.96	93.9	0.94	-	-	7.5	0.46
Viet Nam	94.7	0.95	83.5	0.84	85.8	0.86	18.1	0.39
Yemen	63.5	0.63	59.1	0.59	49.5	0.50	169.8	0.20
Zambia	60.0	0.60	26.4	0.26	13.9	0.14	2.8	0.54
Zimbabwe	64.1	0.64	36.2	0.36	36.8	0.37	31.3	0.34

Table A.2 Energy sustainability and climate change indicators

Country	Access to clean fuels and technologies		Energy efficiency		Renewable energy		CO ₂ emissions per capita		Black carbon		Methane emissions	
	%	Norm	MJ/ purch	Norm	Share	Norm	tons carbon	Inv. norm	ktC	Inv. log norm	MMTC DE	Inv. log norm
Afghanistan	30	0.32	1.93	0.93	24.7	0.25	0.05	1.00	14.3	0.30	17.2	0.27
Albania	78	0.77	2.91	0.88	39.6	0.37	0.51	0.95	1.4	0.44	2.9	0.38
Algeria	99	0.93	4.05	0.82	0.1	0.00	1.02	0.90	68.4	0.21	75.9	0.18
Andorra	100	1.00	4.79	0.78	19.3	0.19	1.65	0.84	-	-	43.2	0.22
Angola	48.1	0.48	3.41	0.85	49	0.56	0.34	0.97	33.3	0.25	0.0	0.78
Antigua and Barbuda	100	0.99	3.24	0.86	0.6	0.01	1.40	0.87	0.1	0.60	0.1	0.60
Argentina	100	0.98	4.28	0.81	9.4	0.11	1.16	0.89	38.6	0.25	123.6	0.15
Armenia	98	0.97	5.18	0.76	13.2	0.12	0.51	0.95	1.2	0.45	2.4	0.39
Australia	100	1.00	4.82	0.78	9.5	0.10	4.06	0.62	25.9	0.27	198.3	0.12
Austria	100	1.00	3.50	0.85	34.6	0.33	1.96	0.82	5.2	0.36	10.0	0.31
Azerbaijan	95.5	0.96	3.82	0.83	1.9	0.02	1.03	0.90	7.3	0.34	19.0	0.27
Bahamas	100	1.00	2.61	0.89	1.4	0.01	1.41	0.87	0.3	0.52	0.1	0.57
Bahrain	100	1.00	9.07	0.57	0.0	0.00	6.00	0.43	1.3	0.45	5.8	0.34
Bangladesh	19	0.18	2.92	0.88	33.5	0.32	0.15	0.99	48.2	0.23	121.3	0.15
Barbados	100	0.99	3.25	0.86	3.6	0.04	1.10	0.90	0.3	0.54	0.1	0.58
Belarus	99	0.98	6.54	0.70	6.7	0.07	1.70	0.84	11.4	0.32	57.9	0.20
Belgium	100	1.00	4.75	0.78	9.2	0.10	2.27	0.79	5.3	0.36	17.2	0.27
Belize	83	0.85	5.52	0.75	35.4	0.39	0.45	0.96	0.3	0.54	0.3	0.51

Country	Access to clean fuels and technologies		Energy efficiency		Renewable energy		CO ₂ emissions per capita		Black carbon		Methane emissions	
	%	Norm	MJ/ purch	Norm	Share	Norm	tons carbon	Inv. norm	ktC	Inv. log norm	MMTC DE	Inv. log norm
Benin	4	0.06	9.23	0.56	45.6	0.46	0.18	0.98	8.9	0.33	6.1	0.33
Bhutan	76	0.53	9.71	0.54	85	0.83	0.46	0.96	0.5	0.50	1.0	0.45
Bolivia (Plurinational State of)	84	0.64	4.91	0.78	8.1	0.13	0.53	0.95	6.4	0.35	25.4	0.25
Bosnia and Herzegovina	45	0.63	6.88	0.68	23	0.19	1.78	0.83	1.9	0.42	4.6	0.35
Botswana	54	0.64	3.26	0.86	28.1	0.29	0.87	0.92	4.4	0.37	80.9	0.18
Brazil	95.6	0.96	4.11	0.82	45.6	0.45	0.64	0.94	205.7	0.15	518.3	0.07
Brunei Darussalam	100	1.00	4.91	0.78	0.0	0.00	6.20	0.41	1.6	0.43	4.9	0.35
Bulgaria	88.7	0.89	5.96	0.72	17.7	0.17	1.71	0.84	4.3	0.37	8.7	0.31
Burkina Faso	8.9	0.09	5.69	0.74	72.3	0.70	0.06	1.00	17.6	0.29	16.7	0.27
Burundi	0	0.01	8.74	0.59	89.5	0.88	0.01	1.00	10.3	0.32	3.4	0.37
Cabo Verde	76	0.71	2.85	0.88	24.6	0.23	0.29	0.97	0.7	0.49	0.2	0.53
Cambodia	22	0.18	5.79	0.73	62.7	0.61	0.20	0.98	13.6	0.31	24.1	0.25
Cameroon	22	0.23	4.77	0.78	78.9	0.79	0.08	0.99	22.4	0.28	29.9	0.24
Canada	100	1.00	7.55	0.65	22.3	0.23	4.25	0.60	36.2	0.25	133.7	0.15
Central African Republic	0	0.01	6.67	0.69	82.6	0.76	0.02	1.00	4.7	0.37	6.5	0.33

Country	Access to clean fuels and technologies		Energy efficiency		Renewable energy		CO ₂ emissions per capita		Black carbon		Methane emissions	
	%	Norm	MJ/ purch	Norm	Share	Norm	tons carbon	Inv. norm	ktC	Inv. log norm	MMTC DE	Inv. log norm
Chad	3.1	0.03	3.25	0.86	85.4	0.85	0.02	1.00	13.1	0.31	15.2	0.28
Chile	100	0.92	3.90	0.83	24.6	0.24	1.25	0.88	34.8	0.25	25.1	0.25
China	61	0.59	6.06	0.72	12.6	0.13	1.86	0.82	2,534	0.00	1558.3	0.00
China, Hong Kong (SAR)	-		1.42	0.95	0.2	0.01	1.59	0.85	4.5	0.37	4.5	0.35
Colombia	91.8	0.92	2.49	0.90	30.7	0.29	0.51	0.95	32.0	0.26	70.3	0.19
Comoros	6	0.09	3.07	0.87	60.5	0.39	0.08	0.99	1.0	0.46	0.3	0.51
Congo	27	0.24	4.77	0.78	67.7	0.70	0.19	0.98	7.0	0.35	9.1	0.31
Costa Rica	95	0.93	2.75	0.88	36.8	0.36	0.46	0.96	4.3	0.37	3.4	0.37
Côte d'Ivoire	25	0.18	5.02	0.77	64.3	0.63	0.15	0.99	21.5	0.28	12.3	0.29
Croatia	100	0.93	3.89	0.83	31.8	0.30	1.18	0.89	2.9	0.40	4.6	0.35
Cuba	79.4	0.79	1.82	0.93	14	0.18	0.60	0.94	6.3	0.35	14.2	0.28
Cyprus	100	1.00	3.26	0.86	10.4	0.10	1.64	0.85	1.0	0.46	0.9	0.45
Czechia	100	0.97	5.26	0.76	14.8	0.14	2.58	0.76	9.7	0.33	12.7	0.29
Democratic People's Republic of Korea	9	0.11	5.77	0.73	21.9	0.27	0.23	0.98	25.1	0.27	20.6	0.26
Democratic Republic of the Congo	4.0	0.04	18.96	0.08	97.1	0.97	0.01	1.00	65.8	0.21	32.8	0.23

Country	Access to clean fuels and technologies		Energy efficiency		Renewable energy		CO ₂ emissions per capita		Black carbon		Methane emissions	
	%	Norm	MJ/ purch	Norm	Share	Norm	tons carbon	Inv. norm	ktC	Inv. log norm	MMTC DE	Inv. log norm
Denmark	100	1.00	2.61	0.89	32.1	0.37	1.51	0.86	3.3	0.39	8.9	0.31
Djibouti	9	0.12	2.55	0.89	24.9	0.15	0.11	0.99	1.1	0.45	0.8	0.46
Dominica	84	0.91	3.62	0.84	10.7	0.10	0.61	0.94	0.0	0.65	0.1	0.62
Dominican Republic	90.4	0.90	2.32	0.91	15.4	0.17	0.63	0.94	6.0	0.36	8.7	0.31
Ecuador	94	0.96	3.46	0.85	14.8	0.17	0.64	0.94	12.9	0.31	22.0	0.26
Egypt	100	0.98	3.77	0.83	4.9	0.06	0.72	0.93	74.0	0.21	63.3	0.19
El Salvador	86.0	0.86	3.73	0.84	20.7	0.25	0.26	0.98	4.3	0.37	2.9	0.38
Equatorial Guinea	24	0.34	1.75	0.93	3.9	0.12	1.29	0.88	11.6	0.32	4.0	0.36
Eritrea	9	0.16	4.29	0.81	76.8	0.78	0.06	1.00	1.9	0.42	4.0	0.36
Estonia	100	0.93	6.06	0.72	27.0	0.27	3.58	0.66	2.6	0.40	3.5	0.37
Eswatini	49.7	0.50	4.05	0.82	62.4	0.61	0.24	0.98	1.6	0.43	1.2	0.43
Ethiopia	5	0.04	9.66	0.54	90.5	0.90	0.04	1.00	130.1	0.17	101.0	0.17
Fiji	42	0.40	4.18	0.81	27.7	0.27	0.62	0.94	0.7	0.48	0.9	0.45
Finland	100	1.00	6.14	0.72	42.4	0.44	2.10	0.80	5.3	0.36	22.8	0.26
France	100	1.00	3.97	0.82	14.5	0.15	1.35	0.87	25.2	0.27	65.4	0.19
Gabon	86	0.79	6.30	0.71	81.2	0.81	0.62	0.94	8.5	0.33	8.4	0.32
Gambia	2	0.03	4.42	0.80	52.7	0.51	0.07	0.99	2.0	0.42	1.2	0.43
Georgia	82	0.78	5.57	0.74	27.6	0.29	0.67	0.94	2.8	0.40	4.1	0.36

Country	Access to clean fuels and technologies		Energy efficiency		Renewable energy		CO ₂ emissions per capita		Black carbon		Methane emissions	
	%	Norm	MJ/ purch	Norm	Share	Norm	tons carbon	Inv. norm	ktC	Inv. log norm	MMTC DE	Inv. log norm
Germany	100	1.00	3.47	0.85	14.2	0.15	2.37	0.78	33.3	0.25	78.8	0.18
Ghana	21.7	0.22	3.28	0.86	46.5	0.40	0.13	0.99	11.8	0.32	15.6	0.28
Greece	100	0.94	3.68	0.84	16.4	0.16	1.70	0.84	2.3	0.41	11.9	0.29
Grenada	91	0.97	2.92	0.88	12.6	0.13	0.69	0.94	0.1	0.60	0.0	0.66
Guatemala	44	0.45	4.57	0.79	63.3	0.64	0.28	0.97	31.4	0.26	11.5	0.30
Guinea	1.2	0.01	5.85	0.73	75.3	0.77	0.07	0.99	11.9	0.32	14.2	0.28
Guinea-Bissau	1	0.02	10.82	0.48	86.7	0.87	0.04	1.00	1.7	0.43	1.8	0.41
Guyana	73	0.74	6.42	0.70	21.4	0.23	0.81	0.92	1.3	0.44	1.7	0.41
Haiti	4.3	0.04	10.35	0.51	76.1	0.76	0.08	0.99	9.6	0.33	8.7	0.31
Honduras	44	0.53	5.99	0.72	52.8	0.53	0.29	0.97	11.1	0.32	7.0	0.33
Hungary	100	1.00	4.24	0.81	15.3	0.14	1.32	0.88	5.8	0.36	10.9	0.30
Iceland	100	1.00	13.94	0.33	77.5	0.77	1.65	0.84	0.4	0.52	0.5	0.48
India	52	0.41	4.23	0.81	33.6	0.32	0.50	0.95	971.7	0.06	833.5	0.04
Indonesia	72	0.58	3.46	0.85	27.8	0.35	0.54	0.95	265.2	0.13	336.7	0.09
Iran (Islamic Republic of)	97	0.98	7.11	0.67	1.0	0.01	2.46	0.77	92.8	0.19	164.6	0.14
Iraq	97.6	0.98	4.33	0.81	0.9	0.00	1.52	0.86	37.4	0.25	70.7	0.19
Ireland	100	1.00	1.80	0.93	8.5	0.10	2.09	0.80	1.9	0.42	17.9	0.27
Italy	100	1.00	3.00	0.87	16.1	0.16	1.45	0.86	16.2	0.30	41.0	0.22
Jamaica	85	0.91	4.77	0.78	10.8	0.12	0.73	0.93	1.1	0.45	2.4	0.39

Country	Access to clean fuels and technologies		Energy efficiency		Renewable energy		CO ₂ emissions per capita		Black carbon		Methane emissions	
	%	Norm	MJ/ purch	Norm	Share	Norm	tons carbon	Inv. norm	ktC	Inv. log norm	MMTC DE	Inv. log norm
Japan	100	1.00	3.67	0.84	6.4	0.07	2.46	0.77	57.2	0.22	52.4	0.20
Jordan	100	0.99	4.78	0.78	4.7	0.05	0.71	0.93	5.9	0.36	5.8	0.34
Kazakhstan	97	0.95	8.19	0.61	2	0.02	3.70	0.65	20.6	0.28	85.7	0.18
Kenya	13.4	0.13	7.61	0.64	71	0.72	0.09	0.99	36.0	0.25	53.3	0.20
Kiribati	7	0.06	6.29	0.71	46.6	0.46	0.15	0.99	0.1	0.62	0.0	0.65
Kuwait	100	1.00	5.32	0.76	0.0	0.00	7.06	0.33	8.4	0.34	31.9	0.23
Kyrgyzstan	77	0.81	7.65	0.64	21.9	0.25	0.41	0.96	4.5	0.37	7.1	0.33
Lao People's Democratic Republic	5.6	0.06	5.41	0.75	49.5	0.46	0.73	0.93	2.7	0.40	10.2	0.30
Latvia	100	0.95	3.79	0.83	38.5	0.43	0.95	0.91	3.4	0.39	2.4	0.39
Lebanon	-		4.77	0.78	3.9	0.03	1.10	0.90	1.5	0.43	3.1	0.37
Lesotho	37	0.36	8.00	0.62	43.5	0.39	0.33	0.97	2.6	0.41	1.6	0.42
Liberia	0.7	0.01	17.62	0.14	82.9	0.85	0.07	0.99	4.0	0.38	2.3	0.39
Libya	-		4.90	0.78	2.6	0.02	1.84	0.83	16.2	0.30	14.8	0.28
Liechtenstein	-		-	-	55.8	0.55	0.38	0.96	0.0	0.99	-	-
Lithuania	100	1.00	3.77	0.83	31.5	0.34	1.28	0.88	4.1	0.38	4.3	0.36
Luxembourg	100	1.00	2.85	0.88	13.5	0.15	4.16	0.61	0.5	0.50	0.6	0.48
Madagascar	0.9	0.01	8.87	0.58	84	0.83	0.04	1.00	0.5	0.50	18.9	0.27
Malawi	2.5	0.03	4.13	0.82	78.7	0.76	0.02	1.00	16.1	0.30	6.7	0.33

