PAGE PARTNERSHIP FOR ACTION ON GREEN ECONOMY

# THE GREEN ECONOMY PROGRESS MEASUREMENT FRAMEWORK APPLICATION

EVALUATING NATIONAL PROGRESS TOWARDS POVERTY ERADICATION AND SHARED PROSPERITY WITHIN PLANETARY BOUNDARIES

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| | |
|---|---|
| **APEC** | Asia-Pacific Economic Cooperation |
| **GEP** | Green Economy Progress |
| **GGGI** | Global Green Growth Institute |
| **GGKP** | Green Growth Knowledge Platform |
| **HDI** | Human Development Index |
| **ILO** | International Labour Organization |
| **IWI** | Inclusive Wealth Index |
| **OECD** | Organisation for Economic Co-operation and Development |
| **PAGE** | Partnership for Action on Green Economy |
| **PPP** | Purchasing Power Parity |
| **SDGs** | Sustainable Development Goals |
| **UN** | United Nations |
| **UNDP** | United Nations Development Programme |
| **UNIDO** | United Nations Industrial Development Organization |
| **WDI** | World Development Indicators |
| **WIPO** | World Intellectual Property Organization |

# EXECUTIVE SUMMARY

The Green Economy Progress (GEP) Measurement Framework[1] offers a double lens through which to look at progress made towards an Inclusive Green Economy by assessing progress in the individual- and multi-dimensional case. This report presents an application of the GEP Framework that tests its main implications at the global level. In this Beta test, progress was measured for a sample of 105 countries between 2004 and 2014 (taking averages for each indicator between 2000-2004 as the "start" period and averages for indicators between 2010-2014 as the "end" period due to data restrictions). According to the results, when considering indicators on an individual basis, on average, progress has been found to be most significant in reducing energy use, gender inequality, and improving education and life expectancy in the countries sampled. However, countries have, on average, not progressed as much in areas such as material footprint and air pollution, and many countries have even experienced regress for those indicators. A multidimensional perspective on progress is created by combining single indicators into the GEP Index. In 2014, as compared to 2004, 83 out of 105 countries (79 per cent) managed to achieve progress in their transition towards an Inclusive Green Economy. In regional terms, Middle East and North African and South Asian countries in the sample are leading green economy progress. However, the best performing country in sub-Saharan Africa, Latin America, Europe and Central Asia and in the Developed Country group[2] outperforms the best performer in the Middle East and North African and South Asian regions. Countries in the East Asian and the Pacific region experienced higher levels of regress. When countries are grouped according to their human development level (using the Human Development Index [HDI]), the highest proportion of countries experiencing regress (half of the countries in this region – 14 out of 28 countries) were concentrated in the high HDI group.

Through the Beta test, the GEP Framework was applied to eight Partnership for Action on Green Economy (PAGE)[3] countries[4]. Of PAGE countries, Peru had the highest GEP Index, followed by Senegal, Kyrgyz Republic and Ghana. Mongolia achieved progress in eight out of its 11 indicators, but still has the largest negative GEP Index because of its strongly deteriorating material footprint. Progress in Brazil and China was similarly reduced by regress on material footprint, whereas the main driver of South Africa's negative GEP Index was attributed to increasing income inequality.

Although the GEP Index results are encouraging, integration with the dashboard of sustainability indicators shows how much effort is still required to ensure that improving current human well-being does not come at the expense of key stocks of capital. Individual dashboard results show that countries' sustainability indicators are, on average, regressing and surpassing planetary boundaries. The only indicator in the sample in which the majority of countries are making progress is the Inclusive Wealth Index (IWI). However, when only considering the part of the IWI related to natural capital, results show that most countries have regressed. In addition, no country surpassed its target in terms of greenhouse gas emission reductions: one of the areas in which there were significant global environmental sustainability concerns during the time period measured.

Finally, a ranking (GEP+) of countries is formed by using results from both the GEP Index and the Dashboard of Sustainability indicators. Overall results show that only 17 countries in our sample achieved progress in all of the sustainability indicators of the dashboard and a positive GEP Index value. Comparison across countries however, seems to be more valid, when we concentrate the

[1] Please see PAGE (2017), The Green Economy Progress Measurement Framework -Methodology.
[2] All countries with very high HDI (HDI>0.8) that do not belong to any of the other regions (UNDP, 2014).
[3] PAGE is a joint initiative of five UN agencies (UN Environmnet, UNIDO, ILO, UNITAR and UNDP) to support countries in their transition towards achieving a green economy. For more information, see: http://www.un-page.org/
[4] The eight countries are Brazil, China, Ghana, Kyrgyz Republic, Mongolia, Peru, Senegal and South Africa.

comparison among similar countries. Resuls for the GEP+ are presented for the top 4 countries per HDI group, showing how the Protective Criterion works in determining the ranking within each HDI group.

The GEP Measurement Framework, in its current version, proposes a method of measuring progress that monitors change in key variables, both taking into account global thresholds that should not be surpassed and utilizing achievable targets selected to help countries to move in the right direction through policy intervention. These components are critical to obtaining a useful measure of progress, making the measurement framework a valid instrument for not only practitioners, but also the wider community of researchers and academics working in the field.

There are important challenges associated with this line of work and it should be borne in mind that there is much progress to be made. Conceptual challenges remain with respect to the integration of the GEP Measurement Framework and the Inclusive Green Economy narrative, as a result of the latter's complexity and the different implicit and explicit causal relations that exist. In addition, there are empirical challenges related to the availability of indicators. While the focus on progress is a significant added value of this work, it also imposes considerable constraints on the potential indicators that can be used. From a policy perspective, an additional challenge lies in how to make use of available national level indicators, which tend to better capture local realities. This publication Beta tests the methodology of the GEP Measurement Framework in order to see the different tradeoffs and challenges of the methodology with the aim of improving its design, and more importantly, enriching the green economy policy making analysis.

There are at least two ways to expand on the GEP Measurement Framework for policymaking in the future. First, the methods used in the framework are flexible when it comes to selecting indicators, thereby making inter-country comparison possible, on any particular aspect of an Inclusive Green Economy, as long as the underlying data is available. Currently unavailable yet important indicators, such as those that adequately reflect biodiversity and green jobs, may be incorporated into the framework whenever they become accessible, thus expanding the scope of measurement. Second, the framework can build on UN Environment's work on indicators namely, *Measuring Progress towards an Inclusive Green Economy - 2012*, *Guidance Manual for Green Economy Indicators - 2014*, and *Indictors for Green Economy Policymaking Synthesis Report of Studies in Ghana, Mauritius and Uruguay - 2015*, by adjusting the choice of indicators to specific country needs and priorities. This extension would make the framework more useful in facilitating policymaking in a specific country. The GEP Measurement Framework is particularly useful for the monitoring of SDGs at the country and global level, given its strong linkages with many of the SGDs; it has direct 14 direct links to 10 of the 17 SDGs. This will not only help in the monitoring process but also in the integration and articulation of policies by enhancing the linkages between IGE policies to the overall objectives of sustainable development.

# 1. INTRODUCTION

In June 2012, the United Nations Conference on Sustainable Development ("Rio+20") endorsed a series of agreements, two of which stand out with the ability to alter the way countries approach sustainability. First, governments agreed to negotiate a set of Sustainable Development Goals (SDGs) that would be universal, aspirational and transformational. Second, they agreed that a green economy approach could be a tool for achieving this sustainable development by contributing to *"(…) eradicating poverty as well as sustained economic growth, enhancing social inclusion, improving human welfare and creating opportunities for employment and decent work for all, while maintaining the healthy functioning of the Earth's ecosystems."* (Art. 56, "The Future we want")[5]. In this context, Rio+20 also called on the United Nations to provide technical assistance to those countries wishing to pursue green economy policies, including through the creation of measures and metrics that would help track progress of efforts to green economies and achieve sustainable development.

As the global leader of the Green Economy Initiative, UN Environment is well positioned to catalyze the development of green economy indicators with a view of supporting the implementation of the green economy concept at the country level. At the global level, UN Environment conducted a study in 2012 on how to use indicators to develop and track green economy policies (UNEP, 2012) and in 2013, UN Environment partnered with the OECD, the World Bank, and the Global Green Growth Institute (GGGI) via the Green Growth Knowledge Platform (GGKP), to develop a common green growth indicators framework (GGKP, 2013).

To support green economy at the country level, UN Environment, under the Partnership for Action on Green Economy (PAGE), developed a framework that combines four types of indicators into an integrated policymaking process (UNEP, 2014). This framework was tested in Ghana, Mauritius, and Uruguay, where green economy indicators were identified as powerful instruments to engage stakeholders in shaping the policymaking process (UNEP, 2015). However, the country studies also identified challenges in terms of availability and quality of data[6].

In order to bridge measurement initiatives at the global level with the indicator work carried out at the country level, UN Environment has developed a new **GEP Measurement Framework** that will facilitate cross-country comparison of national efforts to transition to greener and more inclusive economies[7]. In order to beta test the methodology, the GEP Methodology has been applied at the global level, with the results of the test detailed in this document. The purpose of this test was to (i) demonstrate the validity of the methodology, (ii) improve its design, and most importantly, (iii) enrich green economy policy making analysis.

The following sections provide a comprehensive overview of the GEP Measurement Framework, demonstrating its validity through a beta test and its value as a green economy inidcator. Section 2 outlines criteria that compose the GEP Measurement Framework. Section 3 presents the results of the beta test applied to the years 2004 to 2014. Finally, Section 4 concludes and outlines several future considerations, including ways through which the framework may be expanded.

[5] United Nations (2012), "The Future We Want". Available at: https://sustainabledevelopment.un.org/futurewewant.html
[6] See GGKP (2016) for a complete review of main approaches and indicators as well as the identification of research gaps.
[7] A significant literature review was conducted prior to this project to assess the landscape of existing indices related to sustainable development. A gap was found in the area of the measurement of green economy progress, which was one of the motivations for developing the GEP Measurement Framework. See Pineda and Galotto (2015) for more information.

# 2. DESIGN OF THE GEP MEASUREMENT FRAMEWORK

**The GEP Measurement Framework[8] is composed of a GEP Index and a companion Dashboard of Sustainability indicators.** Figure 1 presents the GEP Measurement Framework and its parts.[9]

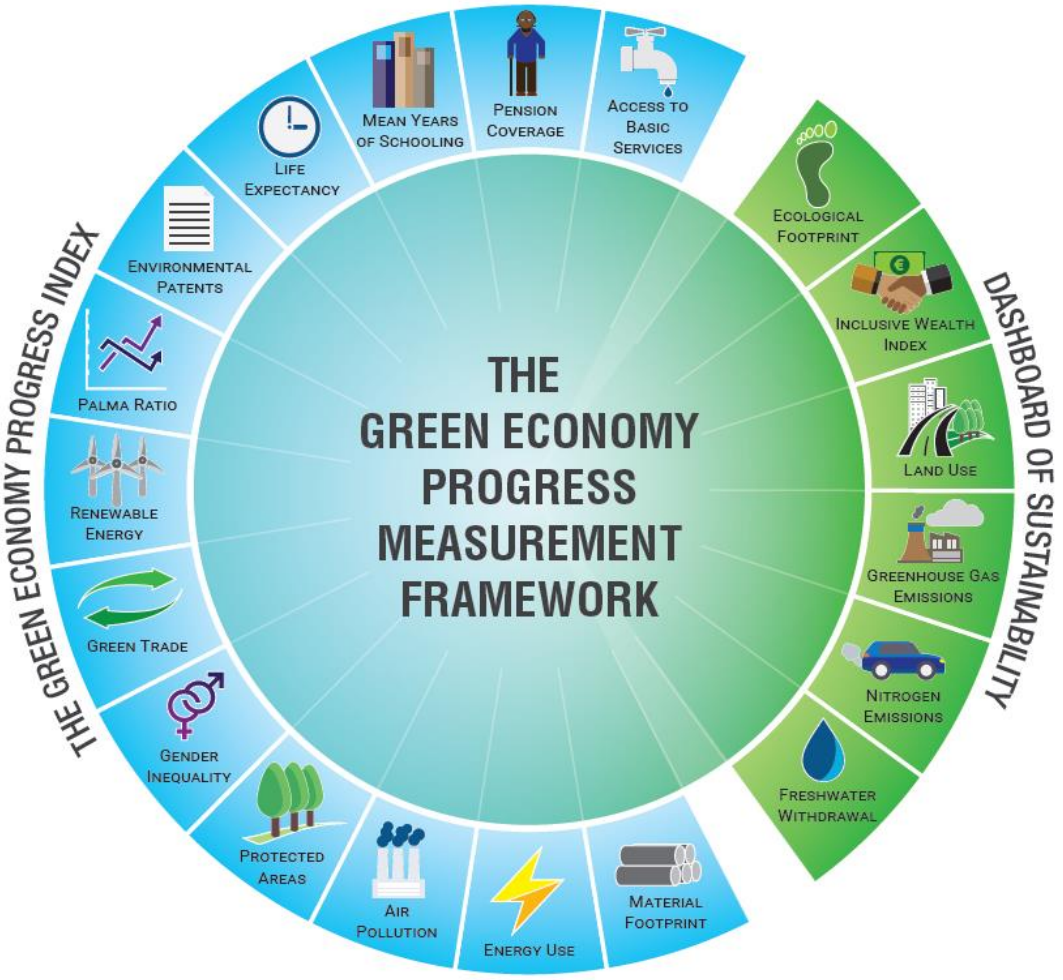
The **GEP Index** is used to track the changes in green economy indicators relative to desired changes, which directly or indirectly impact current human well-being. It captures particular characteristics of the Inclusive Green Economy concept with a set of multidimensional indicators that cover aspects of at least two dimensions of sustainability[10] (e.g. indicators that capture the link between health and the environment). The GEP Index reflects the weighted progress achieved by countries with respect to targets set within planetary boundaries and relevant thresholds across several indicators. The value of the GEP Index enables countries to gain an overview of their progress towards greening the economy.

The **Dashboard of Sustainability** aims to monitor the long-term sustainability of any short-term progress as measured by the GEP Index. It tracks some of the main forms of natural capital (e.g. freshwater and land), as well as other key stocks of capital (e.g. human, health) which affect long-term sustainability. A country that manages to conserve the value of its natural assets (i.e. non-decreasing stocks of natural capital), for example, will be considered to be making progress. In this way, the dashboard acts to monitor the lasting prospects of green economy progress within a given country, highlighting impacts on environment and society.

A final ranking of progress in achieving targets is obtained by comparing progress on the indicators in the dashboard with any green economy progress made, as measured by the GEP Index. This ranking is nicknamed the **GEP+** and is further discussed in Section 3.

[8] The design of the GEP measurement framework benefitted from the input of participants at two workshops held in April and June 2015 (see Annex II for further details).
[9] A full description of the indicators can be found in sections 3.2.1 and 3.2.2.
[10] Multidimensional indicators cover aspects of at least two dimensions of sustainable development (e.g. economic, social and environmental).

**Figure 1: The Green Economy Progress Measurement Framework's parts**




## 2.1 SELECTION CRITERIA

To decide which indicators should be included in the GEP Measurement Framework, the following selection criteria were used:

The first selection criterion is to identify indicators that are related to the challenge that an Inclusive Green Economy seeks to address and/or to a category of the new generation of capital[11]. The indicators should capture policy outcomes in areas in which policymakers could invest more resources to green their economies and make them more inclusive (e.g. access to basic services).

The second selection criterion is data coverage. For indicators to be useful in comparing the progress made by countries in greening their economies, indicators must be adequate in terms of country development (developed and developing) and time coverage (with information for countries from all regions/degree of development, and with observations over a period of at least two years). The two years considered in the GEP Index in this initial instance are 2004 and 2014, and the data is averaged

[11] This is further explained in sections 2.2.1 and 2.2.2.

over a five-year period around these years[12]. This approach was chosen based on availability of comparative data and because it takes time for green economy indicators to fully reflect policy changes. For the sake of simplification, the averaged data over 2000-2004 will be referred to as "2004" and the averaged data over 2010-2014 will be referred to as "2014" from this point forward. The temporal frame can be updated as more data becomes readily accessible. Indicators that fulfil the first selection criterion and for which there is good data coverage were preferred.

The third selection criterion is data access. Data should be publically available through international organizations with the mandate of collecting and harmonizing global databases and, in some cases, from NGOs with excellent records of accomplishment in the regular production of indicators (e.g. the World Resource Institute and the Global Footprint Network). This will allow the results of the GEP Index to be replicated, tested and expanded.

The fourth and final criterion, which applies solely to the indicators in the Dashboard of Sustainability, is that they should be widely recognized as representing a planetary boundary (e.g. land, water, emissions) and have an estimated threshold value derived from the literature.

It is important to note that it was not possible to include some indicators of interest in the GEP Index, either because they are still at a preliminary stage of development (e.g. green jobs), or because data are proprietary (e.g. renewable energy investments).

## 2.2 MAPPING THE CHOICE OF INDICATORS WITH THE INCLUSIVE GREEN ECONOMY NARRATIVE

As presented in Section 2, an Inclusive Green Economy supports the promotion of investments and policies by stimulating the supply of environmentally friendly goods and services, and by creating enabling conditions for these new goods and services to be absorbed by the economy. As one of the main levers used to initiate an Inclusive Green Economy transformation, policy outcomes must be balanced between the new aggregate supply and aggregate demand to achieve a new economic equilibrium. Enabling policies, when combined with the accumulation of a new generation of capital that promotes the production of environmentally friendly goods and services, have the potential to create multidimensional benefits. These can include new economic opportunities, reduced environmental impacts, social improvements and new jobs, as well as the overall capacity of the economy of absorbing these new green goods and services.

An Inclusive Green Economy promotes the creation or enablement of a new generation of capital that includes natural capital, low carbon, resource efficient physical capital, human capital with modern and green skills, and social capital that ensures equity and inclusiveness.