Country	Access to clean fuels and technologies		Energy efficiency		Renewable energy		CO ₂ emissions per capita		Black carbon		Methane emissions	
	%	Norm	MJ/ purch	Norm	Share	Norm	tons carbon	Inv. norm	ktC	Inv. log norm	MMTC DE	Inv. log norm
Malaysia	97	0.96	4.18	0.81	4.4	0.05	2.18	0.79	39.7	0.24	55.9	0.20
Maldives	98	0.94	3.25	0.86	1.2	0.01	0.82	0.92	85.0	0.20	0.1	0.60
Mali	1.0	0.01	2.56	0.89	76.2	0.59	0.05	1.00	17.3	0.29	21.5	0.26
Malta	100	1.00	1.64	0.94	9.3	0.07	0.95	0.91	0.1	0.60	0.1	0.56
Marshall Islands	64	0.65	11.03	0.47	11.8	0.12	0.69	0.94	0.9	0.46	0.0	0.82
Mauritania	43	0.47	4.63	0.79	31.6	0.23	0.26	0.98	4.2	0.38	7.1	0.33
Mauritius	100	0.93	2.31	0.91	10.3	0.10	0.98	0.91	1.7	0.43	0.5	0.49
Mexico	85.4	0.85	3.37	0.85	9.2	0.10	1.00	0.91	0.0	0.64	168.0	0.13
Micronesia (Federated States of)	12.0	0.12	6.09	0.72	1.6	0.02	0.35	0.97	0.1	0.61	0.0	0.66
Monaco	100	1.00	-	-	-	-	1.35	0.87	-	-	-	-
Mongolia	46	0.43	5.93	0.73	3.4	0.04	3.00	0.72	4.8	0.37	21.0	0.26
Montenegro	62	0.69	4.16	0.81	43.9	0.38	0.91	0.91	0.8	0.47	0.7	0.46
Morocco	98	0.97	3.17	0.86	11	0.10	0.48	0.96	36.9	0.25	16.2	0.28
Mozambique	3.7	0.04	13.19	0.36	70.5	0.59	0.08	0.99	28.1	0.26	16.3	0.28
Myanmar	23	0.18	3.19	0.86	69.5	0.61	0.12	0.99	47.0	0.23	87.3	0.17
Namibia	45	0.42	3.49	0.85	28.7	0.28	0.46	0.96	2.6	0.40	5.1	0.35
Nauru	100	0.91	3.52	0.85	0.2	0.01	1.19	0.89	-	-	0.0	0.74

Country	Access to clean fuels and technologies		Energy efficiency		Renewable energy		CO ₂ emissions per capita		Black carbon		Methane emissions	
	%	Norm	MJ/ purch	Norm	Share	Norm	tons carbon	Inv. norm	ktC	Inv. log norm	MMTC DE	Inv. log norm
Nepal	29	0.28	7.84	0.63	79.2	0.77	0.11	0.99	32.7	0.26	29.8	0.24
Netherlands	100	1.00	3.72	0.84	5.6	0.07	2.66	0.75	8.3	0.34	21.3	0.26
New Zealand	100	1.00	5.02	0.77	31.7	0.30	1.97	0.81	4.3	0.37	35.7	0.23
Nicaragua	52.3	0.52	5.02	0.77	49.5	0.47	0.23	0.98	6.4	0.35	9.2	0.31
Niger	1.9	0.02	6.64	0.69	79.6	0.79	0.03	1.00	9.4	0.33	21.8	0.26
Nigeria	7	0.05	6.44	0.70	82.5	0.83	0.18	0.98	375.3	0.11	180.8	0.13
North Macedonia	73	0.66	4.17	0.81	21.4	0.19	0.98	0.91	-	-	1.8	0.41
Norway	100	1.00	3.66	0.84	59.4	0.61	2.44	0.77	3.4	0.39	20.0	0.26
Oman	100	0.95	6.35	0.71	0.0	0.00	3.84	0.64	13.9	0.31	24.1	0.25
Pakistan	43.3	0.43	4.41	0.80	43.7	0.41	0.31	0.97	153.6	0.16	193.5	0.13
Palau	100	0.87	11.02	0.47	0.1	0.00	3.53	0.67	0.1	0.63	-	-
State of Palestine	-		3.75	0.83	12.4	0.12	0.19	0.98	-	-	-	-
Panama	100	0.89	2.12	0.92	22.1	0.23	0.79	0.93	4.4	0.37	4.0	0.36
Papua New Guinea	9	0.13	5.13	0.77	50.1	0.50	0.21	0.98	4.8	0.37	3.1	0.37
Paraguay	66.2	0.66	3.65	0.84	62.5	0.60	0.33	0.97	6.5	0.35	25.5	0.25
Peru	78	0.75	2.62	0.89	272	0.28	0.45	0.96	24.4	0.27	26.6	0.25
Philippines	44	0.43	3.05	0.87	24	0.23	0.35	0.97	41.2	0.24	77.9	0.18

Country	Access to clean fuels and technologies		Energy efficiency		Renewable energy		CO ₂ emissions per capita		Black carbon		Methane emissions	
	%	Norm	MJ/ purch	Norm	Share	Norm	tons carbon	Inv. norm	ktC	Inv. log norm	MMTC DE	Inv. log norm
Poland	100	1.00	4.19	0.81	11.3	0.11	2.23	0.79	36.4	0.25	63.2	0.19
Portugal	100	1.00	3.30	0.86	29	0.24	1.37	0.87	3.0	0.40	13.4	0.29
Qatar	100	0.98	5.85	0.73	0.0	0.00	10.58	0.00	10.8	0.32	65.6	0.19
Republic of Korea	100	0.97	6.39	0.70	2.5	0.03	3.31	0.69	101.0	0.19	34.6	0.23
Republic of Moldova	95	0.92	7.29	0.66	25.3	0.26	0.35	0.97	1.9	0.42	4.0	0.36
Romania	100	0.86	3.04	0.87	24.4	0.23	1.01	0.91	12.2	0.31	21.1	0.26
Russian Federation	93	0.98	8.33	0.61	3.4	0.03	3.39	0.68	168.4	0.16	432.3	0.08
Rwanda	0.6	0.01	4.38	0.80	86.1	0.87	0.02	1.00	10.6	0.32	4.0	0.36
Saint Kitts and Nevis	100	1.00	2.41	0.90	1.7	0.02	1.27	0.88	0.1	0.59	0.0	0.71
Saint Lucia	96	0.97	2.33	0.91	11.2	0.03	0.53	0.95	0.2	0.55	0.1	0.59
Saint Vincent and the Grenadines	95	0.96	3.26	0.86	4.1	0.03	0.64	0.94	0.1	0.61	0.0	0.63
Samoa	32.3	0.32	4.11	0.82	36.8	0.27	0.36	0.97	0.1	0.58	0.2	0.55
San Marino	100	1.00	-	-	-	-	1.45	0.86	-	-	-	-
Sao Tome and Principe	2	0.17	4.54	0.80	39.2	0.38	0.17	0.98	0.2	0.55	0.1	0.60
Saudi Arabia	100	0.96	5.48	0.75	0.0	0.00	4.72	0.55	91.9	0.20	89.2	0.17

Country	Access to clean fuels and technologies		Energy efficiency		Renewable energy		CO ₂ emissions per capita		Black carbon		Methane emissions	
	%	Norm	MJ/ purch	Norm	Share	Norm	tons carbon	Inv. norm	ktC	Inv. log norm	MMTC DE	Inv. log norm
Senegal	27	0.32	3.62	0.84	37.6	0.38	0.17	0.98	6.6	0.35	10.8	0.30
Serbia	67	0.76	6.09	0.72	21	0.20	1.41	0.87	6.1	0.35	7.6	0.32
Seychelles	100	0.90	3.22	0.86	1.2	0.01	1.66	0.84	0.4	0.51	0.1	0.60
Sierra Leone	0	0.01	6.48	0.70	78.1	0.78	0.04	1.00	6.4	0.35	4.1	0.36
Singapore	100	1.00	3.12	0.87	0.7	0.01	1.87	0.82	8.9	0.33	2.0	0.40
Slovakia	100	0.97	4.44	0.80	13.1	0.12	1.68	0.84	3.7	0.38	5.2	0.34
Slovenia	100	0.96	4.46	0.80	20.8	0.20	1.72	0.84	2.9	0.40	3.3	0.37
Solomon Islands	8.5	0.08	5.47	0.75	48.7	0.49	0.12	0.99	0.2	0.56	0.1	0.56
Somalia	2.3	0.02	-	-	94.8	0.95	0.01	1.00	10.3	0.32	21.4	0.26
South Africa	84.8	0.85	7.95	0.63	10.7	0.10	2.23	0.79	123.4	0.18	81.2	0.18
South Sudan	0.6	0.01	1.52	0.95	29.1	0.28	0.04	1.00	5.3	0.36	-	-
Spain	100	1.00	3.30	0.86	17.2	0.16	1.57	0.85	14.4	0.30	42.9	0.22
Sri Lanka	26.3	0.26	2.01	0.92	50.9	0.48	0.30	0.97	33.7	0.25	12.2	0.29
Sudan	48	0.41	4.33	0.81	59.5	0.60	0.15	0.99	28.0	0.26	71.6	0.19
Suriname	92	0.90	1.90	0.93	15.9	0.22	1.20	0.89	0.6	0.49	0.7	0.46
Sweden	100	1.00	4.39	0.80	51.9	0.52	1.09	0.90	4.9	0.37	11.9	0.29
Switzerland	100	1.00	2.02	0.92	24.1	0.25	1.10	0.90	3.1	0.39	5.5	0.34
Syrian Arab Republic	98	0.99	4.48	0.80	1.2	0.01	0.42	0.96	12.2	0.31	11.6	0.30

Country	Access to clean fuels and technologies		Energy efficiency		Renewable energy		CO ₂ emissions per capita		Black carbon		Methane emissions	
	%	Norm	MJ/ purch	Norm	Share	Norm	tons carbon	Inv. norm	ktC	Inv. log norm	MMTC DE	Inv. log norm
Tajikistan	79	0.80	5.23	0.76	41.2	0.42	0.24	0.98	5.3	0.36	7.6	0.32
Thailand	79	0.74	5.13	0.77	22.4	0.23	1.12	0.89	105.3	0.19	104.6	0.16
Timor-Leste	10	0.07	0.94	0.97	19.7	0.19	0.11	0.99	0.5	0.50	0.8	0.45
Togo	8	0.07	12.88	0.38	80.7	0.71	0.10	0.99	5.6	0.36	4.7	0.35
Tonga	71	0.59	3.67	0.84	2	0.01	0.42	0.96	0.0	0.64	0.1	0.61
Trinidad and Tobago	100	0.99	17.71	0.14	0.4	0.00	7.88	0.26	2.8	0.40	14.2	0.28
Tunisia	100	0.99	3.78	0.83	12.4	0.12	0.70	0.93	10.6	0.32	8.7	0.31
Turkey	95		3.03	0.87	13.2	0.11	1.38	0.87	61.7	0.22	95.0	0.17
Turkmenistan	100	0.99	12.25	0.41	0.1	0.00	3.34	0.68	7.7	0.34	43.9	0.22
Tuvalu	65	0.50	3.68	0.84	12.5	0.13	0.22	0.98	-	-	0.0	0.75
Uganda	0.8	0.01	9.52	0.55	90.8	0.89	0.04	1.00	36.8	0.25	28.5	0.24
Ukraine	95.7	0.96	11.16	0.47	5.5	0.06	1.19	0.89	24.6	0.27	58.2	0.20
United Arab Emirates	100	0.99	4.48	0.80	0.1	0.00	5.41	0.49	23.1	0.28	40.4	0.22
United Kingdom of Great Britain and Northern Ireland	100	1.00	2.80	0.88	8.7	0.10	1.49	0.86	13.3	0.31	105.9	0.16
United Republic of Tanzania	3	0.02	5.74	0.74	84.5	0.84	0.06	1.00	63.7	0.22	47.6	0.21

Country	Access to clean fuels and technologies		Energy efficiency		Renewable energy		CO ₂ emissions per capita		Black carbon		Methane emissions	
	%	Norm	MJ/ purch	Norm	Share	Norm	tons carbon	Inv. norm	ktC	Inv. log norm	MMTC DE	Inv. log norm
United States of America	100	1.00	5.09	0.77	9.5	0.10	4.11	0.61	183.1	0.15	632.2	0.05
Uruguay	100	0.98	3.02	0.87	60.3	0.60	0.49	0.95	4.3	0.37	25.4	0.25
Uzbekistan	85	0.92	7.24	0.66	1.6	0.02	0.93	0.91	10.0	0.32	55.1	0.20
Vanuatu	9	0.13	3.65	0.84	32.7	0.36	0.13	0.99	0.2	0.57	0.4	0.50
Venezuela (Bolivarian Republic of)	97	0.96	6.02	0.72	14.5	0.15	1.36	0.87	20.1	0.28	78.4	0.18
Viet Nam	61	0.67	5.55	0.74	31	0.32	0.53	0.95	94.2	0.19	113.1	0.16
Yemen	61	0.65	2.04	0.92	3	0.05	0.10	0.99	9.8	0.33	13.7	0.29
Zambia	16.4	0.16	8.05	0.62	85.6	0.85	0.10	0.99	19.4	0.29	11.7	0.30
Zimbabwe	30	0.29	12.95	0.38	82.8	0.83	0.20	0.98	34.6	0.25	12.0	0.29