**Natural capital** "(…) is any stock or flow of energy and material that produces goods and services. Examples of natural capital include:

- Resources - renewable and non-renewable materials
- Sinks - that absorb, neutralize or recycle wastes
- Processes - such as climate regulation"[13]

[12] For most indicators, 2000-2004 and 2010-2014 averages are used. However, for social indicators, for which measurement frequency is lower, averages between 1997-2004 and 2005-2014 are used. In a future version of the GEP measurement framework, other years could be included (subject to data availability).
[13] For more information, see: https://www.forumforthefuture.org/project/five-capitals/overview

Natural capital is the basis of life and production. This category also includes "newly created natural capital" through the implementation of policies: for example, natural capital saved by transforming the production process (i.e. becoming less polluting and more energy efficient), or enabled to naturally reproduce by introducing conservation policies or policies that reduce the pressure on natural resources.

**Low carbon, resource efficient physical capital** is a sub-category of manufactured capital. "Manufactured Capital comprises material goods or fixed assets which contribute to the production process rather than being the output itself"[14]. Low carbon, resource efficient physical capital includes elements such as roads, buildings, vehicles, energy and water infrastructure that minimize any negative impacts on the environment, enable access to services, reduce pollution and environmental risks, and restore and sustain ecosystem health and resilience.

**Human capital** "(…) consists of people's health, knowledge, skills and motivation"[15]. Enhancing human capital through public and private support to research and development, education and training is central for productive work and a flourishing economy. In particular, the GEP Index focuses on measuring the outcome of knowledge and skill generation in terms of education and employment-enhancing environmental technologies.

**Social capital** "(…) concerns the institutions that help us maintain and develop human capital in partnership with others, e.g. families, communities, businesses, trade unions, schools and voluntary organisations"[16]. It includes the intangible capital created by policies through institutions that reduce vertical and horizontal inequalities (e.g. by promoting non-discrimination in educational and employment opportunities, gender, race and income equality).

As envisaged by UN Environment, this new generation of capital will serve as input in the production of environmentally friendly goods and services to be absorbed by the economy.

**Consumption:** environmentally friendly goods and services will be "used"[17] by the private and public sector. The ability to enjoy a cleaner environment and benefit from healthier lives, to purchase more sustainable consumption goods and services, and to evolve in more equal societies, where human rights are recognized and respected, will improve current human well-being and is in line with reducing the inequitable sharing of growing prosperity.

**Investment:** the revenue generated by the production of environmentally friendly goods and services may be invested in the production of those goods and services, or in the substitution of environmentally harmful products with environmentally friendly ones, thereby creating a virtuous circle.

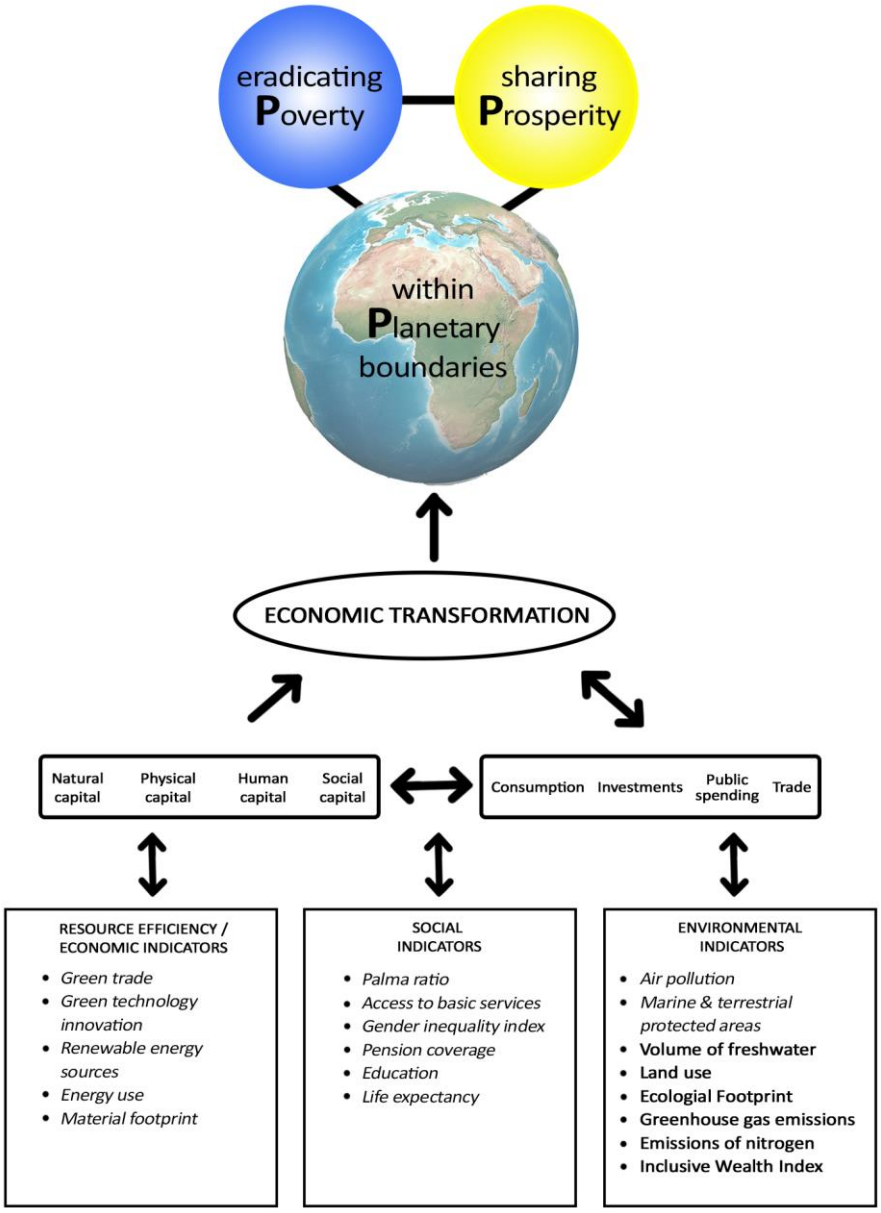
**Trade:** Many environmentally friendly goods and services can be traded, thereby potentially generating new income, encouraging innovation, productivity gains and sustaining jobs, while lowering the negative impact of trade on the environment.

Public spending may be subsumed under consumption, investment and trade.

[14] *Ibid*
[15] *Ibid*
[16] *Ibid*
[17] The word "used" includes the consumptive and non-consumptive value of a clean environment, preferably in a more equitable society.

The GEP Measurement Framework is, however, not limited to the production sphere: it also encompasses indicators[18] that are linked to addressing poverty eradication and overstepped planetary boundaries. Figure 2 gives an overview of the indicators included in the GEP Measurement Framework, mapped in the Inclusive Green Economy analytical framework.[19]

**Figure 2 : Indicators in the GEP Measurement Framework and the Inclusive Green Economy analytical framework**




*Note: Figure created by the authors. Indicators in italic are included in the GEP Index, and those in bold are in the dashboard.*

[18] Indicators in the GEP index are outcome (or performance) indicators that are affected by policy choices (the GEP index aims to monitor their evolution over time). By contrast, most of the indicators in the dashboard are state indicators because monitoring stocks, in order to assess progress within planetary boundaries, is the main focus of the dashboard.

[19] Notice that this figure is a mapping between Figure 1 in PAGE (2017), which presents the methodology of the GEP Measurement Framework.

### 2.2.1 Components of the GEP Index

Based on the Inclusive Green Economy analytical framework, the GEP Index includes 13 multidimensional indicators[20] that are associated with the three challenges of Inclusive Green Economy (persistent poverty, overstepped planetary boundaries and inequitable sharing of growing prosperity). These indicators aim to capture key components in the transition towards an Inclusive Green Economy related to policy and investment outcomes on the new aggregate supply and aggregate demand[21]. Each indicator also meets the data requirements as mentioned above (time, country coverage and public accessibility).

**Green trade,** as measured by the share of environmental exports in total exports, captures how competitive a country is in producing and trading environmental goods[22]. These environmental goods help to reduce environmental risk and pollution levels, and that are environmentally friendly in terms of their production process, use, and/or disposal. This indicator measures the outcome of investments and regulatory policies in favour of green trade.

**Environmental patents**, as measured by the share of patents that are related to environmental technologies[23], captures the innovative capacity of a country to manufacture goods and services that have a lower negative, or even positive, impact on the environment. Green innovation can result from public R&D policies or from private initiatives. Environmentally-related inventions will serve as input in the production of green goods and services, thereby creating new markets and potentially new employment opportunities.

**Renewable energy supply** measures the percentage of renewable energy in total energy supply. To enable the use of renewable energy sources, incentives that change price signals towards investing in new infrastructure need to be in place. This will enable investors to reap the benefits of diversifying energy markets.

**Energy use**, as measured by the kilograms of oil equivalent consumed per USD 1,000 of GDP (constant 2011 PPP), captures the degree of energy intensity of an economy. A decreasing energy intensity trend can be the result of the implementation of a more stringent environmental policy or the result of companies trying to reduce their costs in response to high input prices. A more energy efficient economy is one that sets natural capital free for the conservation of ecological and biodiversity services. Resource efficiency will also decrease production costs and could increase competitiveness, thereby generating an increase in income. In turn, new income as well as a portion of the preserved natural capital could materialize into new consumption opportunities.

**The Palma ratio**, named after the Chilean economist José Gabriel Palma, is defined as the ratio of the richest 10 per cent of the population's share in gross national income divided by the share of the

[20] Shown in italic in Figure 3 (the six remaining indicators appear in the dashboard, see Section 3.2.2).
[21] This is one method to balance policy outcomes captured by green economy indicators between aggregate demand and aggregate supply. It is, however, not the only option as some indicators can be related to impacts on both the aggregate supply and aggregate demand side. Moreover, general equilibrium effects are not considered here.
[22] According to the OECD and Eurostat, "environmental goods" refer to a set of goods that can be used "to measure, prevent, limit, minimize or correct environmental damage to water, air, and soil, as well as problems related to waste, noise and eco-systems" (OECD/Eurostat 1999).
[23] Another alternative would be to use data on R&D spending. However, not all R&D spending is for green technology innovation and it is difficult to find disaggregated green R&D data that meet the selection criteria (good country coverage with a balance between developed and developing countries, good time coverage and publically accessible data) in order to calculate progress.

poorest 40 per cent of the population[24]. In recent years, policymakers have preferred to use the Palma ratio over the Gini index when referring to income inequality as it puts a special focus on the inclusion of the most vulnerable. Policies that promote the transition to an Inclusive Green Economy by creating jobs and generating new income for a wider share of the population should result in reduced inequality. The Palma ratio, in that sense, should reflect the outcome of these new policies, which in turn allow a larger share of the population to access new consumption opportunities.

**Access to basic services**, measured by the percentage of the population with **access to electricity, access to water, and access to sanitation**, is included in the GEP Index in order to capture some of the different forms of absolute poverty [25]. Access to basic services affects citizens' ability to experience direct (e.g. consumption, health) and indirect (e.g. educational and entrepreneurial) development opportunities. For example, learning opportunities may be lost because of lack of access to electricity, or because travel time to collect water impedes visiting school on a regular basis, or because of higher incidences of diarrhea due to insufficient collection and treatment of wastewater.

- **Access to electricity:** Enabling greater access to electricity will require investments in the electricity grid, transmission and distribution, and decentralized electricity systems. Electricity generation from low-carbon and renewable sources should also be promoted.
- **Access to water:** Making progress in providing access to basic services requires new investments in infrastructure, including water distribution and purification systems, and pipelines, among others. Impacts on the environment should also be considered, especially how to avoid water stress.
- **Access to sanitation:** To improve access to sanitation, new facilities must be built while ensuring that there are corresponding waste and sewage management, collection and treatment systems in place to handle a higher number of sanitation facilities. These investments and the services they provide may create new employment and economic opportunities.

**Air pollution,** as measured by the concentration of atmospheric particulates of 2.5 micrometres or less in diameter (PM2.5), is included to capture the nexus between the economic and the social/environmental components of sustainability. Particulates can be found in smoke and haze from sources such as forest fires, or they can form when gases emitted from power plants, industries and automobiles react in the air. Air pollution directly impacts the quality of the environment. Additionally, through its related impacts on human health, it also affects labour productivity and social inclusiveness by reducing educational and work opportunities, and thus current and future economic opportunities.

**Material footprint per capita**[26] measures the consumption of raw material of used biotic and abiotic materials (tons/person). This measure indicates how much of the environment is consumed to sustain the current level of average consumption. A lower material footprint will make more natural capital available for production and consumption. It is also synonymous with an economy with higher resource efficiency. It is therefore an alternative indicator for measuring efficiency and, as it considers material efficiency in per capita terms, complements the energy efficiency perspective.

**Protected areas (marine and terrestrial)** are measured as the percentage of marine and land areas that are protected in a total area. Increasing the coverage of protected areas reflects a country's

[24] José Gabriel Palma observed that the share of middle class incomes almost always represented about 50 per cent of gross national income, while the other half was divided between the richest 10 per cent and poorest 40 per cent. The share of those two groups, however, varied considerably across countries. See Palma, José Gabriel (2011) for more information.
[25] Access to water, electricity and sanitation are treated as a single index (access to basic services) in the GEP index.
[26] This data has been collected by the International Resource Panel, which was launched by UN Environment in 2007 to build and share the knowledge needed to improve the use of resources worldwide and to steer economies away from over-consumption, waste and ecological harm for a more prosperous and sustainable future.

recognition of the value of conserving natural capital for its current well-being and development. Protected areas contribute to the maintenance of natural capital stock. For example, establishing national parks to protect natural habitats and conserve biodiversity is also a way to protect the livelihoods of poor communities, attract sustainable tourism and potentially create new job opportunities in the tourism and environmental conservation sectors, in turn generating new incomes and promoting social inclusiveness[27].

**Gender inequality** is measured by the United Nations Development Programme's gender inequality index (GII). It highlights the loss in potential development due to the disparity between female and male achievements in empowerment and economic status and reflects a country's position relative to normative ideals across key dimensions of women's health. The index combines data for maternal mortality, adolescent birth rate, women's share of seats in parliament, education rates and participation in the labour force. The gender inequality index ranges between 0 and 1 and higher values indicate higher levels of inequality[28].

**Pension coverage** is measured by the share of the population above statutory pensionable age receiving an old age pension based on contribution and sex[29].

**Education** is measured by mean years of schooling, i.e. the average number of years of education received by people ages 25 and older, which is then converted from education attainment levels using the official durations of each level. Data on mean years of schooling is taken from UNDP/HDRO based on UNESCO's Institute for Statistics (UIS) educational attainment data and, for some countries, Barro and Lee's (2013) methodology where UIS data are not available.

**Life expectancy** is measured as the average number of years that a newborn infant could expect to live if prevailing patterns of age-specific mortality rates at the time of birth stay the same throughout the infant's life. Life expectancy at birth is taken from UNDP/HDRO and provided by the UN Population Division in the UN Department of Economic and Social Affairs (UNDESA).

Table 1 (below) outlines the components of the GEP index, including worldwide country coverage for reference.

[27] Other biodiversity indicators such as the ones listed in the Biodiversity Indicators Partnership factsheets were explored, but were not retained due to insufficient time or country development level coverage. For more information, see: http://www.bipindicators.net/

[28] The GII relies on data from major publicly available international databases, including the maternal mortality ratio from the United Nations Maternal Mortality Estimation Inter-Agency Group (MMEIG), which includes WHO, UNICEF, UNFPA and the World Bank; adolescent birth rates from UNDESA's World Population Prospects; educational attainment statistics from the UNESCO Institute for Statistics educational attainment tables and the Barro-Lee datasets; parliamentary representation from the International Parliamentary Union (IPU); and labour market participation from the International Labour Organization's Key Indicators of the Labour Market (KILM). For more information, see http://hdr.undp.org/en/content/gender-inequality-index-gii

[29] Source: ILO Social Security Inquiry Database. The objective of the ILO Social Security Inquiry (SSI) is to collect, store and disseminate comparable statistical data on social security worldwide. This includes expenditure and receipts of social protection schemes as well as data on protected persons, recipients of social benefits and benefit amounts. The rationale of the inquiry is to address the lack of (comparable) social security statistics outside the OECD. In this respect, the inquiry adopts a systematic approach compatible with existing statistical frameworks such as the European System of Integrated Social Protection Statistics (ESSPROS) and the OECD (SOCX Social Expenditure Database).

**Table 1: Components of the GEP Index**

| *Indicator* | *Description* | *Country coverage* | *Data Source* |
|---|---|---|---|
| **Green trade** | Export of environmental goods according to OECD and APEC (% of total export) | 128 | Internal calculations using UNCOMTRADE, OECD, APEC, UN Environment |
| **Environmental patents** | As a measure of green technology innovation, patent publication in environmental technology by filing office (% of total patents)[30] | 61 | WIPO |
| **Renewable energy sources**[31] | Share of renewable energy supply (of total energy supply)[32] | 129 | Internal calculations using WDI |
| **Energy use** | Energy use (kg of oil equivalent) per USD 1,000 GDP (constant 2011 PPP). | 132 | WDI |
| **Palma ratio** | Ratio of the richest 10% of the population's share of income divided by the share of the poorest 40% | 121 | Internal calculations on WDI and OECD data[33] |
| **Access to basic services** | This is a composite measure created by the average access to three basic services with key social and environmental implications: Access to improved water sources (% of total population)[34], Access to electricity (% of total population), Access to sanitation facilities (% of total population) | 197, 211, 198, respectively | WDI |
| **Air pollution** | PM2.5 pollution mean annual exposure (micrograms per cubic metres) | 186 | WDI |
| **Material footprint** | Raw material consumption of used biotic and abiotic materials (tons/person) | 175 | International Resource Panel, UN Environment |
| **Marine and terrestrial protected areas** | Sum of terrestrial protected area (% of total land area) and marine protected area (% of territorial waters)[35] | 145 and 195, respectively | UN Environment-WCMC via UN Environment GRID |
| **Gender inequality index** | A composite measure reflecting inequality in achievements between women and men across three dimensions: (a) reproductive health; (b) empowerment; and (c) the labour market | 129 | UNDP[36] |
| **Pension coverage** | Share of population above statutory pensionable age receiving an old age pension, by contribution and sex | 102 | ILO |
| **Education (Mean** | Average number of years of education received by | 170 | UNDP[37] |

[30] According to WIPO classifications: "Environmental technology (…) covers a variety of different technologies and applications, in particular filters, waste disposal, water cleaning (a quite large area), gas-flow silencers and exhaust apparatus, waste combustion or noise absorption walls. However, it is not possible to define measuring of environmental pollution by IPC codes in a clear cut way." See Schmoch, U. (2008), p.14, for more information.