Table A.3 Disaster risk reduction indicators

Country	Global Climate Risk Index		World Risk Index	
	Value	Norm	Value	Inv. norm
Afghanistan	37.3	0.18	9.2	0.84
Albania	35.8	0.17	8.2	0.86
Algeria	112.5	0.63	7.7	0.87
Andorra	-	-	-	-
Angola	83.2	0.45	10.6	0.82
Antigua and Barbuda	-	-	30.8	0.46
Argentina	83.2	0.45	3.5	0.94
Armenia	116.0	0.65	5.7	0.90
Australia	30.3	0.14	4.5	0.93
Austria	52.7	0.27	2.9	0.95
Azerbaijan	95.3	0.53	5.7	0.90
Bahamas	69.8	0.37	4.3	0.93
Bahrain	116.0	0.65	2.9	0.95
Bangladesh	16.0	0.05	18.8	0.67
Barbados	116.0	0.65	1.4	0.98
Belarus	116.0	0.65	2.6	0.96
Belgium	77.0	0.42	2.8	0.96
Belize	116.0	0.65	8.0	0.86
Benin	107.5	0.60	12.3	0.79
Bhutan	116.0	0.65	3.3	0.95
Bolivia (Plurinational State of)	47.7	0.24	4.9	0.92
Bosnia and Herzegovina	61.0	0.32	4.7	0.92
Botswana	72.2	0.39	4.3	0.93
Brazil	74.7	0.40	4.8	0.92
Brunei Darussalam	116.0	0.65	21.7	0.62
Bulgaria	58.2	0.30	4.1	0.93
Burkina Faso	116.0	0.65	11.1	0.81
Burundi	72.5	0.39	10.3	0.82
Cabo Verde	100.7	0.56	15.1	0.74

Country	Global Climate Risk Index		World Risk Index	
	Value	Norm	Value	Inv. norm
Cambodia	97.0	0.54	12.9	0.78
Cameroon	52.7	0.27	3.0	0.95
Canada	116.0	0.65	18.0	0.69
Central African Republic	82.8	0.45	7.8	0.87
Chad	116.0	0.65	11.9	0.79
Chile	27.2	0.12	12.5	0.78
China	42.3	0.21	5.8	0.90
China, Hong Kong (SAR)	-	-	-	-
Colombia	30.7	0.14	6.6	0.89
Comoros	116.0	0.65	14.6	0.75
Congo	116.0	0.65	7.1	0.88
Costa Rica	33.8	0.16	17.4	0.70
Côte d'Ivoire	77.7	0.42	10.0	0.83
Croatia	58.2	0.30	4.0	0.94
Cuba	-	-	5.7	0.90
Cyprus	83.7	0.46	2.9	0.95
Czechia	51.5	0.26	3.0	0.95
Democratic People's Republic of Korea	-	-	-	-
Democratic Republic of the Congo	59.0	0.31	8.8	0.85
Denmark	116.0	0.65	2.7	0.96
Djibouti	116.0	0.65	16.5	0.71
Dominica	9.3	0.01	-	-
Dominican Republic	46.8	0.23	11.7	0.80
Ecuador	29.5	0.13	8.5	0.86
Egypt	116.0	0.65	1.8	0.97
El Salvador	83.2	0.45	15.1	0.74
Equatorial Guinea	-	-	7.5	0.87
Eritrea	116.0	0.65	6.9	0.88
Estonia	116.0	0.65	2.0	0.97

Country	Global Climate Risk Index		World Risk Index	
	Value	Norm	Value	Inv. norm
Eswatini	116.0	0.65	6.5	0.89
Ethiopia	53.8	0.28	7.8	0.87
Fiji	82.8	0.45	17.8	0.69
Finland	116.0	0.65	1.9	0.97
France	61.2	0.32	2.4	0.96
Gabon	116.0	0.65	6.7	0.89
Gambia	101.5	0.56	12.1	0.79
Georgia	84.5	0.46	5.5	0.91
Germany	50.3	0.26	2.4	0.96
Ghana	82.2	0.45	9.4	0.84
Greece	39.5	0.19	6.9	0.88
Grenada	116.0	0.65	1.0	0.99
Guatemala	69.7	0.37	20.7	0.64
Guinea	116.0	0.65	8.7	0.85
Guinea-Bissau	116.0	0.65	13.3	0.77
Guyana	116.0	0.65	22.9	0.60
Haiti	37.3	0.18	16.3	0.72
Honduras	45.0	0.22	11.4	0.80
Hungary	99.0	0.55	4.9	0.92
Iceland	116.0	0.65	1.7	0.98
India	22.7	0.09	6.8	0.89
Indonesia	55.8	0.29	10.6	0.82
Iran (Islamic Republic of)	47.5	0.24	4.9	0.92
Iraq	116.0	0.65	6.0	0.90
Ireland	64.2	0.34	4.4	0.93
Italy	45.3	0.23	4.6	0.92
Jamaica	81.3	0.44	11.9	0.79
Japan	46.5	0.23	9.2	0.84
Jordan	116.0	0.65	4.1	0.93
Kazakhstan	66.8	0.36	3.6	0.94

Country	Global Climate Risk Index		World Risk Index	
	Value	Norm	Value	Inv. norm
Kenya	53.5	0.27	10.3	0.82
Kiribati	116.0	0.65	14.6	0.75
Kuwait	116.0	0.65	4.5	0.93
Kyrgyzstan	57.2	0.30	7.3	0.88
Lao People's Democratic Republic	55.0	0.28	4.5	0.93
Latvia	34.5	0.16	2.9	0.95
Lebanon	116.0	0.65	5.3	0.91
Lesotho	116.0	0.65	6.9	0.88
Liberia	82.2	0.45	9.5	0.84
Libya	116.0	0.65	3.3	0.95
Liechtenstein	-	-	-	-
Lithuania	116.0	0.65	2.3	0.96
Luxembourg	116.0	0.65	2.4	0.96
Madagascar	15.0	0.04	10.5	0.82
Malawi	60.5	0.32	8.9	0.85
Malaysia	53.3	0.27	7.6	0.87
Maldives	116.0	0.65	2.1	0.97
Mali	116.0	0.65	10.7	0.82
Malta	116.0	0.65	0.5	1.00
Marshall Islands	116.0	0.65	-	-
Mauritania	74.3	0.40	7.7	0.87
Mauritius	116.0	0.65	9.5	0.84
Mexico	64.7	0.34	6.0	0.90
Micronesia (Federated States of)	116.0	0.65	7.5	0.87
Monaco	-	-	-	-
Mongolia	102.0	0.57	3.0	0.95
Montenegro	116.0	0.65	6.6	0.89
Morocco	116.0	0.65	5.8	0.90
Mozambique	37.7	0.18	9.5	0.84

Country	Global Climate Risk Index		World Risk Index	
	Value	Norm	Value	Inv. norm
Myanmar	68.3	0.36	7.3	0.88
Namibia	116.0	0.65	5.8	0.90
Nauru	-	-	-	-
Nepal	10.5	0.02	4.9	0.92
Netherlands	89.5	0.49	7.4	0.88
New Zealand	68.7	0.37	4.7	0.92
Nicaragua	36.0	0.17	13.8	0.76
Niger	26.5	0.11	13.8	0.76
Nigeria	75.0	0.40	13.1	0.77
North Macedonia	86.7	0.47	6.5	0.89
Norway	85.0	0.46	2.3	0.96
Oman	84.7	0.46	2.7	0.96
Pakistan	43.2	0.21	7.1	0.88
Palau	-	-	-	-
State of Palestine	-	-	-	-
Panama	74.2	0.40	7.7	0.87
Papua New Guinea	78.2	0.42	22.2	0.61
Paraguay	68.0	0.36	3.3	0.95
Peru	10.7	0.02	6.7	0.89
Philippines	33.2	0.15	20.7	0.64
Poland	37.8	0.18	3.0	0.95
Portugal	17.3	0.06	3.4	0.94
Qatar	116.0	0.65	0.3	1.00
Republic of Korea	78.8	0.43	3.1	0.95
Republic of Moldova	116.0	0.65	4.0	0.93
Romania	64.3	0.34	5.7	0.91
Russian Federation	69.0	0.37	3.5	0.94
Rwanda	79.3	0.43	7.5	0.87
Saint Kitts and Nevis	64.0	0.34	-	-
Saint Lucia	116.0	0.65	4.5	0.93

Country	Global Climate Risk Index		World Risk Index	
	Value	Norm	Value	Inv. norm
Saint Vincent and the Grenadines	116.0	0.65	0.8	0.99
Samoa	116.0	0.65	6.2	0.90
San Marino	-	-	-	-
Sao Tome and Principe	-	-	2.5	0.96
Saudi Arabia	80.7	0.44	1.0	0.99
Senegal	110.7	0.62	9.8	0.83
Serbia	42.7	0.21	5.2	0.91
Seychelles	116.0	0.65	5.2	0.91
Sierra Leone	15.7	0.05	9.6	0.84
Singapore	116.0	0.65	2.5	0.96
Slovakia	64.7	0.34	3.2	0.95
Slovenia	81.7	0.44	3.3	0.95
Solomon Islands	75.3	0.41	29.4	0.48
Somalia	-	-	-	-
South Africa	35.7	0.17	6.4	0.89
South Sudan	91.7	0.50	-	-
Spain	54.2	0.28	3.5	0.94
Sri Lanka	9.0	0.01	7.5	0.87
Sudan	63.0	0.33	8.5	0.85
Suriname	116.0	0.65	7.4	0.88
Sweden	108.2	0.60	2.2	0.97
Switzerland	58.8	0.31	2.1	0.97
Syrian Arab Republic	-	-	5.9	0.90
Tajikistan	88.3	0.48	6.2	0.89
Thailand	16.3	0.05	6.5	0.89
Timor-Leste	116.0	0.65	16.4	0.71
Togo	106.0	0.59	11.0	0.81
Tonga	116.0	0.65	29.4	0.48
Trinidad and Tobago	84.5	0.46	9.4	0.84

Country	Global Climate Risk Index		World Risk Index	
	Value	Norm	Value	Inv. norm
Tunisia	82.3	0.45	5.7	0.90
Turkey	69.2	0.37	5.1	0.92
Turkmenistan	-	-	5.7	0.90
Tuvalu	116.0	0.65	-	-
Uganda	78.8	0.43	8.7	0.85
Ukraine	98.7	0.55	2.7	0.96
United Arab Emirates	116.0	0.65	3.7	0.94
United Kingdom of Great Britain and Northern Ireland	87.2	0.48	3.3	0.95
United Republic of Tanzania	81.7	0.44	9.2	0.84
United States of America	19.8	0.07	3.8	0.94
Uruguay	116.0	0.65	12.5	0.78
Uzbekistan	116.0	0.65	7.9	0.87
Vanuatu	90.0	0.49	56.7	0.00
Venezuela (Bolivarian Republic of)	106.8	0.60	7.7	0.87
Viet Nam	13.5	0.03	10.3	0.82
Yemen	66.2	0.35	5.5	0.91
Zambia	116.0	0.65	7.8	0.87
Zimbabwe	56.8	0.29	9.2	0.84

Table A.4 Waste management and material footprint indicators

Country	Material footprint per capita		Food loss index		Total municipal solid waste per capita	
	Tons	Inv. norm	Index	Norm	tons	Inv. norm
Afghanistan	1.3	0.57	-	-	0.16	0.90
Albania	10.9	0.31	-	-	0.40	0.75
Algeria	3.0	0.46	75.4	0.75	0.30	0.81
Andorra	-	-	-	-	0.52	0.67
Angola	3.7	0.44	55.5	0.56	0.17	0.89
Antigua and Barbuda	13.6	0.29	-	-	0.32	0.80
Argentina	14.3	0.28	92.4	0.92	0.42	0.74
Armenia	7.4	0.36	-	-	0.17	0.89
Australia	42.5	0.15	98.9	0.99	0.56	0.65
Austria	32.4	0.18	93.8	0.94	0.56	0.65
Azerbaijan	5.8	0.39	95.3	0.95	0.30	0.81
Bahamas	20.9	0.24	-	-	0.68	0.57
Bahrain	14.7	0.28	86.4	0.86	0.67	0.58
Bangladesh	2.3	0.50	84.9	0.85	0.09	0.94
Barbados	11.1	0.31	-	-	0.62	0.61
Belarus	0.4	0.70	95.0	0.95	0.45	0.72
Belgium	23.4	0.22	95.4	0.95	0.42	0.74
Belize	7.9	0.35	-	-	0.28	0.82
Benin	4.3	0.42	67.9	0.68	0.12	0.92
Bhutan	10.2	0.32	-	-	0.16	0.90
Bolivia (Plurinational State of)	5.4	0.40	94.1	0.94	0.21	0.87
Bosnia and Herzegovina	8.8	0.34	-	-	0.35	0.78
Botswana	33.6	0.18	87.4	0.87	0.10	0.93
Brazil	16.4	0.26	79.3	0.79	0.39	0.76
Brunei Darussalam	19.5	0.24	65.0	0.65	0.51	0.68
Bulgaria	12.1	0.30	79.4	0.79	0.42	0.74
Burkina Faso	3.8	0.44	69.2	0.69	0.14	0.91
Burundi	1.5	0.55	-	-	0.28	0.83

Country	Material footprint per capita		Food loss index		Total municipal solid waste per capita	
	Tons	Inv. norm	Index	Norm	tons	Inv. norm
Cabo Verde	8.5	0.34	-	-	0.26	0.84
Cambodia	3.4	0.45	69.7	0.70	0.07	0.96
Cameroon	1.9	0.52	54.0	0.54	0.15	0.90
Canada	34.9	0.18	93.1	0.93	0.71	0.55
Central African Republic	2.3	0.49	-	-	0.24	0.85
Chad	1.6	0.54	75.7	0.76	0.11	0.93
Chile	17.1	0.26	88.4	0.88	0.39	0.76
China	19.9	0.24	88.0	0.88	0.15	0.90
China, Hong Kong SAR	-	-	-	-	0.78	0.51
Colombia	10.4	0.32	93.4	0.93	0.26	0.84
Comoros	-	-	-	-	0.12	0.93
Congo	2.4	0.49	-	-	0.17	0.89
Costa Rica	8.1	0.35	70.2	0.70	0.31	0.81
Côte d'Ivoire	1.0	0.60	75.3	0.75	0.22	0.86
Croatia	15.3	0.27	-	-	0.39	0.75
Cuba	8.1	0.35	-	-	0.24	0.85
Cyprus	34.7	0.18	-	-	0.47	0.71
Czechia	22.5	0.23	96.7	0.97	0.32	0.80
Democratic People's Republic of Korea	1.0	0.59	-	-	-	-
Democratic Republic of the Congo	2.0	0.51	71.6	0.72	0.18	0.88
Denmark	24.3	0.22	92.4	0.92	0.79	0.50
Djibouti	2.4	0.49	-	-	0.15	0.90
Dominica	-	-	-	-	0.18	0.89
Dominican Republic	6.5	0.37	89.7	0.90	0.39	0.76
Ecuador	10.7	0.31	89.8	0.90	0.33	0.79
Egypt	4.9	0.41	82.0	0.82	0.24	0.85
El Salvador	6.3	0.38	94.6	0.95	0.27	0.83
Equatorial Guinea	-	-	-	-	0.16	0.90