[31] It should be noted that the inclusion of this indicator could have potential negative impacts on the environment, e.g. reduction of dead biomass in ecosystems. However, it is believed that the overall potential benefits of developing renewable energy sources outweigh the potential costs.

[32] Percentage of total energy supply that comes from constantly replenished natural processes, including solar, wind, biomass, geothermal, hydropower and ocean resources, and some waste. It also includes the production of nuclear energy in 30 countries. The indicator is composed of the sum of two variables.

1. Combustible renewables and waste (as a percentage of total energy) comprise solid biomass, liquid biomass, biogas, industrial waste, and municipal waste, measured as a percentage of total energy use (available at: http://data.worldbank.org/indicator/EG.USE.CRNW.ZS);

2. Alternative and nuclear energy (as a percentage of total energy). Clean energy is non-carbohydrate energy that does not produce carbon dioxide when generated. It includes hydropower and nuclear, geothermal, and solar power, among others (available at: http://data.worldbank.org/indicator/EG.USE.COMM.CL.ZS/countries).

[33] The Palma ratio was constructed with observations from OECD and WDI datasets.

[34] FAO data on wastewater was also explored (http://www.fao.org/nr/water/aquastat/data/query/results.html). However, this data has poor time coverage, which is a significant limitation for this study.

[35] The value of the measure of progress for this dimension is the simple average between each component taken separately (because each component has its own threshold).

[36] HDRO calculations based on data from: UN Maternal Mortality Estimation Group (2013), UNDESA (2013a), IPU (2013), Barro and Lee (2013), UNESCO Institute for Statistics (2013) and ILO (2013a). For further information, see http://hdr.undp.org/en/content/gender-inequality-index.

| | | | |
|---|---|---|---|
| **years of schooling)** | people ages 25 and older, converted from education attainment levels using official durations of each level | | |
| **Life expectancy** | Life expectancy at birth indicates the number of years a new-born infant would live if prevailing patterns of mortality at the time of its birth were to stay the same throughout its life | 200 | WDI[38] |

### 2.2.2 Dashboard indicators

The Dashboard of Sustainability monitors key stocks of capital that are priorities to sustain life on the planet. Any loss in these key stocks of capital cannot be compensated by increasing another stock of capital. Progress in these areas can therefore only be assessed for each indicator individually, not as an aggregate index. The role of the dashboard is to keep track of the long-term sustainability of the factors that support human well-being by complementing the information assessment of green economy progress in the GEP Index. Progress or regress made on the dashboard indicators is compared to thresholds that are calculated with respect to planetary boundaries (see Table 2). The dashboard therefore helps to frame the progress measured by the GEP Index in a sustainability perspective, which is important as any progress made in improving current human well-being should not come at the expense of future well-being.

To allow the comparison of progress between the GEP Index and the dashboard, the sample of countries for the dashboard indicators is restricted by the sample of countries for which it was possible to construct a GEP Index (105 countries between 2004 - 2014). Section 5 focuses on the joint analysis of the GEP Index and the dashboard indicators for these 105 countries.

The criteria used for selecting the dashboard indicators are the same as for the GEP Index, but a fourth criterion applies uniquely to the indicators in the dashboard: the indicators should reflect a global planetary boundary for which there is evidence suggesting thresholds determined on the basis of the best available scientific knowledge.

After reviewing the literature with the objective to have the largest country coverage possible in mind, it was decided to only include six indicators in the dashboard, namely: (a) greenhouse gas emissions per capita; (b) nitrogen emissions per capita; (c) share of land use for permanent crops; (d) freshwater withdrawal per capita; (e) the Inclusive Wealth Index; and (f) the Ecological Footprint.[39]

The threshold for greenhouse gas emissions per capita is based on projections of the Intergovernmental Panel on Climate Change (IPCC). The IPCC currently estimates the cap for greenhouse gas emissions concentrations (measured in $CO_2$-equivalents) at roughly 450 parts per million (ppm) in order to limit global average warming to 2 degrees Celsius. This would be equivalent to a 50 per cent reduction in global emissions by 2050 (compared to 1990 levels), and corresponds to an average 2 $tCO_2e$ per capita per year (United Kingdom Committee on Climate Change, 2008).

[37] Derived from: Barro and Lee (2014), UNESCO Institute for Statistics (2015) and HDRO estimates based on data on educational attainment from UNESCO Institute for Statistics (2015) and Barro and Lee (2014). For further information, see http://hdr.undp.org/en/content/mean-years-schooling-adults-years.

[38] Derived from male and female life expectancy at birth from sources such as: (1) United Nations Population Division. World Population Prospects, (2) United Nations Statistical Division. Population and Vital Statistics Report (various years), (3) Census reports and other statistical publications from national statistical offices, (4) Eurostat: Demographic Statistics, (5) Secretariat of the Pacific Community: Statistics and Demography Programme, and (6) U.S. Census Bureau: International Database. For further information, see http://data.worldbank.org/indicator/SP.DYN.LE00.IN.

[39] The authors acknowledge the shortcoming that, except for the Ecological Footprint, the indicators included in the dashboard take a production/territorial perspective and not a consumption (footprint) perspective. Data on carbon, water, land and energy footprints were explored through the Carbon Footprint of Nations (http://carbonfootprintofnations.com) and the Water Footprint Network (http://waterfootprint.org). While the country coverage is good, no time series are available. It was therefore decided to keep production/terrestrial indicators to reflect planetary boundaries for this version of the GEP measurement framework.

The planetary boundaries framework of Rockström et al. (2009) identifies nine areas of crucial importance to maintain the sustainability of life on the planet. For seven of these, it was possible to quantify a threshold by identifying control variables and setting specific boundary values. Planetary boundaries were set at what was considered a "safe distance" from the estimated threshold given the precautionary principle, using the best available science (Nykvist et al., 2013). Thresholds for nitrogen concentrations, freshwater use[40] and land use are determined as the national level counterpart of planetary boundaries (dividing total estimates by either global population or by global terrestrial area) (Nykvist et al., 2013).[41]

## *From planetary boundaries to national boundaries*

The framework proposed by Rockström et al. (2009) includes a set of nine planetary boundaries, seven of which[1] were quantified and for which specific boundary values were proposed. Since its introduction, the framework has become a point of reference not just for the scientific community but also amongst policy makers. The significant success of this framework is due to several reasons. First, the framework represents the first attempt to provide an inclusive set of quantified planetary boundaries that capture key global environmental challenges. Second, the framework not only identifies nine planetary boundaries, but it also provides boundary values for most of them, which allows for absolute benchmarking of countries according to the thresholds. Third, the selection of the nine planetary boundaries within the framework was based on scientific knowledge and not on the availability of data, as is too often the case, to the detriment of the accuracy of the selected indicators.

However, the analysis of Rockström et al. (2009) has some potential limitations. Indeed, some of the planetary boundaries (e.g. land use) represent more regional or local challenges rather than global ones, and this differentiation of spatial scale is absent from the framework. Moreover, although qualitative measurements for some of the planetary boundaries (e.g. land use) are as important as quantitative ones, the quality of the indicator is never considered. Another potential challenge relates to the numerous interactions between the different planetary boundaries, which were not considered in the 2009 study, though they might have significant impacts on boundary values. The current planetary boundaries should therefore be considered as a first set of boundaries that may need adjustment, as interactions are better understood (Nykvist et al., 2013).

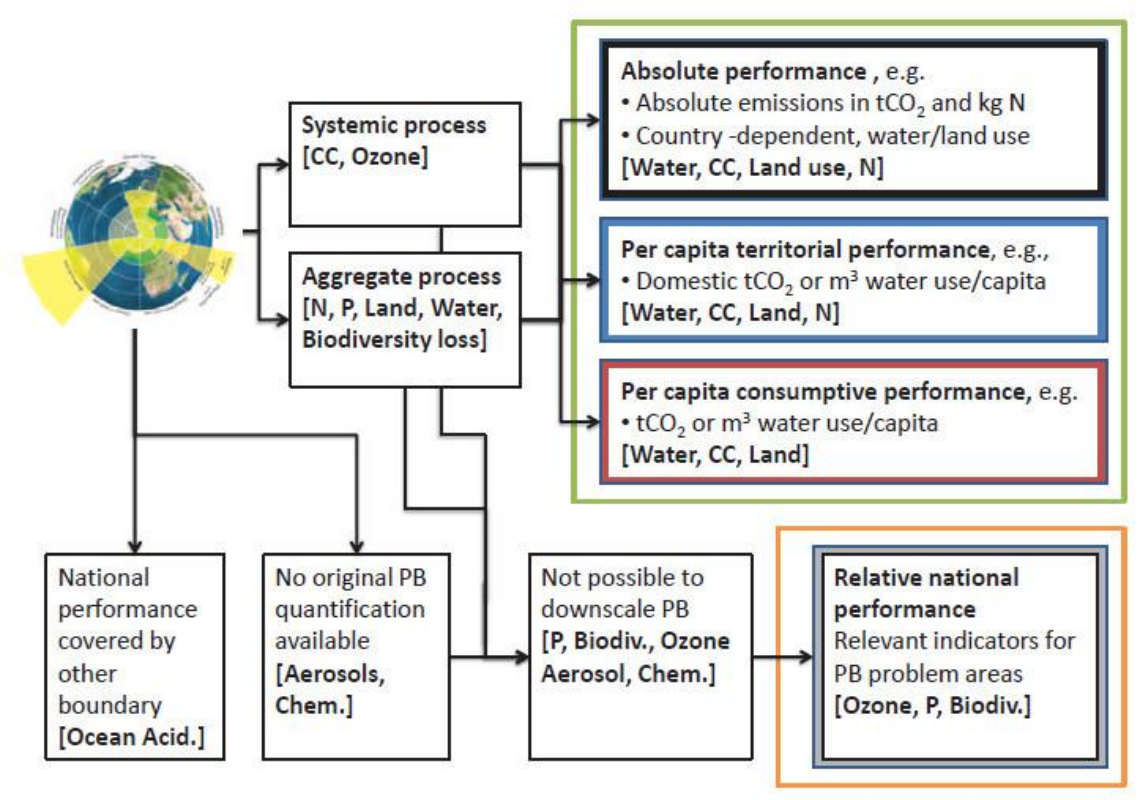
Different organizations have used this study as a starting point to conduct their own research. For one, the Swedish Environmental Protection Agency (SEPA) commissioned a study from the Stockholm Resilience Centre and the Stockholm Environment Institute in order to assess whether the planetary boundaries framework could apply to Sweden's national environmental quality objectives (Nykvist et al., 2013). In particular, the study quantifies national boundaries of four out of the nine planetary boundaries, i.e. climate change, nitrogen cycle, land use and water use. Based on the four indicators, two types of country performance are calculated: the *absolute* performance, which allows for the identification of the less environmentally friendly countries at a global level, and the *per capita* performance, which takes into consideration equity concerns and rights to development.

The methodology used to calculate both measures includes two steps (Figure 3): first, the boundaries are downscaled to per capita boundaries to obtain the per capita performance, then this value is multiplied by national population, in order to obtain the values of national absolute boundaries. The downscaling process is specific for each of the four indicators, and a detailed description can be found in Nykvist et al., (2013).

[40] One alternative indicator that could have been included instead is water scarcity. However, as one of the selection criterion is country coverage, freshwater use was preferred. For future thematic studies of the GEP measurement framework, water scarcity indices could be included in the analysis of green economy progress for a sub-set of countries.

[41] The blueDot project (http://bluedot.world/) has calculated national planetary boundaries for six out of the ten planetary boundary indicators for 42 countries. These are, however, mainly OECD and developed countries. This study aims for a balance between developed and developing country coverage and has therefore privileged planetary boundaries based on the downscaling of global estimates. blueDot estimates of planetary boundaries could be used in a future study of the GEP.

**Figure 3: Methodological approach to illustrating national performance**




Source: Nykvist et al., (2013). National Environmental Performance on Planetary Boundaries: A study for the Swedish Environmental Protection Agency. SEPA: Stockholm.

[1] Climate change; ocean acidification; stratospheric ozone depletion; nitrogen cycle and phosphorus cycle; freshwater use; land use change; rate of biodiversity loss.

The Ecological Footprint[42] threshold is based on the Earth's biological capacity, measured as the amount of biologically productive land and water available per person.[43]

Finally, the Dashboard of Sustainability indicators also includes the Inclusive Wealth Index (UNU-IHDP and UN Environment, 2014) to take into account changes in the overall stocks of capital. The "threshold" used for the Inclusive Wealth Index is that it does not show a negative change (human and natural assets are not depleting) (UNU-IHDP and UN Environment, 2014). Table 2 below presents the dashboard indicators, their coverage and their source. [44]

**Table 2: Dashboard indicators**

| *Description of indicator* | *Country coverage* | *Threshold* | *Data Source* |
|---|---|---|---|
| **Freshwater withdrawal ($m^3$/capita/year)** | 79 | 585 $m^3$ / capita /year | WDI |
| **Greenhouse gas emissions, excluding land-use change and forestry ($CO_2$e/capita/year)** | 104 | 2 tons/capita/year | CAIT[45] World Resource Institute |

[42] The Ecological Footprint has been widely used for communication purposes, although it is not supported by the broad scientific community. It is used in this study because it is available for a wide range of countries and time periods.
[43] For more information, see: http://www.footprintnetwork.org/en/index.php/GFN/page/glossary/. Data is for 2011.
[44] The coverage of 105 countries is restricted by the calculation of the GEP index. It does not represent the full coverage by any of the indicators in the dashboard.
[45] CAIT Climate Data Explorer, available at: http://cait.wri.org/

| | | | |
|---|---|---|---|
| **Nitrogen emissions (kg/capita/year)** | 102 | 5 kg/capita/year | FAO through UN Environment GRID |
| **Land use (share of land used for permanent crops)** | 104 | 15% land use (for permanent crops) | FAO through UN Environment GRID |
| **Ecological Footprint (global hectares/capita)** | 92 | 1.72 global hectares/capita | Global Footprint Network |
| **Inclusive Wealth Index (millions of constant 2005 US$/capita)** | 100 | non-negative change | UNU-IHDP and UN Environment |

### 2.2.3 "Goods" and "Bads"

The GEP Measurement Framework makes the distinction between "goods" and "bads". When the amount of "goods" increases, society is making progress towards an Inclusive Green Economy. However, when the amount of "bads" increases, society is moving further away from an Inclusive Green Economy (i.e. society is regressing). For example, an increase in inequality will almost, by definition, reduce inclusiveness and contribute to reducing current human well-being (this is why an increase in this indicator is associated with regression). Inequality is therefore considered a "bad". On the other hand, an increase in the share of green trade is associated with potential economic and employment opportunities, and will result in progress towards an Inclusive Green Economy. Green trade is therefore considered a "good". Table 3 below lists the 19 indicators of the GEP Measurement Framework according to their effect on the outcome of progress.

**Table 3: Classification of indicators of the GEP Measurement Framework**

| *"Goods"* | *"Bads"* |
|---|---|
| ***Green trade*** | *Energy use* |
| ***Green innovation*** | *Inequality (Palma ratio)* |
| ***Renewable energy*** | *Air pollution* |
| ***Access to water/sanitation/electricity*** | *Material footprint* |
| ***Protected areas*** | *Gender inequality* |
| ***Education*** | **Greenhouse gas emissions** |
| ***Life expectancy*** | **Freshwater withdrawal** |
| ***Pension coverage*** | **Land use** |
| ***Inclusive Wealth Index*** | **Nitrogen emissions** |
| | **Ecological footprint** |

Note: Indicators in italic are included in the GEP Index, those in bold are in the dashboard.

## 2.3 TARGET AND THRESHOLDS

In practice, the **target y*** is determined for each country by calculating the $\lambda$ (for a "good") or the $\beta$ (for a "bad") by using a relevant comparison group (e.g. countries with similar human development according to the Human Development Index). The idea is to multiply each country's initial value, $y^0$, with the value of $\lambda$ or $\beta$ (depending on whether y is a "good" or a "bad") achieved by the 10 per cent best performing countries in the relevant comparison group. This data-driven approach helps to set targets that are ambitious but feasible according to specific country characteristics of the relevant comparison group.

The temporal period considered for the calculation of the GEP Index is 2004-2014. A target, $y*$, will be defined as $y^* = \lambda y^0$ (in the case of a "good" and if $\lambda y^0 > t$) and $y^* = \beta y^0$ (in the case of a "bad" and if $\beta y^0 < t$).

For a "good", the target of a country is calculated on the basis of the 10 per cent best performing countries in the distribution[46]. In other words, a country should achieve a target that is based on an increase in *y* that is at least as good as the one achieved by the 10 per cent best performing countries in its relevant comparison group. Similarly, for a "bad", the target of the country is set to achieve a reduction as significant as the reduction of the 10 per cent best performing countries in the relevant comparison group[47]. In other words, a country should have as a target a reduction in *y* that is as big as the one achieved by the 10 per cent best performing countries in the relevant comparison group.

**Thresholds** are determined based on the data and internationally recognized scientific sources. For "goods" ("bads"), the value of the threshold is set at the value of the $25^{th}$ ($75^{th}$) percentile of the distribution in 2004. Countries should never go below (or above) the value achieved by the bottom 25 per cent (top 75 per cent) of countries in 2004 for this indicator. Internationally recognized scientific sources are used for environmental indicators, including recommendations on air pollution from the World Health Organization (WHO, 2014); on material footprint per capita from Stefan Bringezu (2015); and on protected areas from Aichi Biodiversity Targets (Leadly et. al., 2014).

Finally, to assess GEP within planetary boundaries, the progress achieved in the GEP Index indicators are compared to the progress made in the indicators of the Dashboard of Sustainability with the goal of highlighting whether planetary boundaries have been overstepped or not. It should be noted that the thresholds of indicators in the dashboard and of some indicators in the GEP Index are determined on the basis of scientific literature, while other thresholds in the GEP Index are empirically determined.