Country	Material footprint per capita		Food loss index		Total municipal solid waste per capita	
	Tons	Inv. norm	Index	Norm	tons	Inv. norm
Eritrea	3.7	0.44	-	-	0.16	0.90
Estonia	28.0	0.20	-	-	0.36	0.77
Eswatini	9.9	0.32	-	-	0.16	0.90
Ethiopia	0.7	0.64	85.8	0.86	0.07	0.96
Fiji	7.2	0.36	-	-	0.22	0.86
Finland	35.2	0.17	100.0	1.00	0.50	0.69
France	21.2	0.23	94.6	0.95	0.50	0.68
Gabon	5.1	0.40	-	-	0.22	0.86
Gambia	2.3	0.50	-	-	0.15	0.91
Georgia	8.5	0.34	-	-	0.22	0.86
Germany	22.6	0.23	93.9	0.94	0.62	0.61
Ghana	3.6	0.44	45.0	0.45	0.16	0.90
Greece	26.2	0.21	87.1	0.87	0.50	0.68
Grenada	-	-	-	-	0.28	0.82
Guatemala	3.8	0.44	89.0	0.89	0.17	0.89
Guinea	2.2	0.50	63.8	0.64	0.07	0.95
Guinea-Bissau	-	-	-	-	0.16	0.90
Guyana	116.7	0.03	-	-	0.24	0.85
Haiti	1.3	0.56	68.7	0.69	0.21	0.87
Honduras	4.4	0.42	90.4	0.90	0.24	0.85
Hungary	14.3	0.28	93.5	0.94	0.38	0.76
Iceland	34.1	0.18	-	-	1.59	0.00
India	4.5	0.42	86.4	0.86	0.16	0.90
Indonesia	6.0	0.38	84.4	0.84	0.25	0.84
Iran (Islamic Republic of)	13.8	0.28	-	-	0.22	0.86
Iraq	2.8	0.48	-	-	0.36	0.77
Ireland	21.1	0.23	94.3	0.94	0.59	0.63
Italy	20.9	0.24	95.5	0.96	0.49	0.69
Jamaica	8.3	0.35	-	-	0.37	0.77

Country	Material footprint per capita		Food loss index		Total municipal solid waste per capita	
	Tons	Inv. norm	Index	Norm	tons	Inv. norm
Japan	25.0	0.21	93.7	0.94	0.35	0.78
Jordan	8.2	0.35	82.7	0.83	0.30	0.81
Kazakhstan	17.8	0.26	85.3	0.85	0.28	0.83
Kenya	3.1	0.46	87.4	0.87	0.14	0.91
Kiribati	-	-	-	-	0.31	0.80
Kuwait	47.1	0.14	89.2	0.89	0.58	0.63
Kyrgyzstan	8.5	0.34	-	-	0.19	0.88
Lao People's Democratic Republic	6.6	0.37	85.7	0.86	0.05	0.97
Latvia	21.7	0.23	-	-	0.43	0.73
Lebanon	15.4	0.27	-	-	0.36	0.77
Lesotho	11.5	0.31	-	-	0.04	0.98
Liberia	1.7	0.53	-	-	0.16	0.90
Libya	3.8	0.44	-	-	0.35	0.78
Liechtenstein	-	-	-	-	0.89	0.44
Lithuania	34.9	0.18	-	-	0.45	0.72
Luxembourg	104.8	0.05	-	-	0.62	0.61
Madagascar	0.8	0.62	82.6	0.83	0.15	0.90
Malawi	1.2	0.57	65.1	0.65	0.08	0.95
Malaysia	23.8	0.22	94.7	0.95	0.43	0.73
Maldives	16.4	0.26	-	-	0.52	0.67
Mali	4.6	0.42	87.6	0.88	0.12	0.92
Malta	26.7	0.21	-	-	0.62	0.61
Marshall Islands	-	-	-	-	0.16	0.90
Mauritania	2.6	0.48	-	-	0.13	0.92
Mauritius	20.1	0.24	-	-	0.35	0.78
Mexico	9.6	0.33	87.8	0.88	0.42	0.73
Micronesia (Federated States of)	-	-	-	-	0.25	0.84
Monaco	-	-	-	-	1.22	0.23

Country	Material footprint per capita		Food loss index		Total municipal solid waste per capita	
	Tons	Inv. norm	Index	Norm	tons	Inv. norm
Mongolia	13.3	0.29	-	-	0.96	0.40
Montenegro	24.9	0.22	-	-	0.53	0.66
Morocco	3.8	0.44	82.5	0.83	0.20	0.87
Mozambique	1.9	0.52	85.7	0.86	0.09	0.94
Myanmar	1.3	0.56	89.2	0.89	0.10	0.94
Namibia	8.2	0.35	-	-	0.16	0.90
Nauru	-	-	-	-	0.47	0.70
Nepal	2.7	0.48	74.5	0.75	0.06	0.96
Netherlands	26.7	0.21	97.0	0.97	0.52	0.67
New Zealand	24.6	0.22	87.4	0.87	0.73	0.54
Nicaragua	4.2	0.43	92.4	0.92	0.27	0.83
Niger	3.3	0.45	68.3	0.68	0.21	0.87
Nigeria	2.7	0.48	70.6	0.71	0.18	0.89
North Macedonia	13.3	0.29	-	-	0.38	0.76
Norway	37.6	0.17	96.9	0.97	0.42	0.73
Oman	10.2	0.32	91.8	0.92	0.44	0.72
Pakistan	3.2	0.46	91.1	0.91	0.16	0.90
Palau	-	-	-	-	0.44	0.72
State of Palestine	-	-	-	-	0.34	0.78
Panama	7.9	0.35	92.4	0.92	0.37	0.77
Papua New Guinea	2.7	0.48	-	-	0.13	0.92
Paraguay	14.6	0.28	69.4	0.69	0.27	0.83
Peru	9.4	0.33	75.5	0.76	0.27	0.83
Philippines	4.4	0.42	93.4	0.93	0.14	0.91
Poland	23.2	0.22	90.6	0.91	0.29	0.82
Portugal	18.4	0.25	92.7	0.93	0.45	0.71
Qatar	14.8	0.28	89.3	0.89	0.47	0.70
Republic of Korea	27.5	0.20	88.0	0.88	0.36	0.77
Republic of Moldova	3.5	0.45	-	-	1.12	0.29

Country	Material footprint per capita		Food loss index		Total municipal solid waste per capita	
	Tons	Inv. norm	Index	Norm	tons	Inv. norm
Romania	16.4	0.26	95.3	0.95	0.25	0.84
Russian Federation	9.5	0.33	95.5	0.96	0.42	0.74
Rwanda	3.0	0.46	88.7	0.89	0.37	0.77
Saint Kitts and Nevis	-	-	-	-	0.61	0.62
Saint Lucia	-	-	-	-	0.44	0.72
Saint Vincent and the Grenadines	-	-	-	-	0.29	0.82
Samoa	7.6	0.36	-	-	0.15	0.91
San Marino	-	-	-	-	0.52	0.67
Sao Tome and Principe	6.0	0.38	-	-	0.13	0.92
Saudi Arabia	12.3	0.30	91.5	0.92	0.51	0.68
Senegal	2.4	0.49	88.2	0.88	0.16	0.90
Serbia	19.7	0.24	89.4	0.89	0.26	0.84
Seychelles	21.1	0.23	-	-	0.54	0.66
Sierra Leone	5.9	0.38	-	-	0.11	0.93
Singapore	73.3	0.09	100.0	1.00	1.37	0.13
Slovakia	34.4	0.18	94.7	0.95	0.33	0.79
Slovenia	23.2	0.22	-	-	0.45	0.72
Solomon Islands	-	-	-	-	0.32	0.80
Somalia	3.1	0.46	-	-	0.16	0.90
South Africa	8.6	0.34	90.1	0.90	0.36	0.78
South Sudan	1.3	0.57	-	-	0.24	0.85
Spain	23.3	0.22	93.6	0.94	0.43	0.73
Sri Lanka	3.9	0.43	89.8	0.90	0.12	0.92
Sudan	4.4	0.42	72.1	0.72	0.07	0.95
Suriname	14.4	0.28	-	-	0.15	0.91
Sweden	31.8	0.19	96.1	0.96	0.45	0.72
Switzerland	31.7	0.19	97.4	0.97	0.72	0.54
Syrian Arab Republic	3.2	0.46	83.8	0.84	0.22	0.86
Tajikistan	3.6	0.44	91.1	0.91	0.22	0.86

Country	Material footprint per capita		Food loss index		Total municipal solid waste per capita	
	Tons	Inv. norm	Index	Norm	tons	Inv. norm
Thailand	14.4	0.28	90.4	0.90	0.39	0.75
Timor-Leste	-	-	-	-	0.05	0.97
Togo	2.6	0.48	66.6	0.67	0.15	0.90
Tonga	-	-	-	-	0.16	0.90
Trinidad and Tobago	5.4	0.40	-	-	0.55	0.65
Tunisia	6.2	0.38	86.4	0.86	0.24	0.85
Turkey	15.6	0.27	74.3	0.74	0.40	0.75
Turkmenistan	21.4	0.23	-	-	0.09	0.94
Tuvalu	-	-	-	-	0.36	0.77
Uganda	2.6	0.48	89.3	0.89	0.20	0.87
Ukraine	11.3	0.31	90.4	0.90	0.34	0.79
United Arab Emirates	48.1	0.14	83.4	0.83	0.58	0.63
United Kingdom of Great Britain and Northern Ireland	22.7	0.23	97.5	0.98	0.48	0.69
United Republic of Tanzania	1.4	0.55	74.4	0.74	0.19	0.88
United States of America	32.3	0.18	-	-	0.81	0.49
Uruguay	35.8	0.17	-	-	0.37	0.77
Uzbekistan	6.1	0.38	-	-	0.13	0.92
Vanuatu	7.5	0.36	-	-	0.26	0.84
Venezuela (Bolivarian Republic of)	7.4	0.36	89.7	0.90	0.33	0.79
Viet Nam	11.8	0.30	80.3	0.80	0.11	0.93
Yemen	1.1	0.58	93.3	0.93	0.18	0.89
Zambia	3.4	0.45	93.9	0.94	0.18	0.88
Zimbabwe	3.4	0.45	-	-	0.12	0.93

Table A.5 Biodiversity and marine life indicators

Country	Marine protected areas		Freshwater key biodiversity areas		Terrestrial key biodiversity areas		Forested areas		Red List Index	
	%	Norm	%	Norm	%	Norm	%	Norm	Index	Norm
Afghanistan	0.0	0.00	0.0	0.00	5.7	0.06	1.9	0.02	0.837	0.84
Albania	2.7	0.03	92.7	0.93	57.2	0.57	28.8	0.29	0.835	0.83
Algeria	0.1	0.00	18.8	0.19	16.6	0.17	0.8	0.01	0.908	0.91
Andorra	0.0	0.00	-	-	26.1	0.26	34.0	0.34	0.916	0.92
Angola	0.0	0.00	33.3	0.33	28.1	0.28	53.4	0.53	0.932	0.93
Antigua and Barbuda	0.2	0.00	-	-	8.2	0.08	18.5	0.18	0.888	0.89
Argentina	4.0	0.04	43.7	0.44	31.8	0.32	10.4	0.10	0.849	0.85
Armenia	0.0	0.00	26.8	0.27	21.6	0.22	11.5	0.12	0.845	0.85
Australia	40.6	0.41	37.7	0.38	55.7	0.56	17.4	0.17	0.821	0.82
Austria	0.0	0.00	71.2	0.71	67.3	0.67	47.2	0.47	0.894	0.89
Azerbaijan	0.4	0.00	14.5	0.15	36.6	0.37	13.7	0.14	0.910	0.91
Bahamas	7.9	0.08	0.0	0.00	29.2	0.29	50.9	0.51	0.700	0.70
Bahrain	1.2	0.01	-	-	0.0	0.00	0.9	0.01	0.749	0.75
Bangladesh	5.4	0.05	0.0	0.00	43.7	0.44	14.5	0.14	0.749	0.75
Barbados	0.0	0.00	-	-	0.2	0.00	14.7	0.15	0.897	0.90
Belarus	0.0	0.00	53.3	0.53	47.1	0.47	43.2	0.43	0.971	0.97
Belgium	36.7	0.37	93.0	0.93	84.2	0.84	22.8	0.23	0.986	0.99
Belize	10.1	0.10	15.3	0.15	41.5	0.42	56.0	0.56	0.844	0.84
Benin	0.0	0.00	0.0	0.00	66.7	0.67	27.8	0.28	0.910	0.91
Bhutan	0.0	0.00	34.3	0.34	47.3	0.47	71.5	0.71	0.797	0.80

Country	Marine protected areas		Freshwater key biodiversity areas		Terrestrial key biodiversity areas		Forested areas		Red List Index	
	%	Norm	%	Norm	%	Norm	%	Norm	Index	Norm
Bolivia (Plurinational State of)	0.0	0.00	53.5	0.54	48.3	0.48	46.9	0.47	0.871	0.87
Bosnia and Herzegovina	8.3	0.08	66.7	0.67	18.2	0.18	42.7	0.43	0.901	0.90
Botswana	0.0	0.00	52.1	0.52	51.1	0.51	26.9	0.27	0.974	0.97
Brazil	1.7	0.02	20.8	0.21	42.8	0.43	59.4	0.59	0.900	0.90
Brunei Darussalam	0.2	0.00	50.0	0.50	41.7	0.42	72.1	0.72	0.860	0.86
Bulgaria	8.1	0.08	91.5	0.91	87.5	0.88	35.9	0.36	0.941	0.94
Burkina Faso	0.0	0.00	50.2	0.50	66.7	0.67	22.7	0.23	0.988	0.99
Burundi	0.0	0.00	69.1	0.69	56.8	0.57	10.9	0.11	0.892	0.89
Cabo Verde	0.0	0.00	-	-	12.0	0.12	11.3	0.11	0.905	0.90
Cambodia	0.2	0.00	33.0	0.33	39.5	0.40	45.7	0.46	0.787	0.79
Cameroon	3.4	0.03	41.3	0.41	35.3	0.35	43.0	0.43	0.840	0.84
Canada	0.9	0.01	21.1	0.21	28.1	0.28	38.2	0.38	0.963	0.96
Central African Republic	0.0	0.00	94.8	0.95	74.2	0.74	35.8	0.36	0.937	0.94
Chad	0.0	0.00	61.4	0.61	67.3	0.67	3.4	0.03	0.916	0.92
Chile	12.9	0.13	35.3	0.35	34.2	0.34	24.5	0.24	0.759	0.76
China	3.8	0.04	9.5	0.09	9.9	0.10	23.3	0.23	0.758	0.76
China, Hong Kong (SAR)	-	-	-	-	48.9	0.49	-	-	0.831	0.83
Colombia	10.5	0.10	47.4	0.47	42.9	0.43	53.3	0.53	0.748	0.75