[46] For a "good", λ represents the ratio between the final ($y^1$) and initial ($y^0$) values for each indicator for the $90^{th}$ percentile of the distribution. A country's target is calculated by multiplying its initial value with the λ of the 10 per cent best performing countries.
[47] For a "bad", β represents the ratio between the final ($y^1$) and initial ($y^0$) values for each indicator for the $10^{th}$ percentile of the distribution. A country's target is calculated by multiplying its initial value with the β of the 10 per cent best performing countries.

# 3. RESULTS OF THE GEP MEASUREMENT FRAMEWORK, 2004 - 2014

This section presents the results from the practical implementation of the GEP Measurement Framework Methodology developed by PAGE (2017) using the set of indicators described in Section 2. This practical implementation is meant to serve as a beta test for the GEP Methodology to illustrate its aplicability and ensure replicability.

The section is structured as follows: Sections 3.1 and 3.2 present the results on Inclusive Green Economy progress in the single indicator case and in the multidimensional case using the GEP Index. Section 3.3 demonstrates how countries have progressed in terms of their sustainability indicators (dashboard). Finally, Section 3.4 shows the results for the progress made within planetary boundaries (GEP+); this is done by comparing the GEP Index results with the progress shown in the dashboard of indicators. To be included in the sample, a country was required to have data for 10 of the 13 GEP Index indicators and 3 of the 6 Dashboard of Sustainability indicators. Bear in mind, as discussed in Section 2.1, the two years considered in the GEP Index in this initial instance are 2004 and 2014, and the data is averaged over a five-year period around these years (2000-2004 and 2010-2014) due to data limitations. For the sake of simplification, the averaged data over 2000-2004 is referred to as "2004" and the averaged data over 2010-2014 is referred to as "2014" within this document.

## 3.1 RESULTS FOR PROGRESS IN THE SINGLE INDICATOR CASE (GEP INDEX)

Given data availability, it was possible to calculate progress for 13 indicators for the two data points of analysis, 2004 and 2014, for a total of 105 countries[48]. Table 4 presents summary statistics for these 13 indicators (to later be aggregated into the GEP Index, see next section). **On average, progress by countries in the sample was highest on the indicators measuring education, life expectancy, gender inequality, and energy use (meaning education and life expectancy increased while gender inequality and energy use decreased).** On the other hand, **material footprint and air pollution saw, on average, the most significant regress (material footprint and air pollution increased).**

[48] For some indicators, cut-off values were used, for example for a country starting at a very high level and for which it is almost impossible to achieve further progress (e.g. a country with more than 97 per cent of access to basic services), or if the country started at a very low level for which achievements may be magnified because of data measurement problems (e.g. a country starting with 0.1 per cent access to basic services and that achieved a 0.2 per cent coverage). In these extreme cases, the value was substituted by a missing value for the corresponding indicator and progress was measured based on achievements in the remaining indicators.

**Table 4: Progress on an Inclusive Green Economy by indicator – full sample**

| *Variable* | *Obs* | *Mean* | *Std. Dev.* | *Min* | *Max* |
|---|---|---|---|---|---|
| **material footprint** | 104 | -1.83 | 5.57 | -52.53 | 1.43 |
| **air pollution** | 105 | -0.13 | 0.89 | -5.70 | 1.23 |
| **protected areas** | 101 | 0.15 | 0.35 | -0.04 | 2.44 |
| **energy use** | 102 | 0.37 | 0.46 | -1.43 | 2.03 |
| **green trade** | 93 | 0.10 | 0.30 | -0.28 | 1.61 |
| **green technology innovation** | 54 | 0.13 | 0.98 | -0.92 | 5.98 |
| **renewable energy source** | 101 | 0.04 | 0.36 | -0.78 | 1.11 |
| **Palma ratio** | 96 | 0.06 | 0.68 | -2.04 | 1.74 |
| **gender inequality index** | 98 | 0.39 | 0.30 | -0.28 | 1.46 |
| **access to basic services** | 71 | 0.38 | 0.23 | -0.05 | 1.00 |
| **mean years of schooling** | 103 | 0.39 | 0.25 | -0.42 | 1.04 |
| **pension coverage** | 66 | 0.22 | 0.96 | -4.55 | 2.19 |
| **life expectancy** | 103 | 0.39 | 0.20 | -0.32 | 1.48 |

*Source: Authors' calculations.*

Tables 5 and 6 present the results of the progress made in these single indicators for the 20 countries with the highest (lowest) average progress. [49]

**Table 5: Progress on an Inclusive Green Economy for 20 countries with the highest average progress, by indicator**

| | material footprint | air pollution | protected areas | energy use | green trade | environmental patents | renewable energy | Palma ratio | gender inequality | access to basic services | mean years of schooling | Pension coverage | life expectancy |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Cyprus** | 0.04 | 0.08 | 0.01 | 0.37 | 0.51 | 5.98 | 0.82 | | 0.19 | | 0.38 | 0.42 | 0.19 |
| **Poland** | -0.31 | 0.36 | 0.63 | 0.74 | 0.06 | 0.30 | 0.71 | 1.68 | 0.38 | -0.01 | 0.21 | 0.83 | 0.36 |
| **Tunisia** | 0.13 | 0.07 | 0.08 | 0.44 | 0.56 | | 0.20 | 0.88 | 0.64 | 0.47 | 0.95 | | 0.25 |
| **Slovenia** | -0.11 | 0.32 | 2.30 | 0.39 | 0.02 | -0.35 | 0.12 | 0.11 | 1.00 | | 0.08 | | 0.56 |
| **Paraguay** | -0.18 | 0.76 | 0.11 | 0.36 | | | -0.11 | 0.60 | 0.35 | 0.87 | 0.81 | | 0.30 |
| **Norway** | -0.11 | 1.23 | 0.21 | -0.03 | 0.11 | 0.17 | -0.05 | 0.80 | 0.55 | | 0.28 | 1.00 | 0.39 |
| **Switzerland** | -0.08 | 0.35 | 0.08 | 0.55 | -0.02 | 0.59 | 0.04 | | 1.03 | | 0.49 | | 0.53 |
| **Dominican Republic** | 0.79 | 0.50 | -0.04 | 1.00 | 0.29 | | -0.16 | 0.47 | 0.08 | 0.13 | 0.43 | | 0.32 |
| **Namibia** | -0.42 | 1.10 | 0.50 | 0.07 | 0.13 | | -0.41 | 0.24 | 0.30 | 0.63 | 0.28 | 0.87 | 0.66 |
| **Slovak Republic** | -0.64 | 0.39 | 0.34 | 1.19 | 0.02 | 0.88 | 0.07 | 0.21 | 0.42 | | 0.38 | | 0.31 |
| **Ireland** | 0.26 | -1.37 | 0.29 | 0.60 | 0.10 | 0.52 | 1.11 | 0.49 | 0.63 | | 0.41 | | 0.51 |
| **Italy** | 0.09 | 0.23 | 0.37 | 0.21 | 0.02 | -0.68 | 1.00 | 0.29 | 1.02 | | 0.39 | 0.46 | 0.46 |
| **Austria** | -0.06 | 0.36 | 0.00 | 0.19 | 0.05 | -0.06 | 0.37 | 0.07 | 0.84 | | 0.51 | 1.00 | 0.37 |
| **Peru** | -0.28 | 0.24 | 0.31 | 0.04 | 0.24 | 0.55 | -0.33 | 1.02 | 0.39 | 0.61 | 0.29 | | 0.53 |
| **Philippines** | -0.50 | -0.11 | 0.00 | 0.87 | 1.16 | | -0.16 | 0.54 | 0.32 | 0.53 | 0.30 | | 0.23 |
| **El Salvador** | 0.02 | -0.28 | | 0.39 | 0.36 | | -0.05 | 1.00 | 0.37 | 0.38 | 0.61 | 0.04 | 0.31 |
| **Thailand** | -1.12 | -0.02 | 0.03 | -0.08 | 0.21 | | 0.06 | 0.36 | 0.42 | 0.44 | 0.50 | 2.19 | 0.42 |
| **Portugal** | -0.10 | -0.38 | 0.02 | 0.39 | 0.10 | -0.43 | 0.46 | 0.73 | 0.63 | | 0.55 | 1.00 | 0.43 |
| **Germany** | 0.03 | 0.35 | 0.19 | 0.50 | 0.06 | 0.14 | 0.25 | -0.45 | 0.92 | | 0.70 | | 0.33 |
| **Czech Republic** | -0.19 | 0.40 | 0.16 | 0.72 | 0.07 | 0.24 | 0.57 | 0.16 | 0.82 | | -0.42 | | 0.39 |

*Source: Authors' calculations. Empty cells are missing values*

[49] Average progress is the unweighted average of country achievements over the 13 indicators, based on equation [1'], Section 4.1.2.

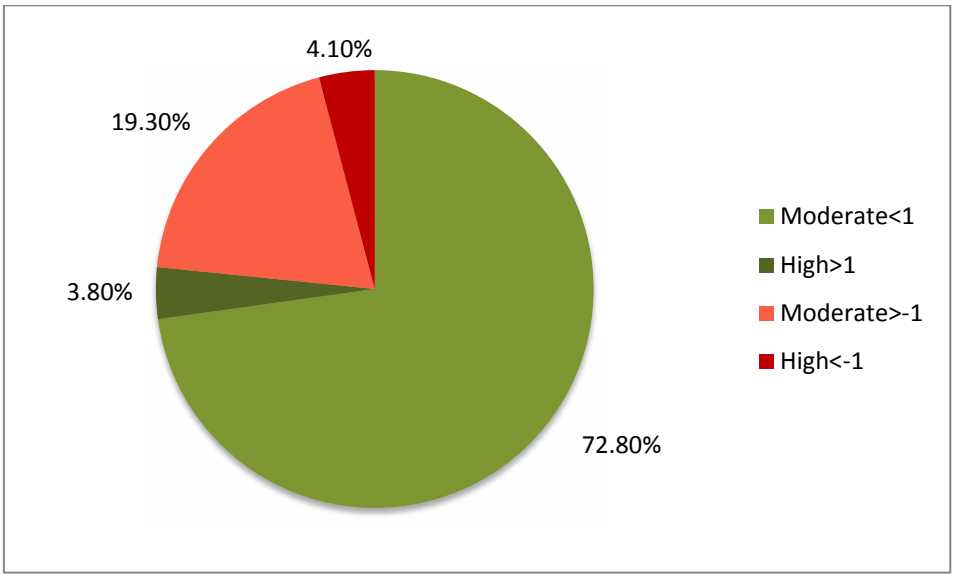
**Table 6: Progress on an Inclusive Green Economy for 20 countries with the lowest average progress, by indicator**

| | material footprint | air pollution | protected areas | energy use | green trade | environmental patents | renewable energy | Palma ratio | gender inequality | access to basic services | mean years of schooling | Pension coverage | life expectancy |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Ghana** | -2.85 | 0.04 | 0.00 | 0.71 | 0.01 | | -0.34 | -0.58 | 0.12 | 0.63 | 0.24 | 0.07 | 0.34 |
| **Zambia** | -1.58 | -0.78 | 0.03 | 0.91 | | | 0.07 | -1.33 | 0.09 | 0.15 | 0.21 | 0.21 | 0.53 |
| **Mali** | -2.98 | 0.02 | 0.24 | | 0.00 | | | 0.42 | 0.12 | 0.18 | 0.22 | 0.06 | 0.31 |
| **South Africa** | 0.03 | -0.59 | 0.11 | 0.25 | -0.05 | -0.67 | -0.16 | -2.04 | 0.27 | 0.71 | 0.27 | | -0.21 |
| **Algeria** | -3.12 | 0.03 | 0.08 | -0.15 | 0.01 | -0.66 | | | 0.63 | -0.05 | 0.74 | 0.27 | 0.26 |
| **Costa Rica** | 0.35 | -4.37 | 0.03 | 0.03 | 0.03 | | 0.22 | -0.29 | 0.52 | 0.35 | 0.09 | 0.39 | 0.22 |
| **Yemen, Rep.** | -1.93 | 0.03 | 0.07 | -0.42 | | | -0.04 | -0.84 | 0.22 | 0.25 | 0.38 | | 0.20 |
| **United States** | 0.17 | 0.09 | 0.02 | 0.53 | -0.02 | -0.13 | 0.17 | -0.86 | 0.11 | | 0.14 | -2.95 | 0.23 |
| **Angola** | -4.78 | -0.61 | 0.00 | 1.00 | | | -0.44 | 1.74 | | 0.39 | 0.11 | 0.20 | 0.28 |
| **Indonesia** | -3.89 | 0.03 | 0.26 | 0.53 | 0.00 | | -0.14 | -0.97 | 0.26 | 0.50 | 0.34 | 0.09 | 0.47 |
| **Georgia** | -3.99 | -0.13 | 0.00 | 0.82 | -0.01 | -0.44 | -0.36 | -0.18 | | 0.34 | 0.17 | 0.50 | 0.31 |
| **Albania** | -6.43 | 0.33 | 0.23 | 0.86 | -0.08 | | 0.10 | 0.26 | 0.91 | 0.24 | 0.22 | -1.13 | 0.40 |
| **Latvia** | -0.62 | -5.70 | 0.08 | 0.45 | 0.06 | | 0.13 | -0.22 | 0.24 | 0.00 | 0.66 | | 0.39 |
| **Vietnam** | -6.58 | -0.05 | 0.05 | -0.14 | 0.38 | | -0.61 | 0.17 | 0.19 | 0.80 | 0.98 | | 0.25 |
| **Azerbaijan** | -4.08 | 0.17 | 0.04 | 2.03 | -0.28 | | 0.36 | -0.50 | | 0.60 | 0.14 | -4.55 | 0.59 |
| **Benin** | -5.78 | 0.02 | 0.02 | -0.59 | 0.06 | | -0.40 | -0.73 | 0.18 | 0.18 | 0.32 | 0.32 | 0.36 |
| **Tajikistan** | -8.64 | 0.22 | 0.05 | 1.17 | | | -0.06 | 0.16 | 0.27 | 0.25 | -0.05 | -0.65 | 0.53 |
| **Cambodia** | -12.5 | 0.02 | 0.06 | 0.75 | | | -0.36 | -0.04 | 0.40 | 0.49 | 0.75 | 0.75 | 1.48 |
| **Mongolia** | -13.6 | 0.09 | 0.01 | 0.66 | | | -0.51 | -1.48 | 0.29 | 0.53 | 0.33 | 1.00 | 0.66 |
| **Moldova** | -52.5 | 0.45 | | 0.62 | 0.08 | 1.00 | 0.10 | 0.82 | | 0.34 | 0.63 | -0.67 | 0.24 |

*Source: Authors' calculations. Empty cells are missing values.*

Figure 4 shows that, on the one hand, countries made progress in 77 per cent of the indicators considered in the GEP Index (they achieved moderate progress [between 0 and 1] in 73 per cent of indicators, while they overachieved their targets in 4 per cent of indicators [values > 1]). On the other hand, countries regressed in one fourth of the indicators, with significant regress in slightly more than 4 per cent of these indicators (values < -1).

**Figure 4: Percentage of progress and regress on an Inclusive Green Economy (105 countries) over all indicators**

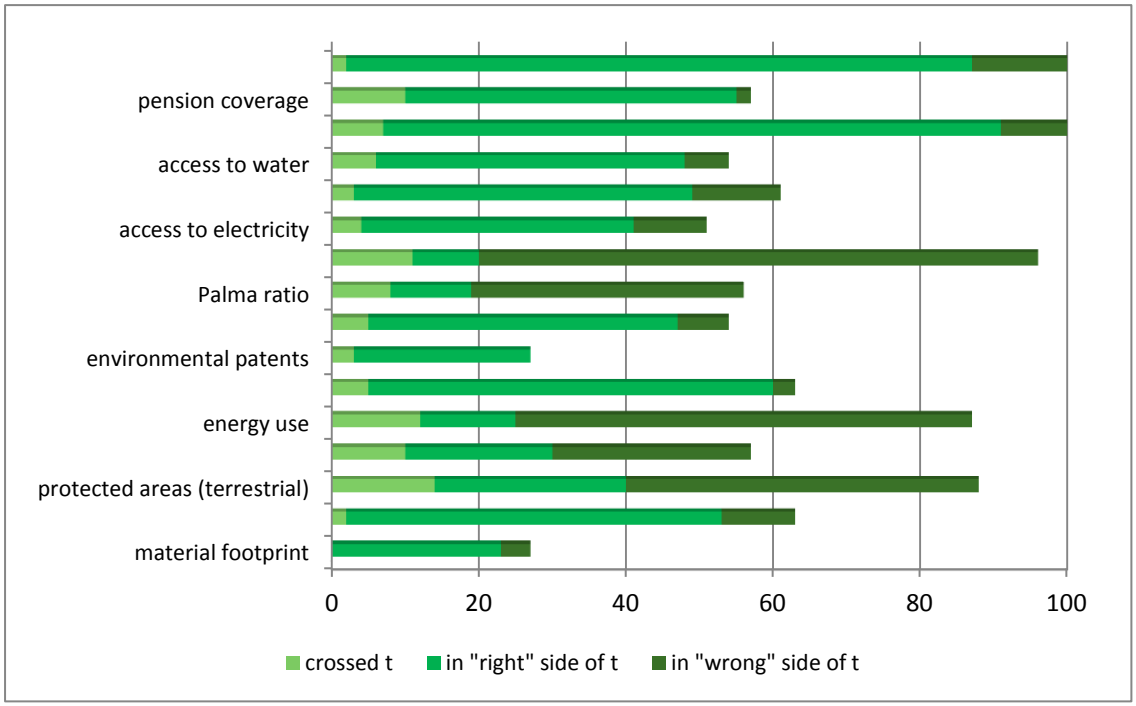



*Source: Authors' calculations.*
*Note: progress in green, regress in red. Average percentages for 105 countries.*

Figures 5 and 6 show how many countries have progressed (green) and regressed (red) by indicator and against the common threshold. For progress, there are three sub-cases: (a) a country could progress, while crossing the threshold in the "right" direction; (b) a country could progress and already be on the "right" side of the threshold; or (c) a country could be making progress but still be on the "wrong" side of the threshold. For regress, the reasoning is symmetric.

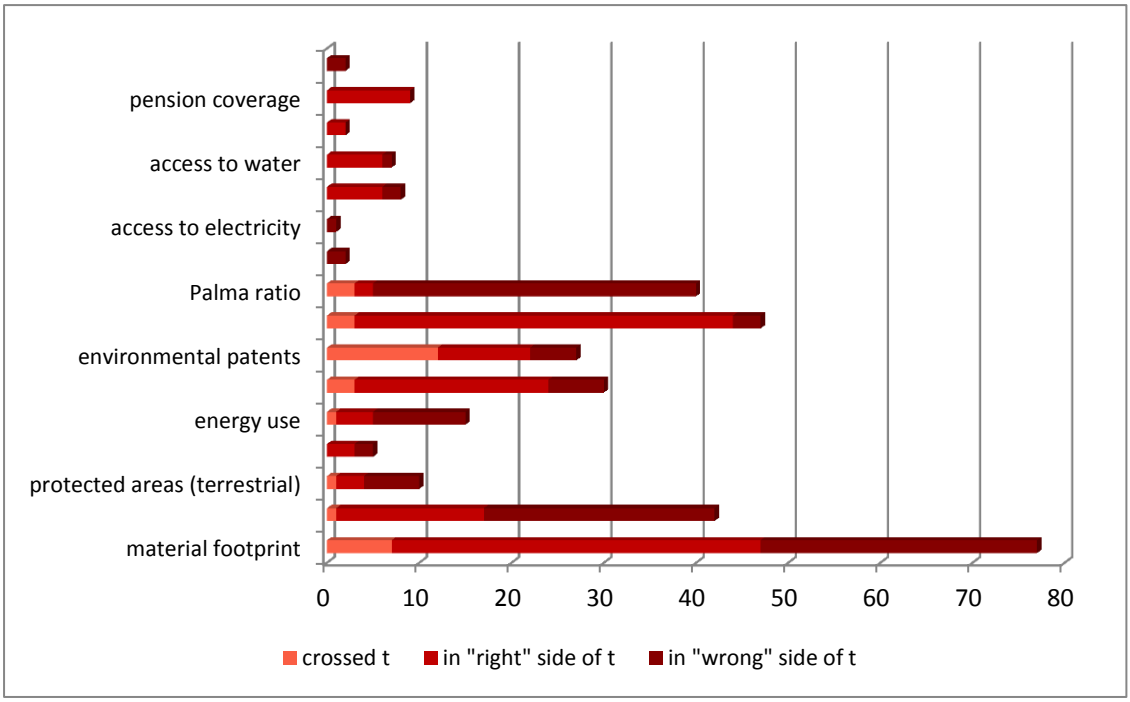
**Over the time period considered (2004-2014), life expectancy has increased in most countries, gender inequality has fallen, more terrestrial areas are now protected and energy use has been reduced.** However, Figure 5 shows that, while efforts have been made to improve the situation in these three indicators, most countries are still below the desirable threshold. By percentage, protected areas (terrestrial and marine), energy use, and pension coverage have the highest share of countries on the "right" side of the threshold. With respect to regress (Figure 6), material footprint is of main concern: 77 out of 104 countries have regressed in this area, with 40 of these countries initially on the "right" side of the threshold. Air pollution and the Palma ratio also show relatively bad results and while most countries have progressed in these indicators (Figure 5), the majority of those that have regressed are moving further away from the threshold (i.e. in the "wrong" direction). **By percentage, the indicators on material footprint, renewable energy, air pollution, Palma ratio, green trade and environmental patents show the highest share of countries in regress**, with environmental patents and material footprint holding the highest proportion of countries that crossed from the "right" to the "wrong" side of the threshold.

**Figure 5: Progress on an Inclusive Green Economy with respect to the threshold**




*Source: Authors' calculations.*
*Note: "t" stands for threshold. There are 16 indicators in the figure, which are later condensed into 13 indicators, because protected areas is transformed into one indicator covering both terrestrial and marine areas, and an indicator of access to basic services is created to cover access to water, electricity and sanitation.*

**Figure 6: Regress on an Inclusive Green Economy with respect to the threshold**




*Source: Authors' calculations.*
*Note: "t" stands for threshold. There are 16 indicators in the figure, which are later condensed into 13 indicators, because protected areas is transformed into one indicator covering both terrestrial and marine areas, and an indicator of access to basic services is created to cover access to water, electricity and sanitation.*

## 3.2 THE GEP INDEX: MEASURING PROGRESS IN THE MULTIDIMENSIONAL CASE

A positive value of the GEP Index indicates progress (i.e. the weighted sum of positive changes in "goods" and negative changes in "bads" outweighs the weighted sum of negative changes in goods and positive changes in "bads"), while the opposite is true for a negative value. Table 7 presents a detailed summary of statistics for the GEP Index, which was calculated for 105 countries[50] using the 13 indicators[51] considered in the GEP Index described in Section 2. Notice that more than 75 per cent of the sample of countries experienced progress as indicated by positive values in green. Although the average country experienced progress, there were some countries that experienced significant regress. The median value of the sample is 0.12, with the bottom 10 percentile having a value lower than -0.09, and the top 90 percentile having a value of 0.37. Figure 7 presents the kernel distributions of the GEP Index for the entire sample, excluding the only country for which regress was more than -0.99 (a move in the opposite direction of progress by almost more than 100 per cent of the desired change or target). The distribution of the GEP Index is relatively symmetric around 0 (with a small positive skew).

**Table 7: Summary statistics of the GEP Index**

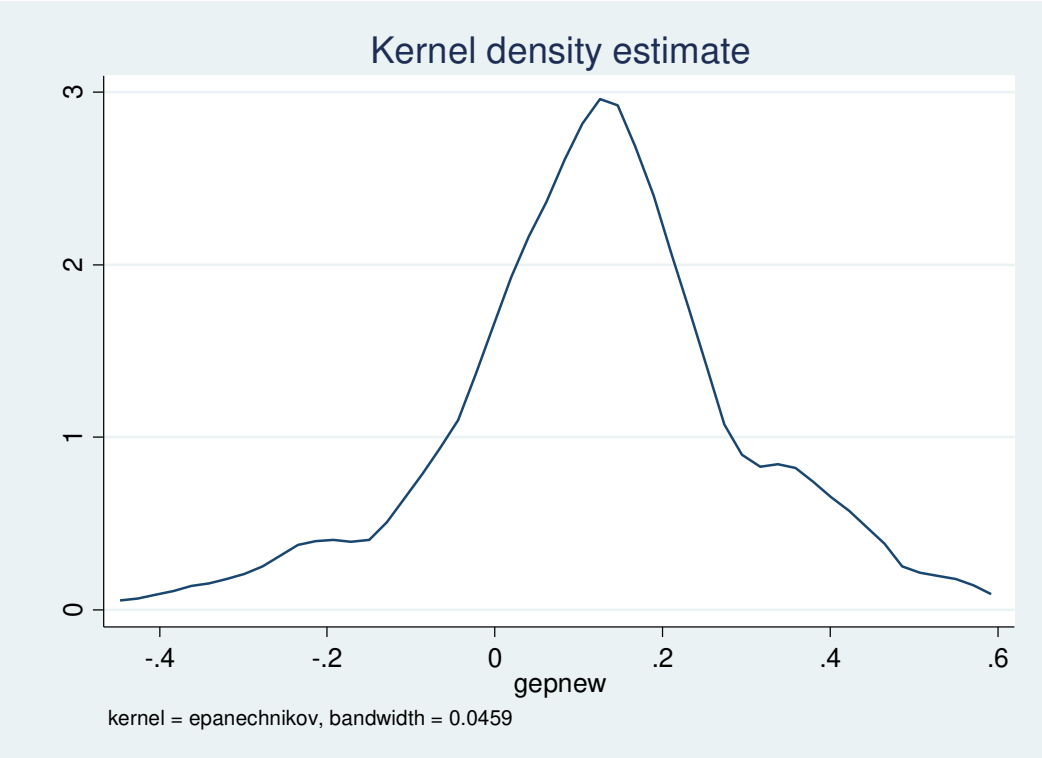
| Variable | Observations | Mean | Std. Dev. | Min | Max |
|---|---|---|---|---|---|
| GEP Index | 105 | 0.11 | 0.20 | -0.99 | 0.55 |

| | 1% | 5% | 10% | 25% | 50% | 75% | 90% | 95% | 99% |
|---|---|---|---|---|---|---|---|---|---|
| Percentiles | -0.40 | -0.22 | -0.09 | 0.02 | 0.12 | 0.20 | 0.37 | 0.39 | 0.52 |

*Source: Authors' calculations.*

[50] The 105 countries in the sample represent about 86 per cent of the global population in 2013.
[51] To determine the sample of countries, the availability of indicators was reviewed. Only 11 countries have all 13 indicators; 48 countries have 12 or more indicators; 88 countries have 11 or more indicators, while 105 countries (the selected sample) have ten or more indicators. For countries with missing values, weighting in the GEP index is adjusted accordingly.

**Figure 7: GEP Index (sample of 104 countries, excluding country with GEP < -0.99)**




*Source: Authors' calculations.*
*Note: The shape of the distribution for the entire sample (105 countries) is similar to the one with 104 countries (the left tail is longer when including the outlier).*

The GEP Index is computed in two steps following equations [2] and [2'] noted in section 3.2 of PAGE (2017). Consider Colombia as an example. Following equation [2'], the non-normalized weights $\hat{\pi}$ for Colombia are computed first (first row of Table 8). Second, the normalized weights $\pi$ are computed (second row of Table 8) by dividing each weight $\hat{\pi}$ by the sum of the weights $\hat{\pi}$. This weighting system allows for the determination of country priorities based on targets and comparison between countries.

**Table 8: Example of the computation of the GEP Index for Colombia**

| **Colombia** | material footprint | air pollution | protected areas | energy use | green trade | environmental patents | renewable energy | Palma ratio | gender inequality | access to basic services | mean years of schooling | pension coverage | life expectancy |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Weights $\hat{\pi}$** | 1.22 | 0.53 | 1.33 | 0.41 | 0.52 | 0.82 | 0.22 | 1.41 | 0.88 | 0.67 | 0.71 | 0.40 | 0.87 |
| **Weights $\pi$** | 0.12 | 0.05 | 0.13 | 0.04 | 0.05 | 0.08 | 0.02 | 0.14 | 0.09 | 0.07 | 0.07 | 0.04 | 0.09 |
| **Progress** | -1.62 | -0.19 | 0.10 | 0.46 | -0.15 | 0.41 | -0.12 | 0.23 | 0.30 | 0.20 | 0.29 | 0.16 | 0.36 |

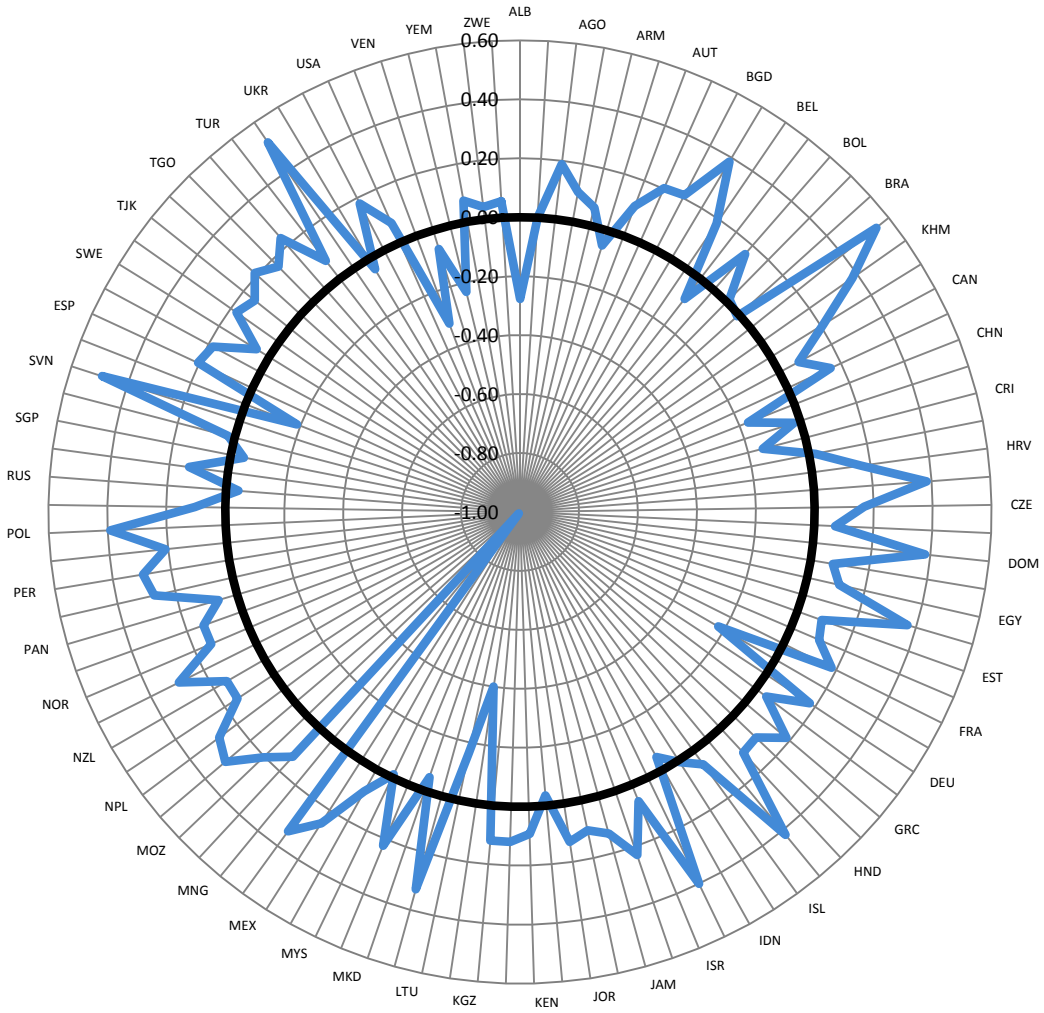
*Source: Authors' calculations.*

Following equation [2'] in PAGE (2017), the GEP Index is found by multiplying the normalized weights $\pi$ by each value of progress on each indicator and summing these values. The resulting value of the GEP Index for Colombia is -0.02[52].

[52] The weighting system for this country illustrates some very interesting aspects of the methodology. Colombia is experiencing regress in four out of 13 indicators (progress in nine out of 13). For material footprint (one of the indicators for which regress is

Figure 8 below shows the values of the GEP Index for each of the 105 countries in the sample[53]. Most of the countries are above the 0 line, meaning that they are making progress towards an Inclusive Green Economy. However, the figure also shows that some countries are making significant regress, e.g. Mongolia and Uruguay.

**Figure 8: GEP Index (sample of 105 countries)**



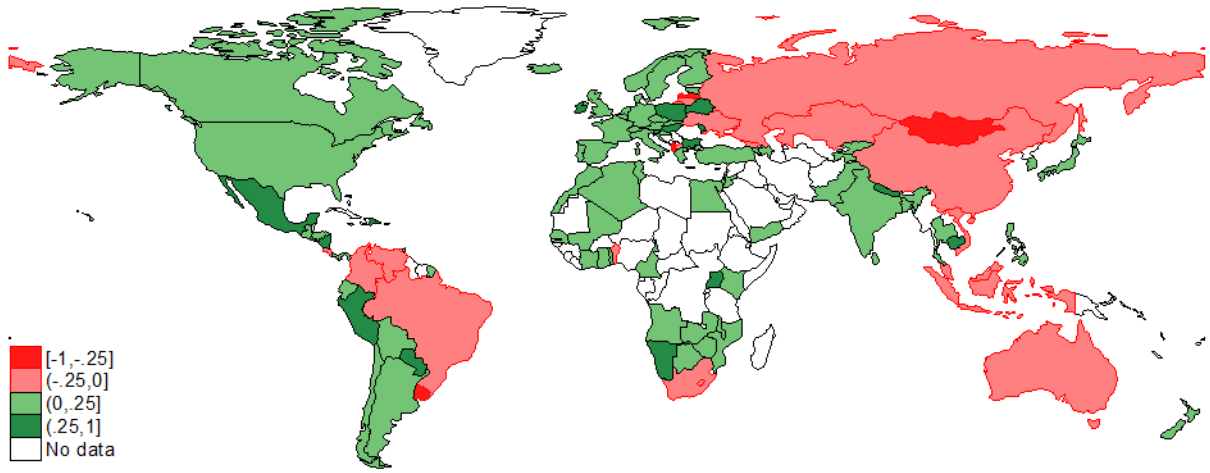

*Source: Authors' calculations.*

observed) the weight is relatively high and the regress was very significant (a value smaller than -1 indicates that the change in absolute value was greater than the target but in the opposite direction). This component alone represents a contribution of -0.19 to the GEP index (0.12*-1.62=-0.194), which is more than 10 times the contribution of the indicator with the largest progress, i.e. energy use (0.04*0.46=0.018).

[53] See Annex IV for the values of the GEP index and progress on individual indicators for all countries in the sample.

Figure 9 shows a global map of the GEP Index for the 105 countries in the sample. The 83 countries that made progress are presented in green. The darker the green area the higher the progress on Inclusive Green Economy, as measured by the GEP Index. It is interesting to note that many countries in dark green are developing countries. The 22 countries that experienced regress are presented in red, with the darker red areas indicating countries with the most significant cases of regress.

**Figure 9: GEP Index (sample of 105 countries)**




*Source: Authors' calculations.*

Table 9-11 present the results for all HDI groups[54]. The three tables below present the results for the entire sample of 105 countries, for the 83 countries with positive GEP Index values, and for the 22 countries with negative GEP Index values, respectively.