Country	Marine protected areas		Freshwater key biodiversity areas		Terrestrial key biodiversity areas		Forested areas		Red List Index	
	%	Norm	%	Norm	%	Norm	%	Norm	Index	Norm
Comoros	0.0	0.00	-	-	8.3	0.08	17.7	0.18	0.741	0.74
Congo	3.2	0.03	65.7	0.66	56.5	0.56	64.3	0.64	0.966	0.97
Costa Rica	0.8	0.01	37.7	0.38	39.8	0.40	59.4	0.59	0.829	0.83
Côte d'Ivoire	0.1	0.00	79.4	0.79	71.2	0.71	8.9	0.09	0.905	0.91
Croatia	8.5	0.09	85.7	0.86	76.5	0.76	34.7	0.35	0.897	0.90
Cuba	4.3	0.04	98.2	0.98	54.5	0.54	31.2	0.31	0.662	0.66
Cyprus	0.1	0.00	36.6	0.37	74.1	0.74	18.7	0.19	0.982	0.98
Czechia	0.0	0.00	92.1	0.92	94.7	0.95	34.7	0.35	0.971	0.97
Democratic People's Republic of Korea	0.0	0.00	0.0	0.00	0.0	0.00	50.1	0.50	0.916	0.92
Democratic Republic of the Congo	0.2	0.00	52.5	0.52	52.7	0.53	55.6	0.56	0.891	0.89
Denmark	18.2	0.18	91.8	0.92	86.2	0.86	15.0	0.15	0.971	0.97
Djibouti	0.2	0.00	0.0	0.00	0.8	0.01	0.3	0.00	0.807	0.81
Dominica	0.0	0.00	-	-	40.0	0.40	63.8	0.64	0.673	0.67
Dominican Republic	9.1	0.09	95.5	0.95	81.1	0.81	44.4	0.44	0.731	0.73
Ecuador	13.1	0.13	66.8	0.67	30.2	0.30	50.3	0.50	0.655	0.65
Egypt	5.0	0.05	28.5	0.28	39.4	0.39	0.0	0.00	0.911	0.91
El Salvador	0.7	0.01	81.6	0.82	25.0	0.25	28.2	0.28	0.831	0.83
Equatorial Guinea	0.2	0.00	-	-	100.0	1.00	87.3	0.87	0.822	0.82
Eritrea	0.0	0.00	0.0	0.00	13.3	0.13	10.4	0.10	0.891	0.89

Country	Marine protected areas		Freshwater key biodiversity areas		Terrestrial key biodiversity areas		Forested areas		Red List Index	
	%	Norm	%	Norm	%	Norm	%	Norm	Index	Norm
Estonia	18.6	0.19	93.5	0.94	94.9	0.95	56.1	0.56	0.985	0.98
Eswatini	0.0	0.00	-	-	30.6	0.31	28.9	0.29	0.812	0.81
Ethiopia	0.0	0.00	16.2	0.16	18.1	0.18	17.1	0.17	0.847	0.85
Fiji	0.9	0.01	0.1	0.00	11.2	0.11	62.4	0.62	0.668	0.67
Finland	9.6	0.10	73.7	0.74	71.8	0.72	73.7	0.74	0.990	0.99
France	14.4	0.14	78.1	0.78	80.4	0.80	31.5	0.32	0.844	0.84
Gabon	28.7	0.29	93.6	0.94	61.7	0.62	91.3	0.91	0.956	0.96
Gambia	0.1	0.00	92.9	0.93	34.6	0.35	24.0	0.24	0.967	0.97
Georgia	0.7	0.01	37.3	0.37	40.3	0.40	40.6	0.41	0.871	0.87
Germany	45.2	0.45	81.3	0.81	78.8	0.79	32.7	0.33	0.984	0.98
Ghana	0.1	0.00	97.6	0.98	80.6	0.81	35.1	0.35	0.848	0.85
Greece	1.5	0.01	87.2	0.87	86.0	0.86	30.3	0.30	0.845	0.85
Grenada	0.0	0.00	-	-	34.5	0.34	52.1	0.52	0.674	0.67
Guatemala	0.8	0.01	24.8	0.25	30.0	0.30	32.9	0.33	0.729	0.73
Guinea	0.5	0.01	90.4	0.90	71.2	0.71	25.2	0.25	0.896	0.90
Guinea-Bissau	10.0	0.10	-	-	52.6	0.53	70.4	0.70	0.908	0.91
Guyana	0.0	0.00	-	-	-	-	93.6	0.94	0.880	0.88
Haiti	0.0	0.00	0.0	0.00	41.0	0.41	12.6	0.13	0.717	0.72
Honduras	4.2	0.04	-	-	59.0	0.59	56.8	0.57	0.763	0.76
Hungary	0.0	0.00	84.8	0.85	82.5	0.83	22.7	0.23	0.875	0.88
Iceland	0.4	0.00	33.5	0.34	19.1	0.19	0.5	0.01	0.858	0.86

Country	Marine protected areas		Freshwater key biodiversity areas		Terrestrial key biodiversity areas		Forested areas		Red List Index	
	%	Norm	%	Norm	%	Norm	%	Norm	Index	Norm
India	0.2	0.00	18.6	0.19	21.0	0.21	24.3	0.24	0.671	0.67
Indonesia	2.9	0.03	41.0	0.41	26.1	0.26	50.9	0.51	0.746	0.75
Iran (Islamic Republic of)	0.8	0.01	35.4	0.35	43.6	0.44	6.6	0.07	0.839	0.84
Iraq	0.0	0.00	8.1	0.08	5.8	0.06	1.9	0.02	0.792	0.79
Ireland	2.3	0.02	98.5	0.99	86.0	0.86	11.4	0.11	0.915	0.91
Italy	1.1	0.01	84.7	0.85	77.3	0.77	32.5	0.33	0.899	0.90
Jamaica	0.8	0.01	27.8	0.28	29.5	0.29	55.1	0.55	0.665	0.67
Japan	8.2	0.08	62.9	0.63	64.8	0.65	68.4	0.68	0.772	0.77
Jordan	35.6	0.36	18.7	0.19	13.5	0.13	1.1	0.01	0.965	0.97
Kazakhstan	1.0	0.01	10.2	0.10	11.1	0.11	1.3	0.01	0.867	0.87
Kenya	0.8	0.01	35.7	0.36	34.5	0.35	6.3	0.06	0.795	0.79
Kiribati	11.8	0.12	-	-	40.0	0.40	1.5	0.01	0.768	0.77
Kuwait	1.5	0.01	-	-	51.6	0.52	0.4	0.00	0.834	0.83
Kyrgyzstan	0.0	0.00	35.4	0.35	25.7	0.26	6.9	0.07	0.984	0.98
Lao People's Democratic Republic	0.0	0.00	29.9	0.30	44.0	0.44	71.9	0.72	0.830	0.83
Latvia	16.0	0.16	97.5	0.97	97.2	0.97	54.9	0.55	0.988	0.99
Lebanon	0.2	0.00	21.1	0.21	12.3	0.12	14.0	0.14	0.919	0.92
Lesotho	0.0	0.00	-	-	16.4	0.16	1.1	0.01	0.945	0.95
Liberia	0.1	0.00	24.3	0.24	15.8	0.16	79.1	0.79	0.905	0.91

Country	Marine protected areas		Freshwater key biodiversity areas		Terrestrial key biodiversity areas		Forested areas		Red List Index	
	%	Norm	%	Norm	%	Norm	%	Norm	Index	Norm
Libya	0.6	0.01	-	-	0.0	0.00	0.1	0.00	0.972	0.97
Liechtenstein	0.0	0.00	-	-	80.8	0.81	41.9	0.42	0.993	0.99
Lithuania	30.6	0.31	95.2	0.95	91.1	0.91	35.1	0.35	0.989	0.99
Luxembourg	0.0	0.00	37.1	0.37	81.9	0.82	36.5	0.37	0.987	0.99
Madagascar	0.7	0.01	51.1	0.51	25.0	0.25	21.4	0.21	0.756	0.76
Malawi	0.0	0.00	18.2	0.18	73.7	0.74	23.8	0.24	0.808	0.81
Malaysia	1.4	0.01	50.0	0.50	28.5	0.29	58.2	0.58	0.765	0.77
Maldives	0.1	0.00	-	-	0.0	0.00	2.7	0.03	0.844	0.84
Mali	0.0	0.00	0.0	0.00	8.1	0.08	10.9	0.11	0.981	0.98
Malta	6.3	0.06	-	-	84.5	0.84	1.4	0.01	0.884	0.88
Marshall Islands	0.3	0.00	-	-	10.1	0.10	52.2	0.52	0.835	0.83
Mauritania	4.2	0.04	-	-	11.2	0.11	0.3	0.00	0.975	0.97
Mauritius	0.0	0.00	-	-	9.6	0.10	19.1	0.19	0.406	0.41
Mexico	21.7	0.22	29.7	0.30	37.1	0.37	33.8	0.34	0.674	0.67
Micronesia (Federated States of)	0.0	0.00	-	-	0.0	0.00	92.0	0.92	0.693	0.69
Monaco	0.1	0.00	-	-	-	-	0.0	0.00	0.758	0.76
Mongolia	0.0	0.00	38.6	0.39	41.7	0.42	9.1	0.09	0.949	0.95
Montenegro	0.0	0.00	-	-	11.1	0.11	61.5	0.61	0.803	0.80
Morocco	0.3	0.00	71.8	0.72	53.8	0.54	12.9	0.13	0.888	0.89
Mozambique	2.2	0.02	19.6	0.20	21.7	0.22	46.7	0.47	0.813	0.81

Country	Marine protected areas		Freshwater key biodiversity areas		Terrestrial key biodiversity areas		Forested areas		Red List Index	
	%	Norm	%	Norm	%	Norm	%	Norm	Index	Norm
Myanmar	0.2	0.00	27.1	0.27	24.9	0.25	43.7	0.44	0.798	0.80
Namibia	1.7	0.02	85.4	0.85	86.1	0.86	8.1	0.08	0.969	0.97
Nauru	0.0	0.00	-	-	0.0	0.00	0.0	0.00	0.768	0.77
Nepal	0.0	0.00	32.4	0.32	50.7	0.51	41.6	0.42	0.830	0.83
Netherlands	26.7	0.27	98.3	0.98	97.9	0.98	11.0	0.11	0.938	0.94
New Zealand	29.7	0.30	29.3	0.29	46.4	0.46	37.6	0.38	0.618	0.62
Nicaragua	3.0	0.03	65.5	0.66	70.4	0.70	28.3	0.28	0.849	0.85
Niger	0.0	0.00	27.1	0.27	33.1	0.33	0.9	0.01	0.935	0.94
Nigeria	0.0	0.00	73.8	0.74	80.4	0.80	23.7	0.24	0.856	0.86
North Macedonia	0.0	0.00	93.6	0.94	26.0	0.26	39.7	0.40	0.970	0.97
Norway	0.8	0.01	64.1	0.64	57.7	0.58	40.0	0.40	0.943	0.94
Oman	0.1	0.00	-	-	11.8	0.12	0.0	0.00	0.890	0.89
Pakistan	0.8	0.01	35.9	0.36	34.8	0.35	4.8	0.05	0.855	0.86
Palau	83.0	0.83	-	-	44.0	0.44	90.0	0.90	0.717	0.72
State of Palestine	-	-	0.0	0.00	24.4	0.24	1.7	0.02	0.921	0.92
Panama	1.7	0.02	52.4	0.52	34.4	0.34	56.7	0.57	0.745	0.74
Papua New Guinea	0.2	0.00	-	-	6.9	0.07	79.2	0.79	0.832	0.83
Paraguay	0.0	0.00	38.8	0.39	36.3	0.36	40.5	0.41	0.949	0.95
Peru	0.5	0.00	48.5	0.48	29.1	0.29	56.5	0.57	0.728	0.73
Philippines	1.0	0.01	49.8	0.50	40.1	0.40	24.1	0.24	0.673	0.67
Poland	22.6	0.23	91.2	0.91	87.3	0.87	31.0	0.31	0.972	0.97

Country	Marine protected areas		Freshwater key biodiversity areas		Terrestrial key biodiversity areas		Forested areas		Red List Index	
	%	Norm	%	Norm	%	Norm	%	Norm	Index	Norm
Portugal	3.8	0.04	64.0	0.64	73.3	0.73	36.2	0.36	0.869	0.87
Qatar	1.7	0.02	-	-	40.0	0.40	0.0	0.00	0.817	0.82
Republic of Korea	1.4	0.01	36.8	0.37	37.5	0.37	64.5	0.65	0.699	0.70
Republic of Moldova	0.0	0.00	0.0	0.00	0.0	0.00	11.8	0.12	0.969	0.97
Romania	23.1	0.23	61.0	0.61	76.0	0.76	30.1	0.30	0.930	0.93
Russian Federation	2.9	0.03	26.2	0.26	25.1	0.25	49.8	0.50	0.954	0.95
Rwanda	0.0	0.00	29.2	0.29	51.7	0.52	11.2	0.11	0.884	0.88
Saint Kitts and Nevis	0.2	0.00	-	-	56.8	0.57	42.3	0.42	0.733	0.73
Saint Lucia	0.2	0.00	-	-	45.6	0.46	34.0	0.34	0.836	0.84
Saint Vincent and the Grenadines	0.2	0.00	-	-	43.0	0.43	73.2	0.73	0.766	0.77
Samoa	0.1	0.00	-	-	13.7	0.14	57.1	0.57	0.765	0.76
San Marino	0.0	0.00	-	-	-	-	16.7	0.17	0.991	0.99
Sao Tome and Principe	0.0	0.00	72.9	0.73	79.5	0.80	54.1	0.54	0.799	0.80
Saudi Arabia	2.5	0.02	17.7	0.18	22.0	0.22	0.5	0.00	0.904	0.90
Senegal	1.1	0.01	-	-	37.8	0.38	41.9	0.42	0.940	0.94
Serbia	0.0	0.00	25.4	0.25	26.1	0.26	31.1	0.31	0.957	0.96
Seychelles	0.0	0.00	100.0	1.00	28.6	0.29	73.3	0.73	0.683	0.68
Sierra Leone	0.5	0.01	61.6	0.62	57.3	0.57	35.1	0.35	0.931	0.93
Singapore	0.0	0.00	-	-	21.1	0.21	22.0	0.22	0.850	0.85

Country	Marine protected areas		Freshwater key biodiversity areas		Terrestrial key biodiversity areas		Forested areas		Red List Index	
	%	Norm	%	Norm	%	Norm	%	Norm	Index	Norm
Slovakia	0.0	0.00	86.3	0.86	85.8	0.86	40.1	0.40	0.961	0.96
Slovenia	0.0	0.00	93.1	0.93	88.7	0.89	61.5	0.61	0.929	0.93
Solomon Islands	0.1	0.00	-	-	4.4	0.04	90.1	0.90	0.759	0.76
Somalia	0.0	0.00	0.0	0.00	0.0	0.00	9.5	0.10	0.903	0.90
South Africa	11.4	0.11	36.3	0.36	32.5	0.33	14.1	0.14	0.774	0.77
South Sudan	0.0	0.00	58.6	0.59	33.6	0.34	11.3	0.11	0.930	0.93
Spain	8.4	0.08	48.4	0.48	57.6	0.58	37.2	0.37	0.854	0.85
Sri Lanka	0.1	0.00	43.9	0.44	43.7	0.44	33.7	0.34	0.571	0.57
Sudan	16.0	0.16	0.0	0.00	17.8	0.18	9.8	0.10	0.925	0.92
Suriname	1.5	0.02	49.4	0.49	51.2	0.51	97.4	0.97	0.983	0.98
Sweden	15.2	0.15	58.2	0.58	59.0	0.59	68.7	0.69	0.992	0.99
Switzerland	0.0	0.00	60.2	0.60	35.5	0.35	32.1	0.32	0.975	0.97
Syrian Arab Republic	0.2	0.00	0.0	0.00	0.0	0.00	2.8	0.03	0.940	0.94
Tajikistan	0.0	0.00	30.5	0.30	16.8	0.17	3.1	0.03	0.990	0.99
Thailand	1.9	0.02	40.7	0.41	70.7	0.71	38.9	0.39	0.780	0.78
Timor-Leste	1.4	0.01	-	-	39.5	0.39	61.9	0.62	0.851	0.85
Togo	0.2	0.00	-	-	75.0	0.75	22.2	0.22	0.862	0.86
Tonga	1.5	0.02	-	-	26.1	0.26	12.4	0.12	0.722	0.72
Trinidad and Tobago	0.0	0.00	0.0	0.00	32.0	0.32	44.5	0.44	0.805	0.81
Tunisia	1.0	0.01	43.4	0.43	40.1	0.40	4.5	0.05	0.974	0.97
Turkey	0.1	0.00	4.3	0.04	2.3	0.02	28.9	0.29	0.875	0.88

Country	Marine protected areas		Freshwater key biodiversity areas		Terrestrial key biodiversity areas		Forested areas		Red List Index	
	%	Norm	%	Norm	%	Norm	%	Norm	Index	Norm
Turkmenistan	3.0	0.03	12.8	0.13	14.0	0.14	8.8	0.09	0.977	0.98
Tuvalu	0.0	0.00	-	-	-	-	33.3	0.33	0.830	0.83
Uganda	0.0	0.00	48.5	0.48	70.6	0.71	11.7	0.12	0.752	0.75
Ukraine	3.4	0.03	16.3	0.16	21.7	0.22	16.7	0.17	0.934	0.93
United Arab Emirates	4.3	0.04	-	-	57.9	0.58	4.5	0.04	0.854	0.85
United Kingdom of Great Britain and Northern Ireland	26.2	0.26	88.6	0.89	82.8	0.83	13.2	0.13	0.961	0.96
United Republic of Tanzania	3.0	0.03	37.0	0.37	62.9	0.63	51.6	0.52	0.696	0.70
United States of America	41.0	0.41	34.2	0.34	51.2	0.51	33.9	0.34	0.832	0.83
Uruguay	0.7	0.01	21.9	0.22	20.8	0.21	11.6	0.12	0.854	0.85
Uzbekistan	0.0	0.00	1.2	0.01	10.1	0.10	8.7	0.09	0.969	0.97
Vanuatu	0.0	0.00	-	-	2.8	0.03	36.3	0.36	0.658	0.66
Venezuela (Bolivarian Republic of)	3.5	0.03	52.7	0.53	52.5	0.53	52.4	0.52	0.827	0.83
Viet Nam	0.6	0.01	38.2	0.38	39.2	0.39	47.2	0.47	0.723	0.72
Yemen	0.5	0.00	7.7	0.08	19.4	0.19	1.0	0.01	0.857	0.86
Zambia	0.0	0.00	55.9	0.56	45.5	0.45	60.3	0.60	0.875	0.87
Zimbabwe	0.0	0.00	82.0	0.82	81.2	0.81	45.1	0.45	0.791	0.79

Note: The proportion of national exclusive economic zones managed using ecosystem-based approaches is a new Sustainable Development Goal indicator for which complete data is not yet available.

Table A.6 Land sustainability indicators

Country	Cereal productivity		Organic carbon density in soil		Land degradation	
	tons/ha	Norm	Average t/ha	Norm	%	Inv. norm
Afghanistan	2.09	0.05	18.8	0.03	8	0.92
Albania	3.66	0.09	44.0	0.08	8	0.92
Algeria	2.98	0.07	15.8	0.03	1	0.99
Andorra	-	-	83.0	0.16	-	-
Angola	0.73	0.02	31.1	0.06	20	0.80
Antigua and Barbuda	1.57	0.04	101.4	0.19	-	-
Argentina	3.67	0.09	45.9	0.09	39	0.61
Armenia	1.99	0.05	55.8	0.11	2	0.98
Australia	2.88	0.07	27.3	0.05	-	-
Austria	5.69	0.14	56.4	0.11	-	-
Azerbaijan	3.18	0.08	48.4	0.09	-	-
Bahamas	9.79	0.24	18.8	0.03	-	-
Bahrain	-	-	15.3	0.03	-	-
Bangladesh	3.12	0.08	60.7	0.12	65	0.35
Barbados	2.80	0.07	60.3	0.11	-	-
Belarus	2.75	0.07	117.1	0.23	1	0.99
Belgium	6.98	0.17	51.8	0.10	11	0.89
Belize	3.65	0.09	70.3	0.13	81	0.19
Benin	1.73	0.04	31.9	0.06	53	0.47
Bhutan	1.92	0.05	60.3	0.11	10	0.90
Bolivia (Plurinational State of)	1.60	0.04	45.2	0.09	18	0.82
Bosnia and Herzegovina	3.44	0.08	42.6	0.08	4	0.96
Botswana	0.74	0.02	18.0	0.03	51	0.49
Brazil	3.33	0.08	46.4	0.09	27	0.73
Brunei Darussalam	1.94	0.05	104.1	0.20	-	-
Bulgaria	4.15	0.10	48.2	0.09	-	-
Burkina Faso	1.41	0.03	27.8	0.05	19	0.81

Country	Cereal productivity		Organic carbon density in soil		Land degradation	
	tons/ha	Norm	Average t/ha	Norm	%	Inv. norm
Burundi	0.92	0.02	76.3	0.15	29	0.71
Cabo Verde	0.02	0.00	55.0	0.10	17	0.83
Cambodia	3.39	0.08	40.2	0.08	33	0.67
Cameroon	1.84	0.05	47.9	0.09	0	1.00
Canada	4.01	0.10	93.2	0.18	-	-
Central African Republic	1.11	0.03	35.2	0.07	13	0.87
Chad	1.20	0.03	22.4	0.04	34	0.66
Chile	7.11	0.17	79.6	0.15	1	0.99
China	4.07	0.10	42.9	0.08	27	0.73
China, Hong Kong (SAR)	-	-	112.4	0.22	-	-
Colombia	3.41	0.08	30.0	0.06	7	0.93
Comoros	1.65	0.04	75.3	0.14	22	0.78
Congo	0.79	0.02	74.5	0.14	10	0.90
Costa Rica	3.33	0.08	117.8	0.23	9	0.91
Côte d'Ivoire	1.57	0.04	35.3	0.07	14	0.86
Croatia	4.82	0.12	41.3	0.08	-	-
Cuba	2.48	0.06	46.7	0.09	-	-
Cyprus	2.14	0.05	32.4	0.06	19	0.81
Czechia	4.45	0.11	49.4	0.09	6	0.94
Democratic People's Republic of Korea	2.23	0.05	35.4	0.07	-	-
Democratic Republic of the Congo	0.81	0.02	46.1	0.09	6	0.94
Denmark	6.15	0.15	63.5	0.12	-	-
Djibouti	2.10	0.05	10.4	0.02	-	-
Dominica	1.66	0.04	49.0	0.09	-	-
Dominican Republic	2.88	0.07	208.3	0.40	-	-
Ecuador	2.14	0.05	89.4	0.17	30	0.70
Egypt	5.45	0.13	12.6	0.02	1	0.99

Country	Cereal productivity		Organic carbon density in soil		Land degradation	
	tons/ha	Norm	Average t/ha	Norm	%	Inv. norm
El Salvador	3.58	0.09	71.2	0.14	16	0.84
Equatorial Guinea	-	-	64.9	0.12	19	0.81
Eritrea	0.85	0.02	20.5	0.04	35	0.65
Estonia	3.72	0.09	116.5	0.22	-	-
Eswatini	1.77	0.04	53.0	0.10	13	0.87
Ethiopia	2.79	0.07	32.8	0.06	29	0.71
Fiji	3.14	0.08	55.6	0.11	-	-
Finland	3.57	0.09	195.4	0.38	1	0.99
France	5.62	0.14	49.5	0.09	12	0.88
Gabon	2.31	0.06	46.2	0.09	16	0.84
Gambia	0.35	0.01	35.4	0.07	14	0.86
Georgia	2.11	0.05	48.4	0.09	6	0.94
Germany	5.96	0.15	67.2	0.13	-	-
Ghana	1.58	0.04	32.3	0.06	14	0.86
Greece	3.94	0.10	29.3	0.05	16	0.84
Grenada	1.00	0.02	74.7	0.14	-	-
Guatemala	2.18	0.05	75.1	0.14	24	0.76
Guinea	1.39	0.03	31.5	0.06	11	0.89
Guinea-Bissau	1.07	0.03	35.1	0.07	15	0.85
Guyana	3.22	0.08	73.3	0.14	16	0.84
Haiti	1.33	0.03	42.5	0.08	-	-
Honduras	1.81	0.04	59.1	0.11	-	-
Hungary	4.68	0.11	64.4	0.12	13	0.87
Iceland	3.59	0.09	80.0	0.15	-	-
India	2.59	0.06	32.2	0.06	30	0.70
Indonesia	5.28	0.13	98.0	0.19	21	0.79
Iran (Islamic Republic of)	2.98	0.07	20.6	0.04	23	0.77
Iraq	2.69	0.07	19.3	0.04	26	0.74
Ireland	8.58	0.21	128.6	0.25	-	-

Country	Cereal productivity		Organic carbon density in soil		Land degradation	
	tons/ha	Norm	Average t/ha	Norm	%	Inv. norm
Italy	5.08	0.12	40.8	0.08	13	0.87
Jamaica	1.06	0.03	52.5	0.10	-	-
Japan	3.05	0.07	103.5	0.20	-	-
Jordan	10.57	0.26	24.7	0.05	4	0.96
Kazakhstan	1.96	0.05	35.3	0.07	36	0.64
Kenya	2.58	0.06	33.6	0.06	40	0.60
Kiribati	4.19	0.10	-	-	-	-
Kuwait	9.46	0.23	18.2	0.03	64	0.36
Kyrgyzstan	2.74	0.07	37.1	0.07	24	0.76
Lao People's Democratic Republic	4.62	0.11	39.2	0.07	-	-
Latvia	3.11	0.08	94.3	0.18	13	0.87
Lebanon	2.35	0.06	33.0	0.06	-	-
Lesotho	0.77	0.02	34.5	0.06	20	0.80
Liberia	0.71	0.02	53.1	0.10	29	0.71
Libya	1.24	0.03	16.7	0.03	-	-
Liechtenstein	-	-	48.0	0.09	-	-
Lithuania	3.36	0.08	83.5	0.16	3	0.97
Luxembourg	5.45	0.13	43.1	0.08	4	0.96
Madagascar	2.48	0.06	41.4	0.08	30	0.70
Malawi	1.21	0.03	40.9	0.08	17	0.83
Malaysia	6.24	0.15	72.1	0.14	16	0.84
Maldives	2.22	0.05	-	-	-	-
Mali	1.74	0.04	21.3	0.04	3	0.97
Malta	-	-	39.7	0.07	-	-
Marshall Islands	-	-	-	-	-	-
Mauritania	1.97	0.05	15.2	0.03	3	0.97
Mauritius	5.34	0.13	59.1	0.11	27	0.73
Mexico	4.59	0.11	71.3	0.14	47	0.53

Country	Cereal productivity		Organic carbon density in soil		Land degradation	
	tons/ha	Norm	Average t/ha	Norm	%	Inv. norm
Micronesia (Federated States of)	1.96	0.05	-	-	-	-
Monaco	-	-	-	-	-	-
Mongolia	1.18	0.03	48.4	0.09	13	0.87
Montenegro	3.01	0.07	48.2	0.09	6	0.94
Morocco	1.84	0.05	26.3	0.05	19	0.81
Mozambique	0.67	0.02	34.1	0.06	-	-
Myanmar	2.03	0.05	45.5	0.09	23	0.77
Namibia	1.19	0.03	13.5	0.02	19	0.81
Nauru	-	-	-	-	-	-
Nepal	2.03	0.05	53.5	0.10	-	-
Netherlands	6.12	0.15	91.9	0.18	-	-
New Zealand	7.78	0.19	74.8	0.14	-	-
Nicaragua	3.11	0.08	63.1	0.12	-	-
Niger	1.71	0.04	16.3	0.03	7	0.93
Nigeria	1.25	0.03	30.0	0.06	32	0.68
North Macedonia	2.93	0.07	41.6	0.08	-	-
Norway	4.97	0.12	81.4	0.16	-	-
Oman	9.19	0.22	16.0	0.03	7	0.93
Pakistan	2.32	0.06	19.8	0.04	5	0.95
Palau	-	-	-	-	-	-
State of Palestine	2.03	0.05	39.1	0.07	15	0.85
Panama	3.00	0.07	79.0	0.15	14	0.86
Papua New Guinea	4.11	0.10	79.6	0.15	21	0.79
Paraguay	4.50	0.11	37.1	0.07	52	0.48
Peru	2.66	0.06	69.3	0.13	-	-
Philippines	4.26	0.10	48.4	0.09	38	0.62
Poland	3.17	0.08	71.2	0.14	5	0.95
Portugal	3.32	0.08	49.1	0.09	32	0.68