**Table 9: GEP Index by HDI groups (sample of 105 countries)**

| *HDI group* | *Observations* | *Mean* | *Std. Dev.* | *Min* | *Max* |
|---|---|---|---|---|---|
| **Very high** | 37 | 0.16 | 0.14 | -0.16 | 0.49 |
| **High** | 28 | 0.04 | 0.21 | -0.40 | 0.55 |
| **Medium** | 22 | 0.09 | 0.30 | -0.99 | 0.38 |
| **Low** | 18 | 0.14 | 0.13 | -0.09 | 0.52 |

*Source: Authors' calculations.*

**Table 10: GEP Index by HDI groups (sample of 83 countries with GEP Index positive)**

| *HDI group* | *Observations* | *Mean* | *Std. Dev.* | *Min* | *Max* |
|---|---|---|---|---|---|
| **Very high** | 34 | 0.18 | 0.12 | 0.02 | 0.49 |
| **High** | 14 | 0.20 | 0.14 | 0.06 | 0.55 |
| **Medium** | 18 | 0.19 | 0.13 | 0.00 | 0.38 |
| **Low** | 17 | 0.16 | 0.12 | 0.02 | 0.52 |

*Source: Authors' calculations.*

**Table 11: GEP Index by HDI groups (sample of 22 countries with GEP Index negative)**

| *HDI group* | *Observations* | *Mean* | *Std. Dev.* | *Min* | *Max* |
|---|---|---|---|---|---|
| **Very high** | 3 | -0.09 | 0.07 | -0.16 | -0.05 |
| **High** | 14 | -0.13 | 0.13 | -0.40 | -0.01 |

[54]The sample of 105 countries with a value of the GEP index is divided across HDI groups as follows: 37 countries for Very High, 28 countries for High, 22 countries for Medium, and 18 countries for Low.

| | | | | | |
|---|---|---|---|---|---|
| **Medium** | 4 | -0.37 | 0.43 | -0.99 | -0.05 |
| **Low** | 1 | -0.09 | . | -0.09 | -0.09 |

*Source: Authors' calculations.*
*Note: The four categories of human development achievement used in Tables 8a-c are obtained using the cut-offs: 0.800 for Very High, 0.700 for High, and 0.550 for Medium. See UNDP (2014).*

Tables 12-14 below present the results for the seven regions in which the sample of 105 countries is divided[55]. The first table (12) shows the results for the entire sample of 105 countries categorized by region, Table 13 shows the results for the 83 countries with positive GEP Index value, while Table 14 shows the results for the 22 countries with negative GEP Index values.

**Table 12: GEP Index by region (sample of 105 countries)**

| *Region* | *Obs* | *Mean* | *Std. Dev.* | *Min* | *Max* |
|---|---|---|---|---|---|
| **MENA** | 6 | 0.11 | 0.08 | 0.00 | 0.23 |
| **EAP** | 8 | -0.08 | 0.42 | -0.99 | 0.38 |
| **ECA** | 13 | 0.10 | 0.23 | -0.28 | 0.55 |
| **LAC** | 19 | 0.12 | 0.18 | -0.32 | 0.38 |
| **South Asia** | 5 | 0.16 | 0.10 | 0.07 | 0.28 |
| **Sub-Saharan Africa** | 17 | 0.12 | 0.16 | -0.19 | 0.52 |
| **Developed countries** | 37 | 0.14 | 0.17 | -0.40 | 0.49 |

*Source: Authors' calculations.*
*Note: MENA: Middle East and North Africa; EAP: East Asia and the Pacific; ECA: Europe and Central Asia; LAC: Latin America and the Caribbean; "Developed" are all countries with very high HDI (> 0.8) that do not belong to any of these regions.*

**Table 13: GEP Index by regions (sample of 83 countries with GEP Index positive)**

| *Region* | *Obs* | *Mean* | *Std. Dev.* | *Min* | *Max* |
|---|---|---|---|---|---|
| **MENA** | 6 | 0.11 | 0.08 | 0.00 | 0.23 |
| **EAP** | 3 | 0.27 | 0.10 | 0.21 | 0.38 |
| **ECA** | 8 | 0.24 | 0.17 | 0.06 | 0.55 |
| **LAC** | 14 | 0.20 | 0.11 | 0.06 | 0.38 |
| **South Asia** | 5 | 0.16 | 0.10 | 0.01 | 0.28 |
| **Sub-Saharan Africa** | 15 | 0.15 | 0.13 | 0.01 | 0.52 |
| **Developed countries** | 32 | 0.18 | 0.12 | 0.02 | 0.49 |

*Source: Authors' calculations.*
*Note: MENA: Middle East and North Africa; EAP: East Asia and the Pacific; ECA: Europe and Central Asia; LAC: Latin America and the Caribbean; "Developed" are all countries with very high HDI (> 0.8) that do not belong to any of these regions.*

**Table 14: GEP Index by regions (sample of 22 countries with GEP Index negative)**

| *Region* | *Obs* | *Mean* | *Std. Dev.* | *Min* | *Max* |
|---|---|---|---|---|---|
| **EAP** | 5 | -0.29 | 0.40 | -0.99 | -0.01 |
| **ECA** | 5 | -0.13 | 0.12 | -0.28 | -0.03 |
| **LAC** | 5 | -0.11 | 0.13 | -0.32 | -0.01 |
| **Sub-Saharan Africa** | 2 | -0.14 | 0.07 | -0.19 | -0.09 |
| **Developed countries** | 5 | -0.14 | 0.15 | -0.40 | -0.04 |

*Source: Authors' calculations.*

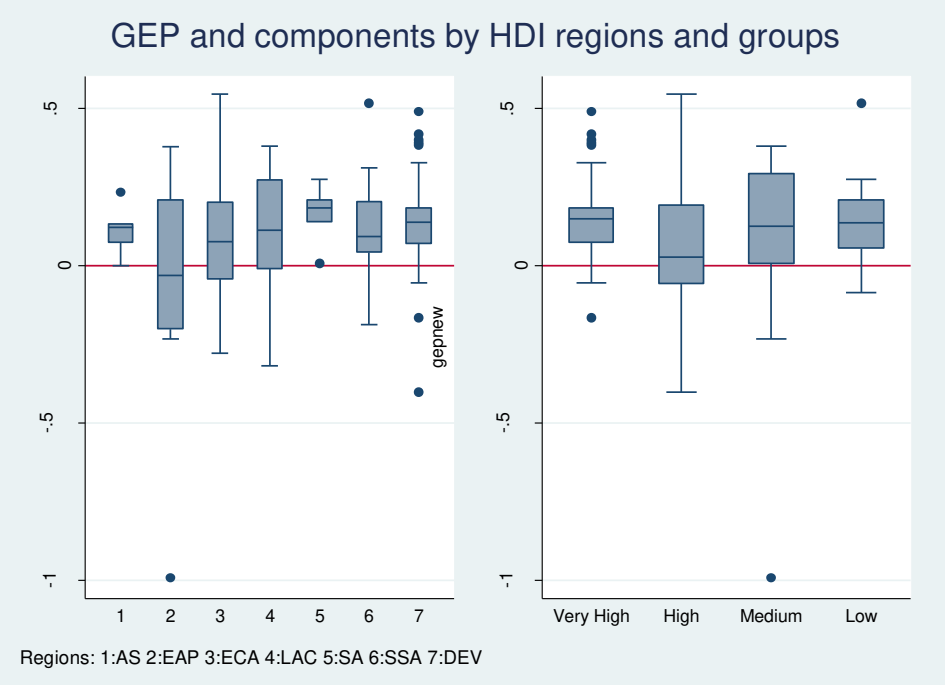
[55] The sample of 105 countries with a value of the GEP index is divided across regions as follows: 6 countries for Middle East and North Africa; 8 countries for East Asia and the Pacific; 13 countries for Europe and Central Asia; 19 countries for Latin America and the Caribbean; 5 countries for South Asia; 17 countries for Sub-Saharan Africa; and 37 countries considered developed (all countries with HDI very high, greater than .8).

*Note: No country in the Middle East and North Africa and South Asia has a negative GEP Index. EAP: East Asia and the Pacific; ECA: Europe and Central Asia; LAC: Latin America and the Caribbean; "Developed" are all countries with very high HDI (> 0.8) that do not belong to any of these regions.*

The results across development groups and geographical regions reveal important differences. The left figure in Figure 10 shows how results differ by region. East Asia and the Pacific, Europe and Central Asia are the regions where results are rather dissimilar in terms of progress. East Asia and the Pacific is the region where most countries experienced regress (negative GEP Index). This result is mostly driven by the significant increase in the per capita material footprint of these countries. South Asian and Middle East and North African countries are leading green economy progress (all of them have a positive GEP Index value). Half of the countries in Latin America and the Caribbean, Sub-Saharan Africa, and the very high HDI countries have made green economy progress. It is interesting to note that the best performing Sub-Saharan African country outperforms the best performing South Asian and Middle East and North African country in terms of green economy progress.

In terms of HDI group variations (see right figure of Figure 10), results are particularly mixed for the high HDI group, in which 50 per cent of countries show a regress (with an average value of -0.13 for the countries experiencing regress and a median value for the group of 0.03). However, the majority of countries in the other HDI groups experienced progress: 34 out 37 countries in the very high HDI group, 18 out of 22 countries in the medium HDI group and almost all countries (17 out of 18) in the low HDI group (with median values of the GEP Index of 0.15, 0.13 and 0.14, respectively).

**Figure 10: GEP Index results by regions and HDI groups**




*Source: Authors' calculations.*
*Note: The four categories of human development achievement are obtained as the HDI values calculated using the cut-offs: 0.800 for Very High, 0.700 for High, and 0.550 for Medium*[56].

[56] The regions in Figure 11 are: 1) Middle East and North Africa; 2) East Asia and the Pacific; 3) Europe and Central Asia; 4) Latin America and the Caribbean; 5) South Asia; 6) Sub-Saharan Africa; and 7) All countries with HDI very high (HDI>0.8) that do not belong to any of these regions (UNDP, 2014).

### 3.2.1 The GEP Index for PAGE countries

This section presents the results for the GEP Index for 8 of the 11 PAGE countries[57] for which data was available. These countries are Brazil, China, Ghana, Kyrgyz Republic, Mongolia, Peru, Senegal and South Africa. Results presented in Table 15 and Figure 11 for the 8 PAGE countries show that Peru is the country with the highest GEP Index (0.30) of the group[58]. In addition, Senegal, Kyrgyz Republic and Ghana also have a positive GEP Index (0.13, 0.12 and 0.04, respectively).

Mongolia is the country with the most significant regress in the entire sample of 105 countries (GEP Index of -0.99); this is mostly driven by a significant regress on material footprint. Material footprint is also the driving factor responsible for China's and Brazil's regress (GEP Index of -0.17, -0.01, respectively). By contrast, increasing income inequality is mainly driving South Africa's poor performance on green economy progress (GEP Index of -0.19).

[57] The 11 countries that currently participate in the Partnership for Action on Green Economy (PAGE) are Barbados, Brazil, Burkina Faso, China, Ghana, Kyrgyz Republic, Mauritius, Mongolia, Peru, Senegal and South Africa.

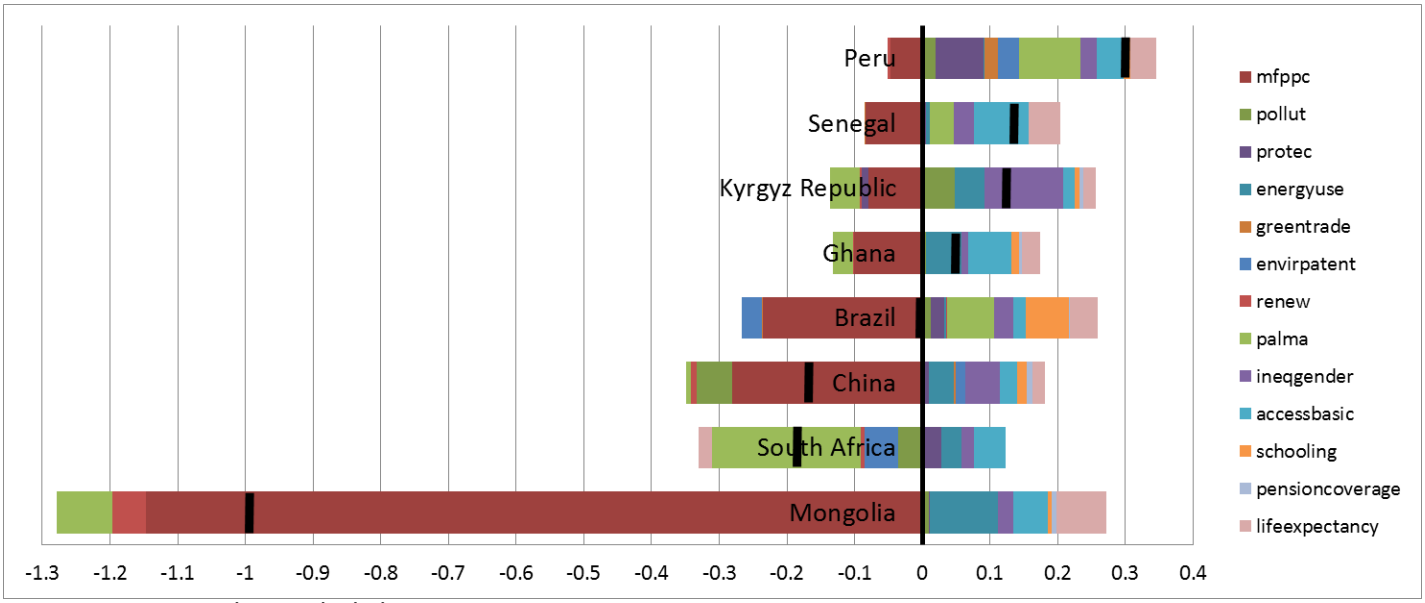
[58] The abbreviations used in Figure 12 correspond to the following labels: mfpcc = material footprint; pollut = air pollution; protec = protected areas; energyuse = energy use; greentrade = green trade; envirpatent = environmental patents; renew = renewable energy; palma = Palma ratio; ineqgender = gender inequality; accessbasic = access to basic services; schooling = mean years of schooling; pensioncoverage = pension coverage; lifeexpectancy = life expectancy.

**Table 15: GEP Index and progress on individual indicators for PAGE countries**

| Country | Material Footprint | Air pollution | Protected area | Energy use | Green trade | Environmental Patents | Renewable Energy | Palma ratio | Gender Inequality | Access to Basic Services | Mean Years of Schooling | Pension Coverage | Life Expectancy | GEP Index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mongolia | **-13.60** | **0.09** | **0.01** | **0.66** | **-** | **-** | **-0.51** | **-1.48** | **0.29** | **0.53** | **0.33** | **1.00** | **0.66** | -0.99 |
| | *0.08* | *0.11* | *0.14* | *0.15* | *-* | *-* | *0.10* | *0.06* | *0.08* | *0.10* | *0.06* | *0.01* | *0.11* | |
| South Africa | **0.03** | **-0.59** | **0.11** | **0.25** | **-0.05** | **-0.67** | **-0.16** | **-2.04** | **0.27** | **0.71** | **0.27** | **-** | **-0.21** | -0.19 |
| | *0.14* | *0.06* | *0.21* | *0.11* | *0.01* | *0.07* | *0.03* | *0.10* | *0.07* | *0.06* | *0.04* | *-* | *0.09* | |
| China | **-3.87** | **-0.16** | **0.04** | **0.52** | **0.23** | **0.42** | **-0.51** | **-0.19** | **1.46** | **0.64** | **0.41** | **0.66** | **0.41** | -0.17 |
| | *0.07* | *0.33* | *0.26* | *0.07* | *0.01* | *0.04* | *0.02* | *0.04* | *0.03* | *0.04* | *0.04* | *0.01* | *0.04* | |
| Brazil | **-1.30** | **0.23** | **0.19** | **0.05** | **-0.03** | **-0.46** | **0.12** | **0.45** | **0.31** | **0.28** | **0.72** | **0.16** | **0.43** | -0.01 |
| | *0.18* | *0.06* | *0.10* | *0.06* | *0.02* | *0.07* | *0.01* | *0.15* | *0.09* | *0.07* | *0.09* | *0.01* | *0.09* | |
| Ghana | **-2.85** | **0.04** | **0.00** | **0.71** | **0.01** | **-** | **-0.34** | **-0.58** | **0.12** | **0.63** | **0.24** | **0.07** | **0.34** | 0.04 |
| | *0.04* | *0.14* | *0.26* | *0.07* | *0.05* | *-* | *0.01* | *0.05* | *0.07* | *0.10* | *0.06* | *0.08* | *0.08* | |
| Kyrgyz Republic | **-0.68** | **0.27** | **-0.04** | **0.38** | **-** | **-** | **-0.22** | **-0.89** | **1.22** | **0.26** | **0.17** | **1.00** | **0.20** | 0.12 |
| | *0.12* | *0.17* | *0.23* | *0.12* | *-* | *-* | *0.01* | *0.05* | *0.09* | *0.06* | *0.04* | *0.01* | *0.09* | |
| Senegal | **-1.96** | **0.01** | **0.03** | **0.10** | **-0.03** | **-** | **0.00** | **0.48** | **0.31** | **0.74** | **0.20** | **-** | **0.48** | 0.13 |
| | *0.03* | *0.31* | *0.07* | *0.05* | *0.03* | *-* | *0.01* | *0.06* | *0.08* | *0.09* | *0.18* | *-* | *0.08* | |
| Peru | **-0.28** | **0.24** | **0.31** | **0.04** | **0.24** | **0.55** | **-0.33** | **1.02** | **0.39** | **0.61** | **0.29** | **-** | **0.53** | 0.30 |
| | *0.17* | *0.08* | *0.23* | *0.03* | *0.08* | *0.06* | *0.01* | *0.09* | *0.06* | *0.06* | *0.05* | *-* | *0.07* | |

*Source: Authors' calculations.*
*Note: Progress in bold. Normalized weights in italics. Dashes indicate missing values.*

**Figure 11: GEP Index and progress on individual indicators for PAGE countries**

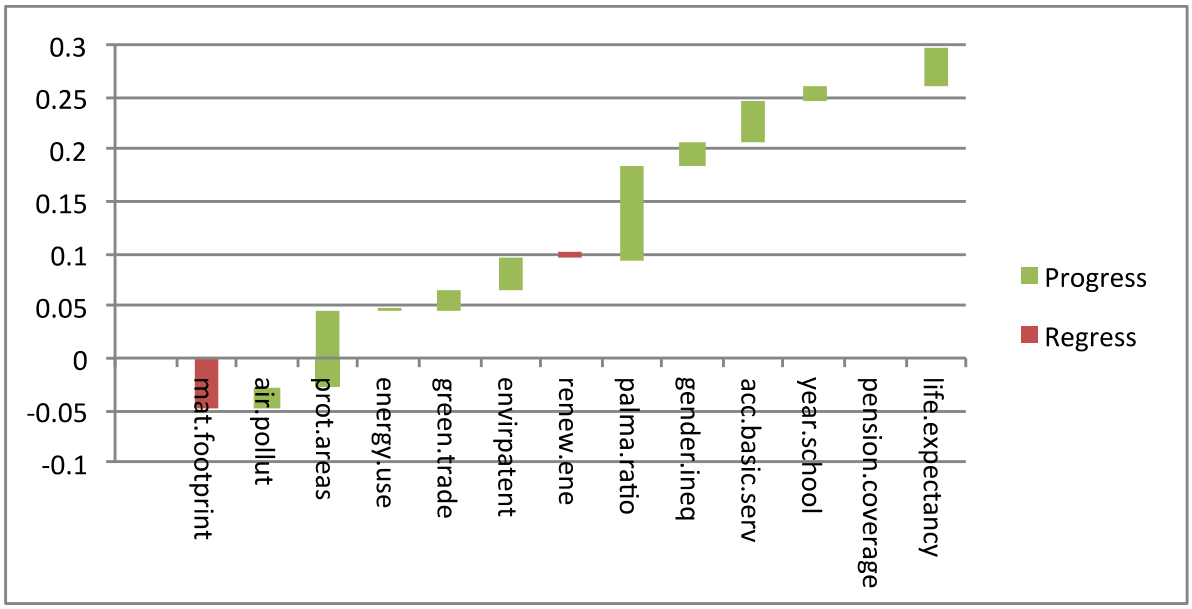



*Source: Authors' calculations.*
*Note: The coloured areas represent the unweighted progress in each indicator. The black bar ( ) indicates the value of the GEP Index.*

While it is relatively easy to identify from Figure 11 the indicators driving negative GEP Index scores in Mongolia, China, Brazil and South Africa, it is less obvious to identify the positive driving factors in Peru, Senegal, Kyrgyz Republic and Ghana. To do so, Figures 12a-h[59] present waterfall figures for each of the PAGE countries, and disaggregate the weighted effect of each indicator in the final GEP score. Notice that regress (in red) makes the final value go down, while progress (in green) makes the final value go up[60].