Country	Cereal productivity		Organic carbon density in soil		Land degradation	
	tons/ha	Norm	Average t/ha	Norm	%	Inv. norm
Qatar	5.60	0.14	14.4	0.03	6	0.94
Republic of Korea	2.87	0.07	37.1	0.07	-	-
Republic of Moldova	3.14	0.08	72.9	0.14	29	0.71
Romania	3.90	0.10	54.8	0.10	-	-
Russian Federation	2.42	0.06	97.6	0.19	6	0.94
Rwanda	1.59	0.04	106.5	0.20	12	0.88
Saint Kitts and Nevis	-	-	208.3	0.40	-	-
Saint Lucia	-	-	93.3	0.18	-	-
Saint Vincent and the Grenadines	29.03	0.71	97.0	0.19	-	-
Samoa	-	-	101.8	0.20	-	-
San Marino	-	-	39.4	0.07	-	-
Sao Tome and Principe	2.01	0.05	69.2	0.13	-	-
Saudi Arabia	4.74	0.12	15.6	0.03	4	0.96
Senegal	1.86	0.05	19.5	0.04	6	0.94
Serbia	3.28	0.08	44.9	0.08	6	0.94
Seychelles	-	-	-	-	12	0.88
Sierra Leone	1.54	0.04	43.2	0.08	18	0.82
Singapore	-	-	33.1	0.06	-	-
Slovakia	3.90	0.10	50.7	0.10	4	0.96
Slovenia	4.49	0.11	50.9	0.10	5	0.95
Solomon Islands	1.51	0.04	51.2	0.10	-	-
Somalia	0.62	0.02	16.7	0.03	23	0.77
South Africa	1.91	0.05	20.9	0.04	78	0.22
South Sudan	1.43	0.03	42.0	0.08	-	-
Spain	4.19	0.10	42.7	0.08	18	0.82
Sri Lanka	2.75	0.07	36.8	0.07	36	0.64
Sudan	1.42	0.03	20.1	0.04	12	0.88
Suriname	3.59	0.09	78.6	0.15	21	0.79

Country	Cereal productivity		Organic carbon density in soil		Land degradation	
	tons/ha	Norm	Average t/ha	Norm	%	Inv. norm
Sweden	5.77	0.14	166.5	0.32	-	-
Switzerland	6.01	0.15	61.5	0.12	-	-
Syrian Arab Republic	2.20	0.05	23.8	0.04	-	-
Tajikistan	4.57	0.11	24.8	0.05	97	0.03
Thailand	2.56	0.06	40.3	0.08	21	0.79
Timor-Leste	2.80	0.07	31.4	0.06	-	-
Togo	1.05	0.03	29.7	0.06	12	0.88
Tonga	-	-	85.7	0.16	-	-
Trinidad and Tobago	1.08	0.03	85.2	0.16	-	-
Tunisia	1.34	0.03	25.3	0.05	13	0.87
Turkey	4.33	0.11	33.8	0.06	9	0.91
Turkmenistan	1.19	0.03	11.5	0.02	22	0.78
Tuvalu	-	-	-	-	-	-
Uganda	1.87	0.05	40.1	0.08	22	0.78
Ukraine	3.33	0.08	77.1	0.15	25	0.75
United Arab Emirates	26.41	0.65	15.4	0.03	1	0.99
United Kingdom of Great Britain and Northern Ireland	5.85	0.14	109.7	0.21	-	-
United Republic of Tanzania	1.63	0.04	53.2	0.10	-	-
United States of America	4.30	0.10	64.6	0.12	-	-
Uruguay	5.02	0.12	92.9	0.18	26	0.74
Uzbekistan	6.69	0.16	16.3	0.03	29	0.71
Vanuatu	0.62	0.02	74.8	0.14	-	-
Venezuela (Bolivarian Republic of)	3.24	0.08	52.6	0.10	15	0.85
Viet Nam	4.29	0.10	44.6	0.08	31	0.69
Yemen	1.07	0.03	15.9	0.03	-	-
Zambia	2.16	0.05	47.2	0.09	7	0.93
Zimbabwe	1.47	0.04	21.8	0.04	36	0.64

Note: Cereals include barley, buckwheat, mixed grains, maize, millet, rice, rye, sorghum and wheat.

Table A.2 Summary of aggregated pillars and Environmental Sustainability Index (ESI)

Country	Water and Sanitation		Energy sustainability and climate change		Disaster risk reduction		Waste management and material footprint		Biodiversity and marine life		Land sustainability		ESI	
	Value	Rank	Value	Rank	Value	Rank	Value	Rank	Value	Rank	Value	Rank	Value	Rank
Afghanistan	0.47	157	0.51	129	0.51	151	0.73	7	0.23	182	0.05	112	0.54	146
Albania	0.78	45	0.63	24	0.51	148	0.53	106	0.43	80	0.09	53	0.62	60
Algeria	0.68	115	0.51	135	0.75	46	0.64	57	0.27	171	0.07	80	0.61	78
Andorra	-	-	-	-	-		-	-	0.38	117	-	-		-
Angola	0.54	139	0.65	14	0.64	100	0.67	45	0.44	76	0.02	170	0.6	83
Antigua and Barbuda	0.76	63	0.65	10	-		0.54	102	0.29	161	0.04	139		-
Argentina	0.79	38	0.53	104	0.7	65	0.51	121	0.33	142	0.09	52	0.61	70
Armenia	0.74	78	0.61	38	0.78	27	0.63	64	0.29	158	0.05	117	0.64	33
Australia	0.82	13	0.48	151	0.53	144	0.4	158	0.49	43	0.07	84	0.59	106
Austria	0.81	24	0.61	35	0.61	114	0.42	155	0.51	32	0.14	19	0.63	36
Azerbaijan	0.71	96	0.55	85	0.72	55	0.6	79	0.35	126	0.08	70	0.62	50
Bahamas	-	-	0.64	19	0.65	86	0.4	157	0.4	103	0.24	4		-
Bahrain	0.74	79	0.46	159	0.8	16	0.43	153	0.19	186	-	-		-
Bangladesh	0.46	159	0.46	163	0.36	172	0.72	12	0.35	130	0.08	74	0.52	151
Barbados	0.74	80	0.65	11	0.82	5	0.46	141	0.26	175	0.07	86	0.62	57
Belarus	0.81	23	0.52	121	0.81	14	0.71	17	0.47	59	0.07	90	0.68	7
Belgium	0.77	61	0.55	91	0.69	70	0.48	130	0.61	11	0.17	10	0.66	16
Belize	0.82	15	0.67	8	0.76	43	0.59	84	0.48	50	0.09	54	0.69	6

Country	Water and Sanitation		Energy sustainability and climate change		Disaster risk reduction		Waste management and material footprint		Biodiversity and marine life		Land sustainability		ESI	
	Value	Rank	Value	Rank	Value	Rank	Value	Rank	Value	Rank	Value	Rank	Value	Rank
Benin	0.48	150	0.46	164	0.69	67	0.67	38	0.46	65	0.04	131	0.59	105
Bhutan	0.63	126	0.63	23	0.8	17	0.61	75	0.5	40	0.05	122	0.66	18
Bolivia (Plurinational State of)	0.71	94	0.52	124	0.58	126	0.63	59	0.46	68	0.04	136	0.61	77
Bosnia and Herzegovina	0.82	18	0.52	120	0.62	108	0.56	94	0.4	99	0.08	59	0.62	53
Botswana	0.75	77	0.54	94	0.66	81	0.56	97	0.44	73	0.02	169	0.61	79
Brazil	0.8	30	0.56	76	0.66	79	0.51	119	0.48	44	0.08	64	0.64	32
Brunei Darussalam	0.83	11	0.5	142	0.64	99	0.46	138	0.5	38	0.05	121	0.61	65
Bulgaria	0.72	90	0.55	89	0.62	113	0.52	114	0.56	16	0.1	44	0.63	37
Burkina Faso	0.38	170	0.51	127	0.73	51	0.67	37	0.47	57	0.03	146	0.58	112
Burundi	0.5	146	0.53	110	0.61	119	0.69	31	0.39	106	0.02	164	0.57	128
Cabo Verde	0.69	112	0.63	21	0.65	89	0.59	82	0.28	163	0	176	0.54	142
Cambodia	0.67	117	0.51	131	0.66	82	0.7	19	0.41	92	0.08	61	0.63	45
Cameroon	0.53	142	0.55	88	0.61	116	0.71	16	0.41	89	0.05	127	0.6	88
Canada	0.83	8	0.48	152	0.67	78	0.37	164	0.41	93	0.1	47	0.6	89
Central African Republic	0.48	152	0.53	117	0.66	80	0.67	40	0.51	33	0.03	157	0.59	92
Chad	0.33	175	0.56	84	0.72	53	0.73	6	0.41	96	0.03	153	0.58	119
Chile	0.81	22	0.56	78	0.45	162	0.51	122	0.37	120	0.17	9	0.59	91

Country	Water and Sanitation		Energy sustainability and climate change		Disaster risk reduction		Waste management and material footprint		Biodiversity and marine life		Land sustainability		ESI	
	Value	Rank	Value	Rank	Value	Rank	Value	Rank	Value	Rank	Value	Rank	Value	Rank
China	0.7	104	0.38	179	0.55	138	0.57	90	0.28	166	0.1	46	0.55	139
China, Hong Kong (SAR)	-	-	0.42	176	-		-	-	-	-	-	-	-	-
Colombia	0.82	21	0.58	51	0.51	150	0.58	88	0.45	69	0.08	60	0.63	47
Comoros	0.6	131	0.55	87	0.7	63	-	-	0.25	178	0.04	134		-
Congo	0.64	125	0.56	79	0.77	37	0.69	27	0.55	21	0.02	167	0.65	21
Costa Rica	0.82	17	0.65	16	0.43	170	0.58	87	0.46	67	0.08	63	0.62	49
Côte d'Ivoire	0.51	145	0.52	118	0.62	106	0.73	8	0.43	83	0.04	140	0.59	93
Croatia	0.85	3	0.62	32	0.62	111	0.51	117	0.52	29	0.12	29	0.66	14
Cuba	0.75	75	0.58	57	-		0.6	78	0.39	107	0.06	97		-
Cyprus	0.78	49	0.62	30	0.71	61	0.44	147	0.48	53	0.05	109	0.63	38
Czechia	0.78	44	0.54	95	0.61	118	0.51	116	0.57	15	0.11	37	0.64	28
Democratic People's Republic of Korea	0.71	97	0.44	171	-		-	-	0.35	127	0.05	103		-
Democratic Republic of the Congo	0.46	158	0.42	174	0.58	127	0.7	22	0.49	41	0.02	166	0.56	136
Denmark	0.79	36	0.64	20	0.8	15	0.36	165	0.54	25	0.15	13	0.66	11
Djibouti	0.62	127	0.51	133	0.68	75	0.7	23	0.2	185	0.05	111	0.58	117
Dominica	0.73	89	0.68	4	-		-	-	0.43	82	0.04	133		-
Dominican Republic	0.7	100	0.6	42	0.52	147	0.56	92	0.52	30	0.07	83	0.62	61

Country	Water and Sanitation		Energy sustainability and climate change		Disaster risk reduction		Waste management and material footprint		Biodiversity and marine life		Land sustainability		ESI	
	Value	Rank	Value	Rank	Value	Rank	Value	Rank	Value	Rank	Value	Rank	Value	Rank
Ecuador	0.76	64	0.58	58	0.49	156	0.55	99	0.4	101	0.05	108	0.59	96
Egypt	0.72	92	0.53	102	0.81	7	0.63	63	0.34	136	0.13	23	0.65	26
El Salvador	0.75	70	0.61	33	0.6	121	0.6	76	0.34	132	0.09	57	0.62	54
Equatorial Guinea	0.69	108	0.49	144	-		-	-	0.67	3	-	-		-
Eritrea	0.35	173	0.59	47	0.77	36	0.67	43	0.28	165	0.02	165	0.56	135
Estonia	0.79	37	0.56	82	0.81	9	0.49	127	0.67	4	0.09	51	0.69	5
Eswatini	0.51	144	0.63	27	0.77	32	0.61	73	0.35	129	0.04	129	0.61	80
Ethiopia	0.27	176	0.47	156	0.57	131	0.8	1	0.3	153	0.07	88	0.53	147
Fiji	0.87	2	0.56	83	0.57	132	0.61	72	0.35	128	0.08	72	0.63	43
Finland	0.8	31	0.6	44	0.81	8	0.43	152	0.64	8	0.09	58	0.68	8
France	0.78	43	0.55	90	0.64	96	0.46	140	0.53	27	0.14	20	0.63	35
Gabon	0.67	116	0.65	12	0.77	34	0.63	60	0.69	2	0.06	102	0.7	2
Gambia	0.58	134	0.53	107	0.68	76	0.7	20	0.39	109	0.01	175	0.58	111
Georgia	0.79	39	0.58	50	0.68	71	0.6	77	0.42	87	0.05	110	0.64	27
Germany	0.78	51	0.54	100	0.61	117	0.42	154	0.64	7	0.15	16	0.64	31
Ghana	0.49	148	0.51	132	0.64	93	0.67	39	0.5	36	0.04	138	0.59	94
Greece	0.79	40	0.58	54	0.54	143	0.45	145	0.51	34	0.1	48	0.61	67
Grenada	0.78	50	0.69	1	0.82	4	-	-	0.38	111	0.02	163		-
Guatemala	0.69	105	0.57	68	0.51	154	0.66	47	0.34	134	0.05	106	0.59	98

Country	Water and Sanitation		Energy sustainability and climate change		Disaster risk reduction		Waste management and material footprint		Biodiversity and marine life		Land sustainability		ESI	
	Value	Rank	Value	Rank	Value	Rank	Value	Rank	Value	Rank	Value	Rank	Value	Rank
Guinea	0.49	147	0.52	122	0.75	45	0.73	10	0.47	62	0.03	147	0.62	63
Guinea-Bissau	0.49	149	0.53	103	0.71	59	-	-	0.56	17	0.03	159		-
Guyana	0.78	47	0.58	64	0.63	105	0.44	148	-	-	0.08	69		-
Haiti	0.47	155	0.49	145	0.45	163	0.71	15	0.31	148	0.03	149	0.53	149
Honduras	0.75	72	0.57	72	0.51	149	0.64	58	0.49	42	0.04	128	0.62	56
Hungary	0.81	25	0.58	55	0.73	48	0.52	113	0.48	48	0.11	31	0.66	13
Iceland	0.9	1	0.66	9	0.81	6	0.09	170	0.26	173	0.09	56	0.59	101
India	0.6	129	0.43	172	0.49	157	0.66	50	0.28	167	0.06	94	0.54	144
Indonesia	0.66	120	0.49	143	0.55	139	0.61	70	0.39	110	0.13	25	0.59	99
Iran (Islamic Republic of)	0.39	168	0.46	162	0.58	128	0.57	91	0.34	139	0.07	81	0.52	152
Iraq	0.73	83	0.51	128	0.78	30	0.62	65	0.22	184	0.07	92	0.61	75
Ireland	0.8	27	0.59	48	0.63	103	0.43	151	0.48	51	0.21	7	0.64	34
Italy	0.78	52	0.57	69	0.58	129	0.46	137	0.5	35	0.12	26	0.62	52
Jamaica	0.73	85	0.6	43	0.62	112	0.56	95	0.38	116	0.03	161	0.6	85
Japan	0.77	56	0.52	123	0.54	142	0.5	123	0.55	22	0.07	77	0.61	69
Jordan	0.74	81	0.58	63	0.79	21	0.58	86	0.37	122	0.26	3	0.66	17
Kazakhstan	0.76	66	0.45	166	0.65	88	0.54	103	0.25	177	0.05	120	0.57	129
Kenya	0.41	166	0.49	146	0.55	140	0.69	28	0.3	152	0.06	95	0.54	145
Kiribati	-	-	0.58	60	0.7	64	-	-	0.33	144	0.1	43		-

Country	Water and Sanitation		Energy sustainability and climate change		Disaster risk reduction		Waste management and material footprint		Biodiversity and marine life		Land sustainability		ESI	
	Value	Rank	Value	Rank	Value	Rank	Value	Rank	Value	Rank	Value	Rank	Value	Rank
Kuwait	0.67	118	0.44	168	0.79	22	0.39	159	0.34	133	0.23	5	0.59	108
Kyrgyzstan	0.71	95	0.56	80	0.59	124	0.61	71	0.33	143	0.07	91	0.6	87
Lao People's Democratic Republic	0.69	110	0.48	150	0.6	120	0.67	42	0.5	39	0.11	32	0.63	42
Latvia	0.84	6	0.65	13	0.56	137	0.48	131	0.67	5	0.08	76	0.67	10
Lebanon	0.73	84	0.42	178	0.78	26	0.52	112	0.3	157	0.06	100	0.59	100
Lesotho	0.55	137	0.53	115	0.77	35	0.64	56	0.28	169	0.02	168	0.58	121
Liberia	0.54	140	0.46	161	0.64	94	0.72	14	0.46	64	0.02	171	0.58	109
Libya	0.69	109	0.37	182	0.8	18	0.61	74	0.24	180	0.03	151	0.57	125
Liechtenstein	-	-	-	-	-	-	-	-	0.55	19	-	-	-	-
Lithuania	0.83	12	0.63	25	0.81	11	0.45	144	0.64	6	0.08	62	0.69	4
Luxembourg	0.83	9	0.6	40	0.81	12	0.33	168	0.54	24	0.13	22	0.66	15
Madagascar	0.36	172	0.53	109	0.43	168	0.76	3	0.31	151	0.06	98	0.53	150
Malawi	0.45	162	0.54	97	0.58	125	0.76	2	0.45	71	0.03	152	0.58	114
Malaysia	0.83	10	0.51	130	0.57	130	0.47	132	0.41	91	0.15	12	0.61	74
Maldives	0.8	32	0.59	46	0.81	10	0.47	136	0.22	183	0.05	104	0.61	73
Mali	0.54	138	0.51	137	0.73	49	0.67	41	0.29	159	0.04	130	0.58	113
Malta	0.75	71	0.68	3	0.82	2	0.41	156	0.45	70	-	-	-	-
Marshall Islands	-	-	0.58	61	-	-	-	-	0.37	123	-	-	-	-
Mauritania	0.53	141	0.53	111	0.63	101	0.7	21	0.28	164	0.05	118	0.57	124

Country	Water and Sanitation		Energy sustainability and climate change		Disaster risk reduction		Waste management and material footprint		Biodiversity and marine life		Land sustainability		ESI	
	Value	Rank	Value	Rank	Value	Rank	Value	Rank	Value	Rank	Value	Rank	Value	Rank
Mauritius	0.77	54	0.63	26	0.74	47	0.51	118	0.17	188	0.13	24	0.61	68
Mexico	0.75	76	0.58	56	0.62	109	0.53	107	0.4	98	0.11	33	0.62	59
Micronesia (Federated States of)	-	-	0.52	125	0.76	39	-	-	0.4	97	0.05	119		-
Monaco	-	-	-	-	-		-	-	-	-	-	-		-
Mongolia	0.65	123	0.42	175	0.76	40	0.34	166	0.36	124	0.03	156	0.54	143
Montenegro	-	-	0.62	28	0.77	33	0.44	149	0.38	112	0.07	78		-
Morocco	0.69	113	0.57	70	0.78	29	0.66	52	0.39	108	0.05	126	0.64	29
Mozambique	0.48	154	0.42	177	0.51	152	0.73	9	0.38	115	0.02	172	0.53	148
Myanmar	0.65	124	0.51	134	0.62	110	0.75	4	0.37	119	0.05	113	0.61	72
Namibia	0.6	130	0.54	93	0.78	28	0.62	66	0.48	49	0.03	154	0.63	46
Nauru	-	-	-	-	-		-	-	0.19	187	-	-		-
Nepal	0.65	122	0.53	114	0.47	159	0.72	11	0.44	74	0.05	115	0.6	90
Netherlands	0.79	35	0.54	96	0.68	72	0.44	150	0.57	14	0.15	14	0.65	25
New Zealand	0.82	20	0.58	53	0.64	91	0.38	161	0.44	72	0.19	8	0.62	48
Nicaragua	0.7	103	0.57	71	0.47	160	0.63	62	0.47	61	0.08	75	0.6	81
Niger	0.37	171	0.51	126	0.44	167	0.66	48	0.32	146	0.04	132	0.51	153
Nigeria	0.51	143	0.47	158	0.59	123	0.68	32	0.47	54	0.03	150	0.58	122
North Macedonia	0.78	48	-	-	0.68	74	0.52	109	0.41	95	0.07	82		-
Norway	0.85	4	0.65	18	0.71	56	0.45	143	0.48	47	0.12	28	0.66	12

Country	Water and Sanitation		Energy sustainability and climate change		Disaster risk reduction		Waste management and material footprint		Biodiversity and marine life		Land sustainability		ESI	
	Value	Rank	Value	Rank	Value	Rank	Value	Rank	Value	Rank	Value	Rank	Value	Rank
Oman	0.72	93	0.48	154	0.71	60	0.52	110	0.25	176	0.22	6	0.59	95
Pakistan	0.58	132	0.49	149	0.55	141	0.68	34	0.31	147	0.06	101	0.56	133
Palau	-	-	-	-	-		-	-	0.72	1	-	-		-
Panama	0.81	26	0.62	31	0.63	102	0.56	93	0.42	88	0.07	79	0.64	30
Papua New Guinea	0.45	160	0.52	119	0.52	146	0.7	24	0.42	86	0.1	45	0.57	126
Paraguay	0.82	14	0.61	34	0.65	84	0.55	100	0.43	81	0.11	35	0.65	23
Peru	0.73	87	0.57	73	0.45	161	0.58	85	0.4	102	0.06	93	0.59	107
Philippines	0.68	114	0.49	148	0.4	171	0.67	46	0.33	141	0.1	41	0.56	132
Poland	0.77	55	0.53	116	0.57	135	0.52	111	0.6	13	0.08	71	0.63	41
Portugal	0.79	34	0.61	37	0.5	155	0.48	129	0.5	37	0.08	66	0.62	64
Qatar	0.71	98	0.37	181	0.83	1	0.49	124	0.31	150	0.14	21	0.59	97
Republic of Korea	0.75	73	0.47	157	0.69	69	0.49	125	0.43	77	0.07	85	0.6	82
Republic of Moldova	0.69	106	0.6	41	0.79	20	0.37	162	0.27	170	0.08	73	0.59	104
Romania	0.77	57	0.57	65	0.62	107	0.55	98	0.56	18	0.1	50	0.65	24
Russian Federation	0.79	33	0.42	173	0.66	83	0.53	105	0.43	78	0.06	99	0.6	84
Rwanda	0.57	135	0.56	81	0.65	85	0.62	68	0.38	118	0.04	137	0.59	103
Saint Kitts and Nevis	0.74	82	0.68	2	-		-	-	0.43	79	-	-		-
Saint Lucia	0.76	68	0.67	7	0.79	23	-	-	0.41	94	-	-		-
Saint Vincent and the Grenadines	0.76	65	0.67	5	0.82	3	-	-	0.48	46	0.71	1		-

Country	Water and Sanitation		Energy sustainability and climate change		Disaster risk reduction		Waste management and material footprint		Biodiversity and marine life		Land sustainability		ESI	
	Value	Rank	Value	Rank	Value	Rank	Value	Rank	Value	Rank	Value	Rank	Value	Rank
Samoa	-	-	0.58	52	0.77	31	0.63	61	0.37	121	-	-		-
San Marino	-	-	-	-	-		-	-	-	-	-	-		-
Sao Tome and Principe	0.61	128	0.58	59	-		0.65	54	0.53	26	0.05	116		-
Saudi Arabia	0.69	107	0.44	170	0.71	57	0.49	126	0.29	162	0.12	30	0.58	123
Senegal	0.58	133	0.53	113	0.73	52	0.69	25	0.44	75	0.05	125	0.62	51
Serbia	0.77	60	0.54	98	0.56	136	0.54	104	0.38	113	0.08	67	0.6	86
Seychelles	-	-	0.62	29	0.78	25	0.45	146	0.43	85	-	-		-
Sierra Leone	0.48	151	0.53	105	0.44	165	0.66	51	0.46	63	0.04	141	0.55	138
Singapore	0.75	69	0.57	67	0.81	13	0.11	169	0.32	145	-	-		-
Slovakia	0.84	5	0.58	62	0.65	90	0.49	128	0.55	20	0.1	49	0.65	19
Slovenia	0.82	16	0.6	45	0.7	66	0.47	135	0.61	10	0.11	36	0.67	9
Solomon Islands	-	-	0.57	66	0.45	164	-	-	0.43	84	0.04	142		-
Somalia	0.42	165	-	-	-		0.68	33	0.25	179	0.02	173		-
South Africa	0.66	121	0.45	165	0.53	145	0.56	96	0.34	137	0.05	123	0.55	141
South Sudan	0.34	174	-	-	-		0.71	18	0.34	131	0.03	144		-
Spain	0.77	58	0.56	74	0.61	115	0.47	133	0.47	56	0.1	42	0.62	58
Sri Lanka	0.7	101	0.53	106	0.44	166	0.68	35	0.34	140	0.07	89	0.58	118
State of Palestine	0.75	74	-	-	-		-	-	-	-	0.05	114		-
Sudan	0.4	167	0.54	92	0.59	122	0.69	30	0.34	135	0.03	145	0.55	140

Country	Water and Sanitation		Energy sustainability and climate change		Disaster risk reduction		Waste management and material footprint		Biodiversity and marine life		Land sustainability		ESI	
	Value	Rank	Value	Rank	Value	Rank	Value	Rank	Value	Rank	Value	Rank	Value	Rank
Suriname	0.77	59	0.65	17	0.76	38	0.59	81	0.62	9	0.09	55	0.7	1
Sweden	0.84	7	0.65	15	0.79	24	0.45	142	0.61	12	0.14	18	0.7	3
Switzerland	0.82	19	0.63	22	0.64	98	0.37	163	0.41	90	0.15	15	0.62	55
Syrian Arab Republic	0.7	99	0.56	77	-		0.66	49	0.24	181	0.05	105		-
Tajikistan	0.69	111	0.61	39	0.69	68	0.65	53	0.3	154	0.11	34	0.63	44
Thailand	0.78	42	0.5	141	0.47	158	0.52	115	0.47	55	0.06	96	0.59	102
Timor-Leste	0.56	136	0.53	108	0.68	73	-	-	0.47	58	0.07	87		-
Togo	0.45	163	0.48	153	0.7	62	0.69	26	0.46	66	0.03	162	0.58	116
Tonga	-	-	0.61	36	0.57	134	-	-	0.28	168	-	-		-
Trinidad and Tobago	0.76	62	0.35	183	0.65	87	0.53	108	0.39	105	0.03	158	0.57	131
Tunisia	0.7	102	0.59	49	0.68	77	0.61	69	0.36	125	0.03	148	0.61	71
Turkey	0.76	67	0.37	180	0.64	95	0.51	120	0.3	155	0.11	38	0.57	130
Turkmenistan	0.73	86	0.44	169	-		0.59	83	0.31	149	0.03	155		-
Tuvalu	-	-	-	-	-		-	-	-	-	-	-		-
Uganda	0.39	169	0.49	147	0.64	97	0.68	36	0.39	104	0.05	124	0.56	137
Ukraine	0.78	53	0.47	155	0.75	44	0.55	101	0.34	138	0.08	65	0.62	62
United Arab Emirates	0.66	119	0.46	160	0.8	19	0.38	160	0.38	114	0.65	2	0.61	76
United Kingdom of Great Britain and Northern Ireland	0.8	29	0.55	86	0.71	58	0.46	139	0.55	23	0.14	17	0.65	20

Country	Water and Sanitation		Energy sustainability and climate change		Disaster risk reduction		Waste management and material footprint		Biodiversity and marine life		Land sustainability		ESI	
	Value	Rank	Value	Rank	Value	Rank	Value	Rank	Value	Rank	Value	Rank	Value	Rank
United Republic of Tanzania	0.43	164	0.5	140	0.64	92	0.72	13	0.47	60	0.04	135	0.58	110
United States of America	0.78	46	0.45	167	0.51	153	0.34	167	0.52	28	0.1	39	0.57	127
Uruguay	0.8	28	0.67	6	0.72	54	0.47	134	0.3	156	0.12	27	0.63	39
Uzbekistan	0.73	88	0.51	136	0.76	42	0.65	55	0.29	160	0.16	11	0.63	40
Vanuatu	-	-	0.56	75	0.25	173	0.6	80	0.26	174	0.02	174		-
Venezuela (Bolivarian Republic of)	0.79	41	0.53	112	0.73	50	0.58	89	0.48	52	0.08	68	0.65	22
Viet Nam	0.72	91	0.51	138	0.43	169	0.62	67	0.4	100	0.1	40	0.58	115
Yemen	0.48	153	0.54	99	0.63	104	0.74	5	0.27	172	0.03	160	0.56	134
Zambia	0.47	156	0.53	101	0.76	41	0.67	44	0.48	45	0.05	107	0.61	66
Zimbabwe	0.45	161	0.5	139	0.57	133	0.69	29	0.51	31	0.04	143	0.58	120

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