**Figures 12a-h: Waterfall figures for PAGE Countries**

**Figure 12a: Waterfall figures for Peru**

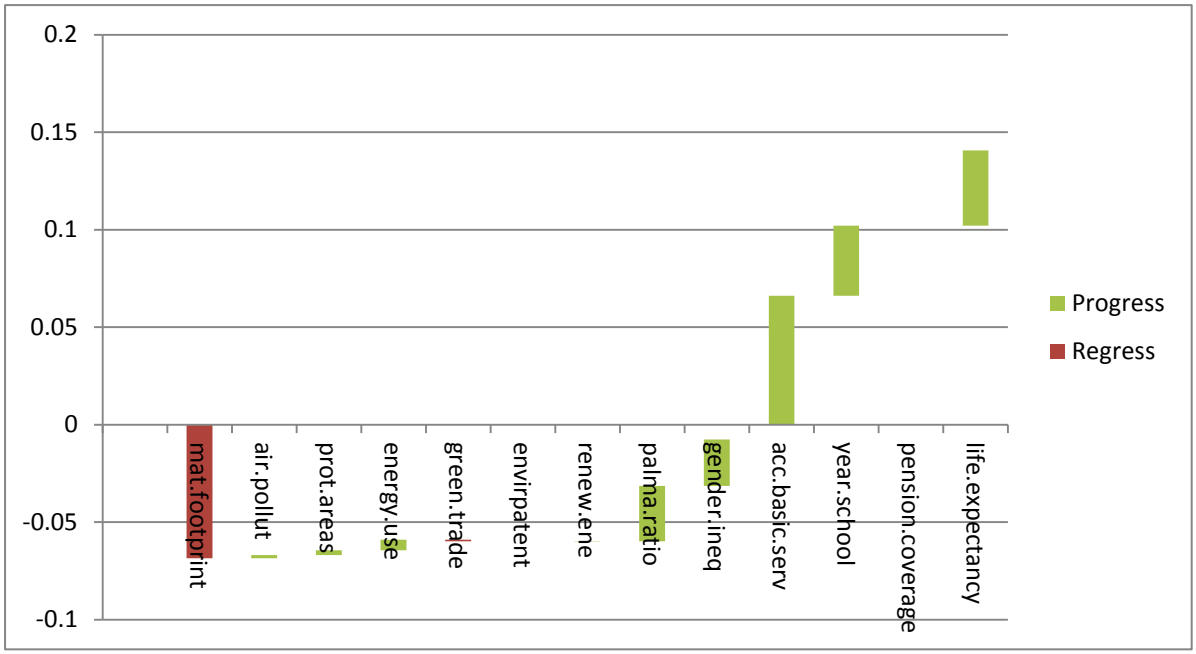



*Source: Authors' calculations.*

[59] The abbreviations used in Figures 13a-h correspond to the following labels: mat.footprint = material footprint; air.pollut = air pollution; prot.areas = protected areas; energy.use = energy use; green.trade = green trade; envir.patent = environmental patents; renew.ene = renewable energy; palma.ratio = Palma ratio; gender.ineq = gender inequality; acc.basic.serv = access to basic services; year.school = mean years of schooling; pension.coverage = pension coverage; life.expectancy = life expectancy.

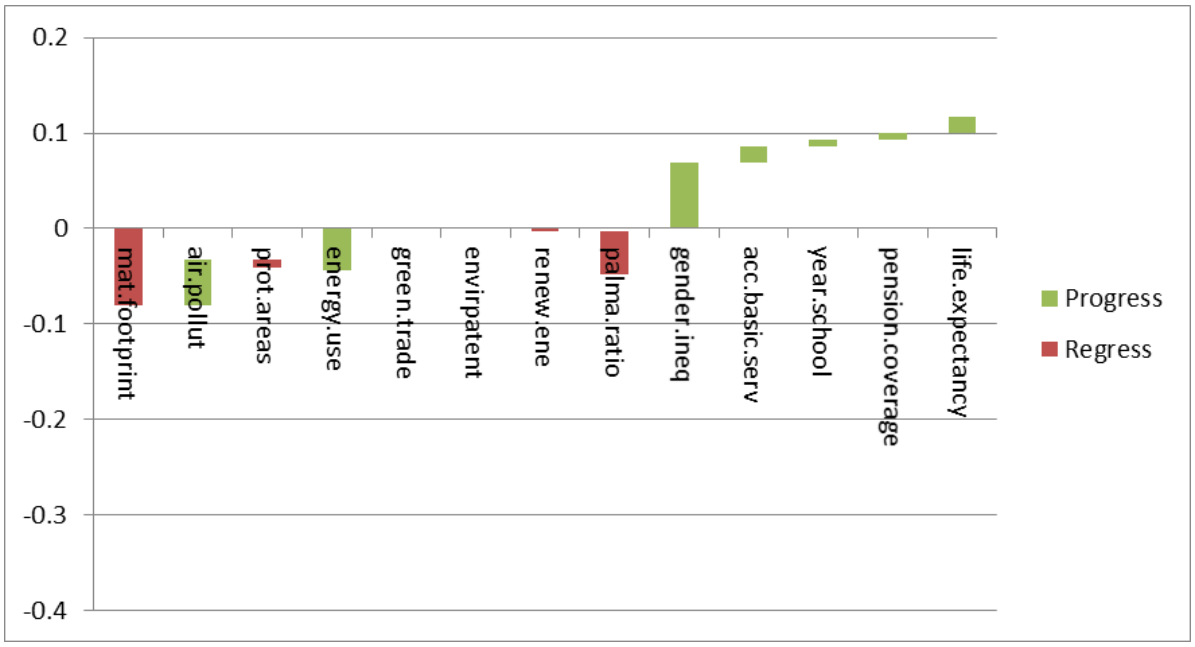
[60] This is because a waterfall chart is a form of data visualization that helps in understanding the cumulative effect of sequentially introduced positive or negative values.

**Figure 12b: Waterfall figures for Senegal**



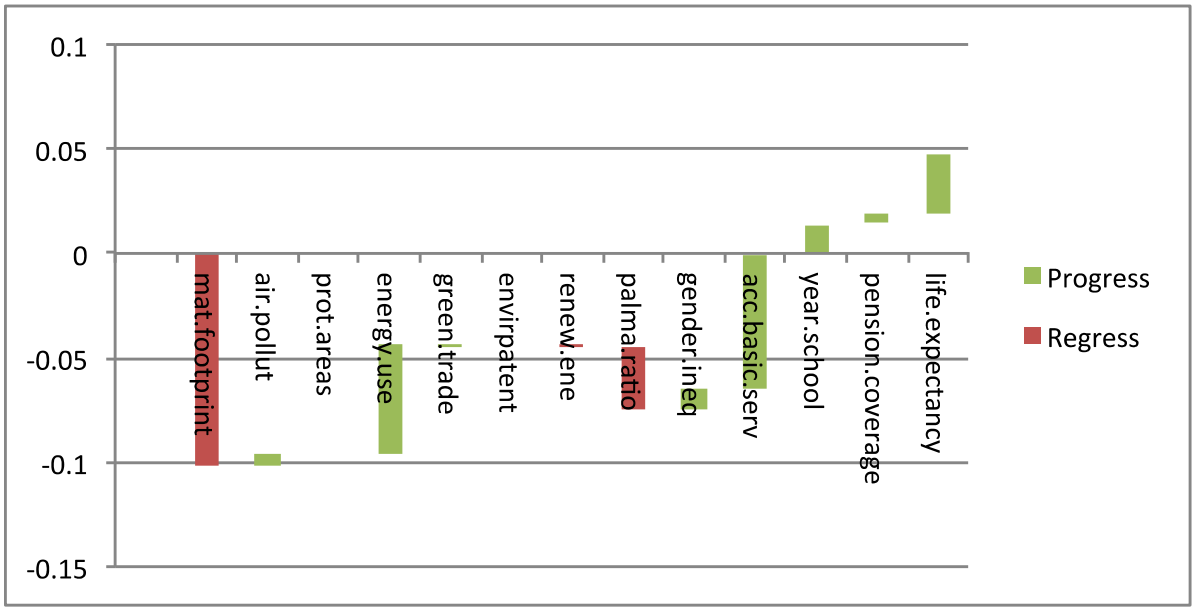

*Source: Authors' calculations.*

**Figure 12c: Waterfall figures for Kyrgyz Republic**




*Source: Authors' calculations.*

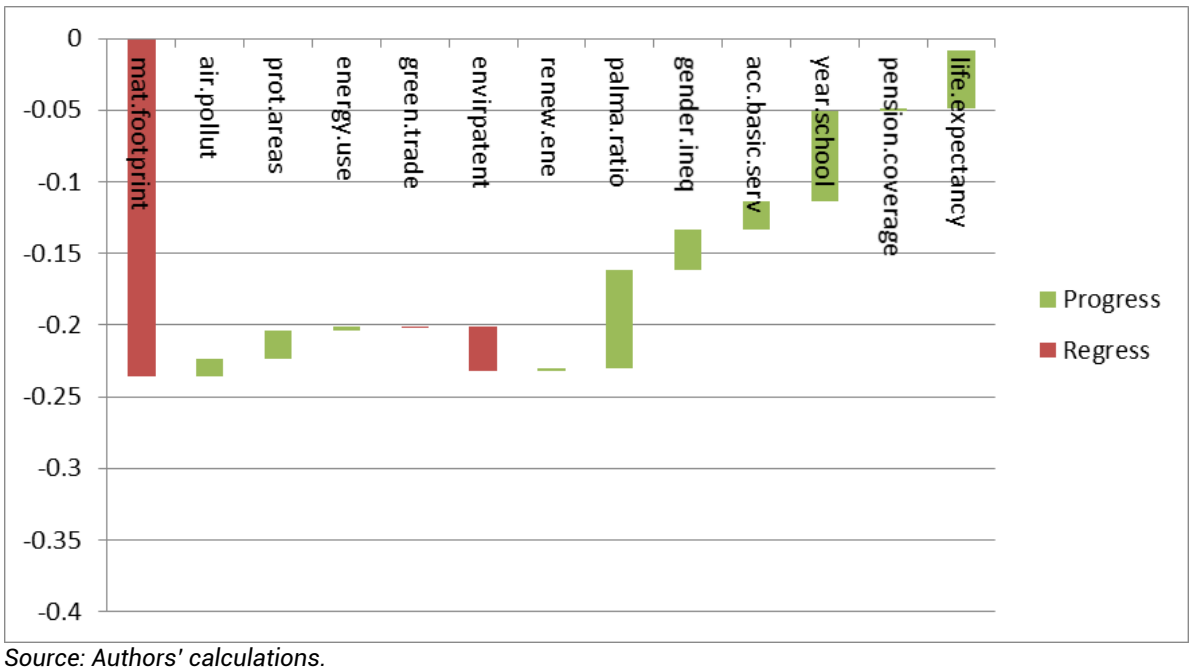
**Figure 12d: Waterfall figures for Ghana**




*Source: Authors' calculations.*

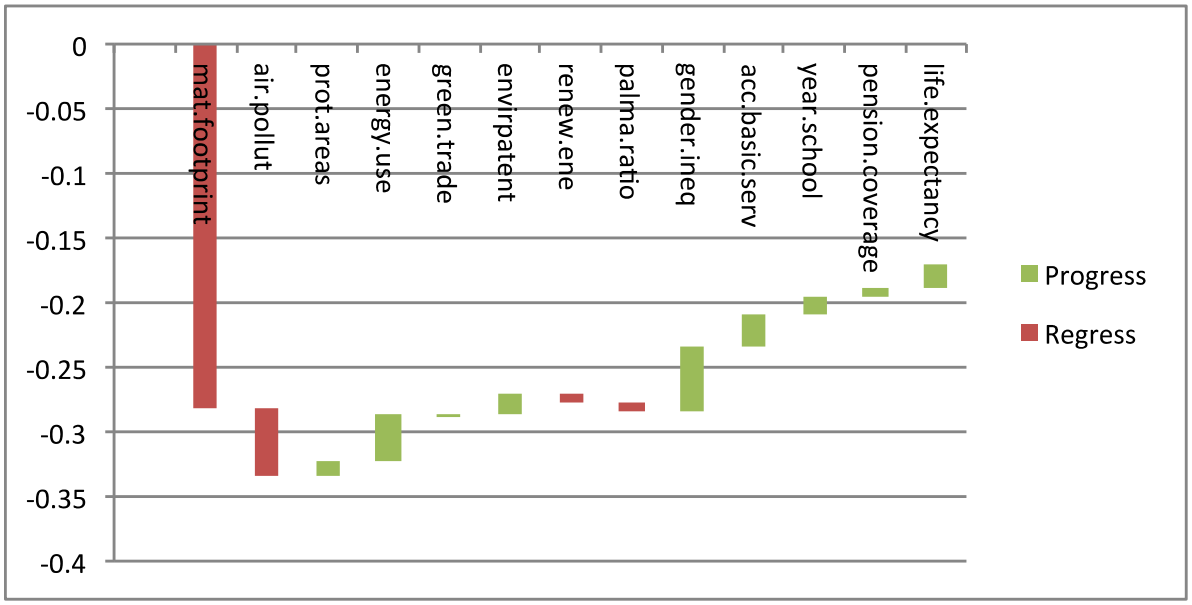
Figures 12a and 12b show that Peru and Senegal have made progress across most indicators, except material footprint per capita and renewable energy (Peru) and material footprint per capita and green trade (Senegal). Peru has made the most progress in increasing protected areas and reducing inequality, while Senegal has progressed most in improving access to basic services and raising life expectancy. Besides achieving an increase in material footprint, Kyrgyz Republic and Ghana (Figures 12c and 12d) have seen their income inequality rise. However, regress in these areas is compensated by the progress made across other indicators, notably following improvements in energy use and access to basic services in the case of Ghana and gender inequality in the case of Kyrgyz Republic.

**Figure 12e: Waterfall figures for Brazil**



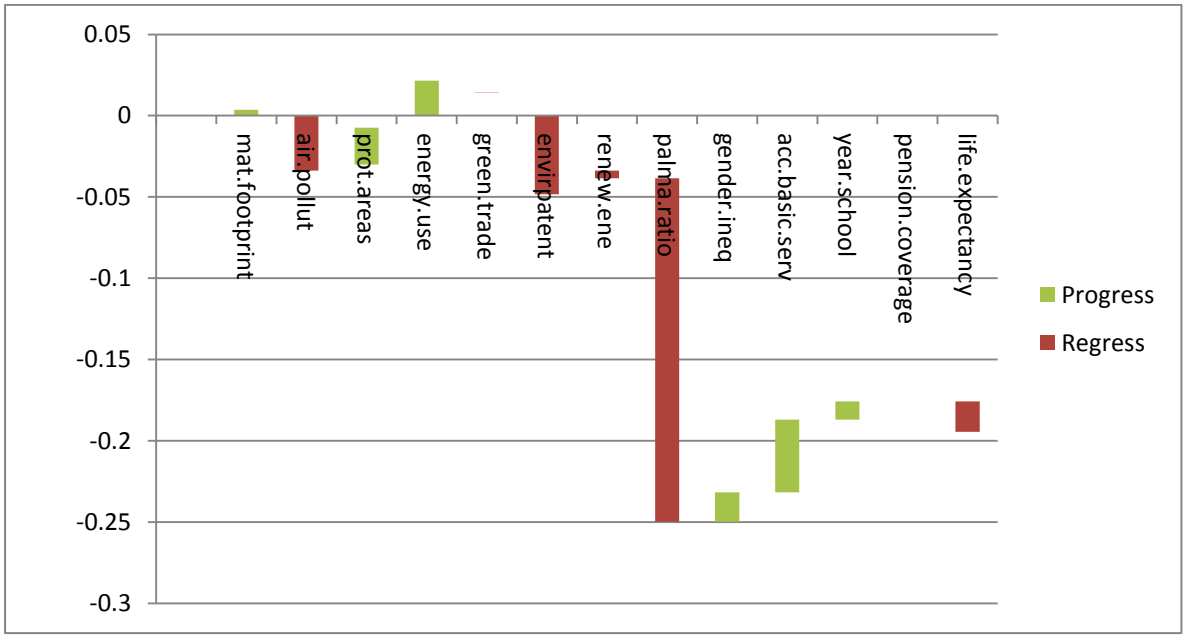

*Source: Authors' calculations.*

**Figure 12f: Waterfall figures for China**



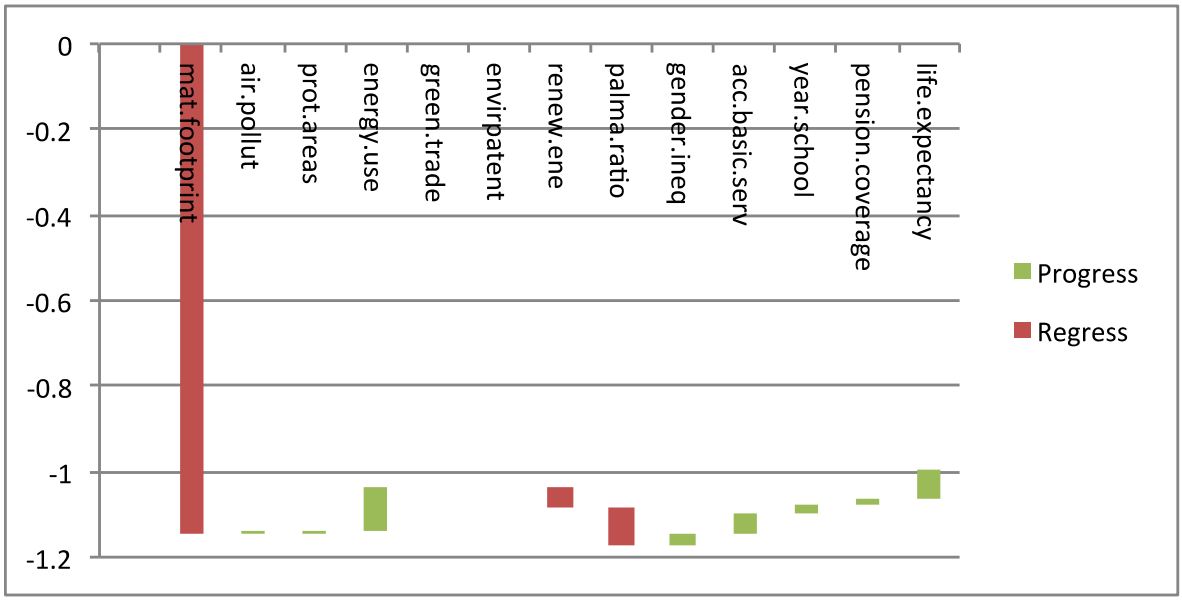

*Source: Authors' calculations.*

**Figure 12g: Waterfall figures for South Africa**




*Source: Authors' calculations.*

Figure 12h: Waterfall figures for Mongolia




*Source: Authors' calculations.*

Figures 12e-h present the disaggregated results for Brazil, China, South Africa and Mongolia. As previously identified in Figure 11, material footprint is driving the results seen in Brazil, China and Mongolia, and the dominating negative effect of rising income inequality has resulted in a negative GEP score for South Africa. Despite these negative GEP scores, China has made progress in nine out of 13 indicators, with highest progress witnessed in reducing energy use and gender inequality. Meanwhile, Brazil has seen its most major improvement in reducing income inequality and increasing education, and witnesses progress in 10 out of 13 indicators. South Africa has progressed in half of its indicators (six out of 12), with main improvement seen in access to basic services. Mongolia, despite having the highest negative GEP value, has made progress in eight out of 11 indicators, with major improvement in reducing energy use.

## 3.3 PROGRESS WITHIN PLANETARY BOUNDARIES

This section presents progress in the dashboard indicators (using the same methodology used to measure progress for an individual indicator) for the 105 countries for which it was possible to calculate the GEP Index[61].

Table 16 shows that, **on average, countries are experiencing regress in the dashboard indicators. In other words, countries are on average exceeding planetary boundaries.** The only indicator for which the majority of countries are making progress is the Inclusive Wealth Index, with an average progress of 0.31. One striking result presented in Table 16 below is that, across all indicators, some countries are experiencing significant regress (progress lower than -1). In addition, no country has a progress value greater than one for greenhouse gas emissions, one of the areas for which there are significant global concerns in terms of environmental sustainability (Rockstrom, J. et al., 2009).

Table 16: Summary of dashboard indicators (sample of countries with GEP Index)

| *Indicator* | *Obs.* | *Mean* | *Std. Dev.* | *Min* | *Max* |
|---|---|---|---|---|---|
| **Freshwater withdrawal** | 79 | -0.07 | 1.65 | -10.93 | 1.28 |

[61] See Annex IV for complete results of the dashboard indicators for the 105 countries in the sample.

| | | | | | |
|---|---|---|---|---|---|
| **Greenhouse gas emissions** | 104 | -0.31 | 0.68 | -3.74 | 0.84 |
| **Emissions of nitrogen** | 102 | -0.35 | 1.11 | -5.07 | 1.48 |
| **Land use** | 104 | -0.31 | 1.03 | -4.24 | 1.54 |
| **Ecological Footprint** | 92 | -0.34 | 0.82 | -4.95 | 1.02 |
| **Inclusive Wealth Index** | 100 | 0.31 | 0.52 | -1.11 | 1.84 |
| **Inclusive Wealth Index (Natural Capital)** | 100 | -5.84 | 7.48 | -26.41 | 5.21 |

*Source: Authors' calculations.*

Table 17 shows that only 40 out of 104 countries (38 per cent) are making progress with respect to greenhouse gas emissions. Similarly, for Ecological Footprint, only 32 (35 per cent) out of 92 countries are making progress. The only two indicators for which the number of countries making progress is greater than those making regress are the Inclusive Wealth Index and freshwater withdrawal (for the latter indicator average progress was negative, as shown in Table 16). However, results show that the majority of counties are regressing in the natural capital component of the Inclusive Wealth Index[62]. This regress is consistent with the negative average value in Table 16 and with the regress found for the other dashboard indicators[63].

**Table 17: Number of countries making progress/regress in dashboard indicators**

| *Indicator* | *Obs.* | *Progress* | *Regress* |
|---|---|---|---|
| **Freshwater withdrawal** | 79 | 60 | 19 |
| **Greenhouse gas emissions** | 104 | 40 | 64 |
| **Emissions of nitrogen** | 102 | 49 | 53 |
| **Land use** | 104 | 49 | 55 |
| **Ecological Footprint** | 92 | 32 | 60 |
| **Inclusive Wealth Index** | 100 | 73 | 27 |
| **Inclusive Wealth Index (Natural Capital)** | 100 | 13 | 87 |

*Source: Authors' calculations.*

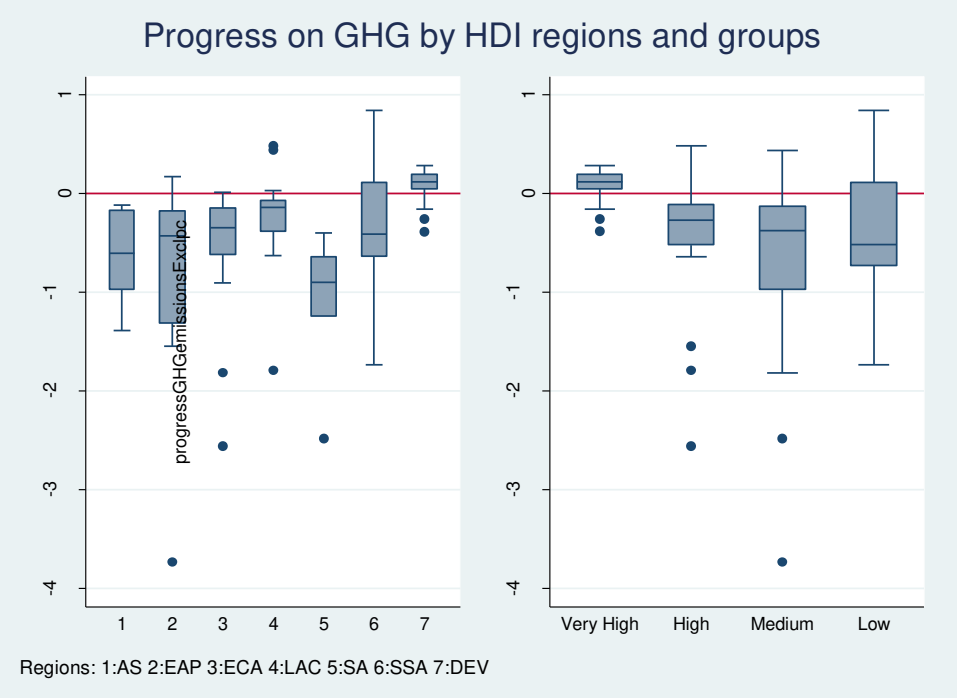
Figure 13 below shows the progress made on the dashboard indicators by HDI group and region. Results show major heterogeneities between regions and across indicators. As can be seen in this figure, there are important differences between group results for indicators for which the majority of countries are regressing, such as greenhouse gas emissions and Ecological Footprint. In the case of greenhouse gas emissions, most of the progress made is concentrated in very highly developed countries, while for Ecological Footprint, the worst performance is concentrated in Europe and Central Asia. Other patterns of heterogeneity can be observed for some indicators, such as the Inclusive Wealth Index, where most of the regions experienced progress, while sub-Saharan African countries experienced regress.

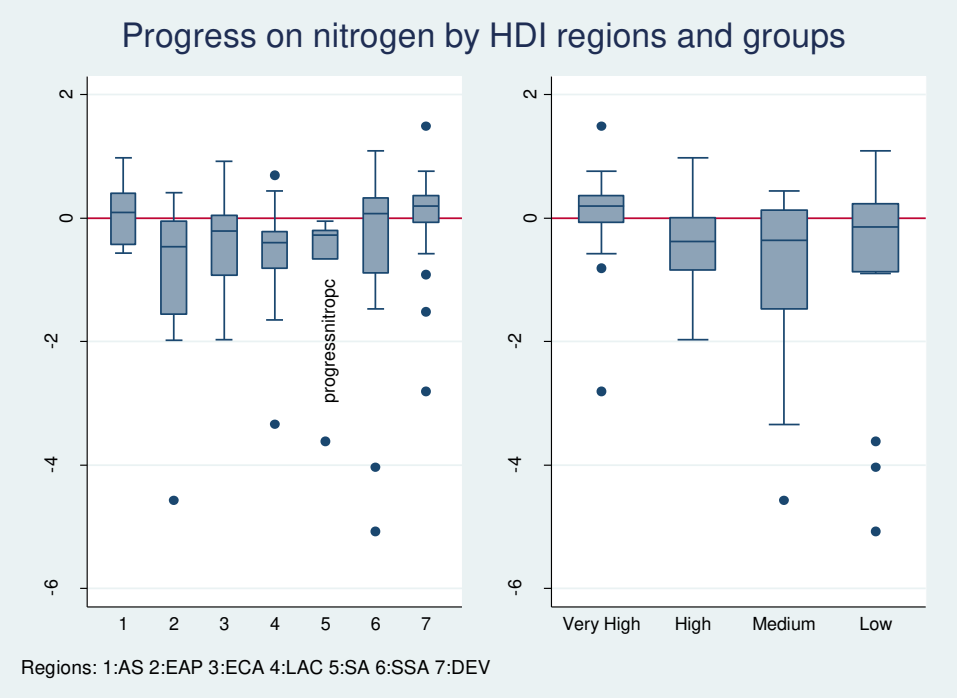
In terms of development, there are also differences across HDI groups. Most countries in the different HDI groups experienced progress in freshwater withdrawal (reducing freshwater withdrawal).[64] However, the majority of countries across HDI groups experienced regress in their Ecological

[62] The IWI combines manufactured capital, human capital and natural capital, the latter of which is described in terms of sub-soil resources, ecosystems, and the atmosphere (UNU-IHDP/UNEP, 2014).
[63] Results show that some countries are significantly progressing on the Inclusive Wealth Index but, at the same time, they are also significantly regressing in the IWI's natural capital component. For example, China and India have respective values of 1.84 and 0.27 for progress on the IWI, but values of -7.82 and -78.94 respectively when only the natural capital component of the IWI is considered.
[64] In the high HDI countries group, the number of countries with progress and regress were equal (nine countries each).

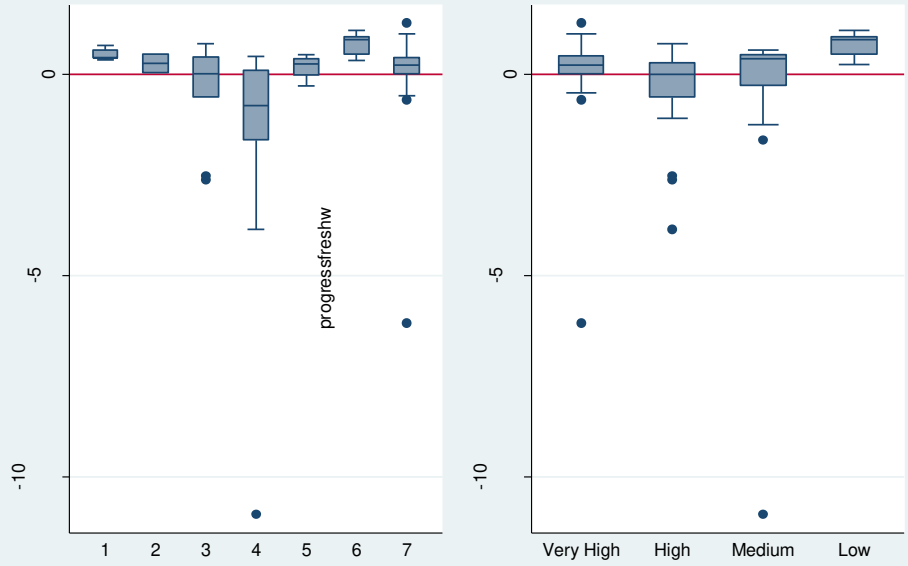
Footprint. With respect to the share of land used for permament crops, progress was mostly achieved in the very high HDI group, while regress was mostly seen in the medium and low HDI groups (and there are mixed results for the high HDI group).

**Figure 13: Progress on dashboard indicators by regions and HDI groups**



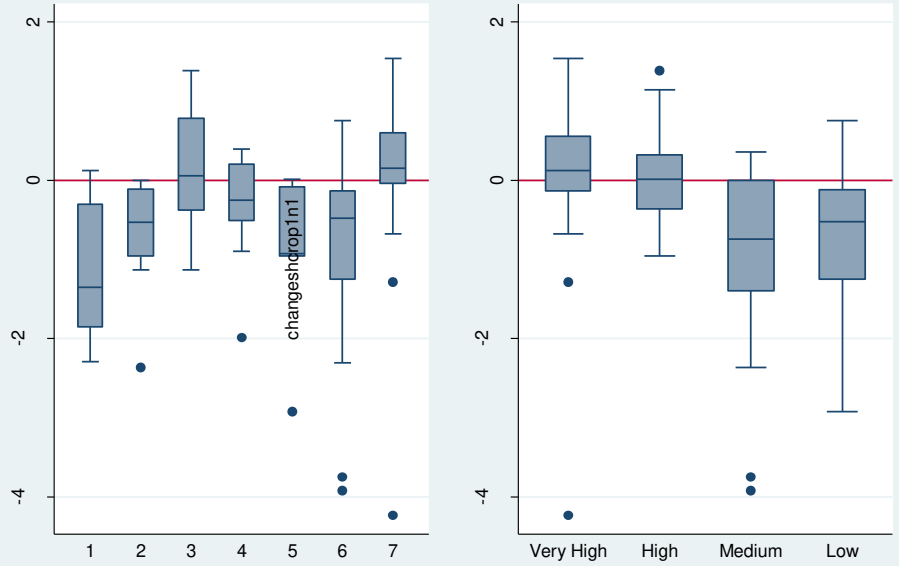



## Progress on Freshwater by HDI regions and groups

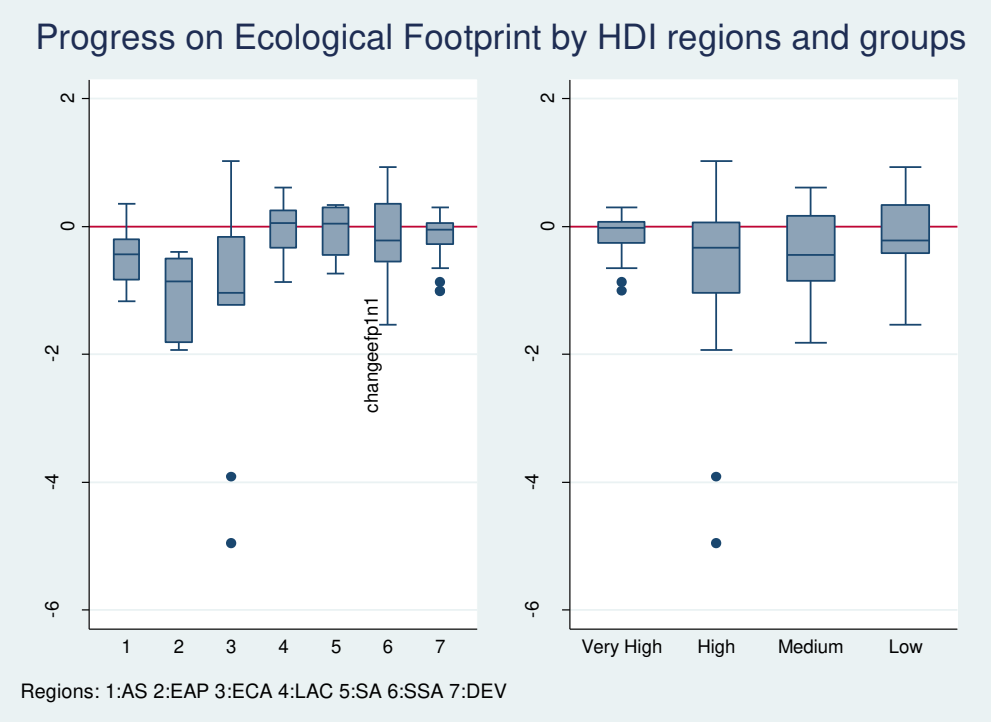


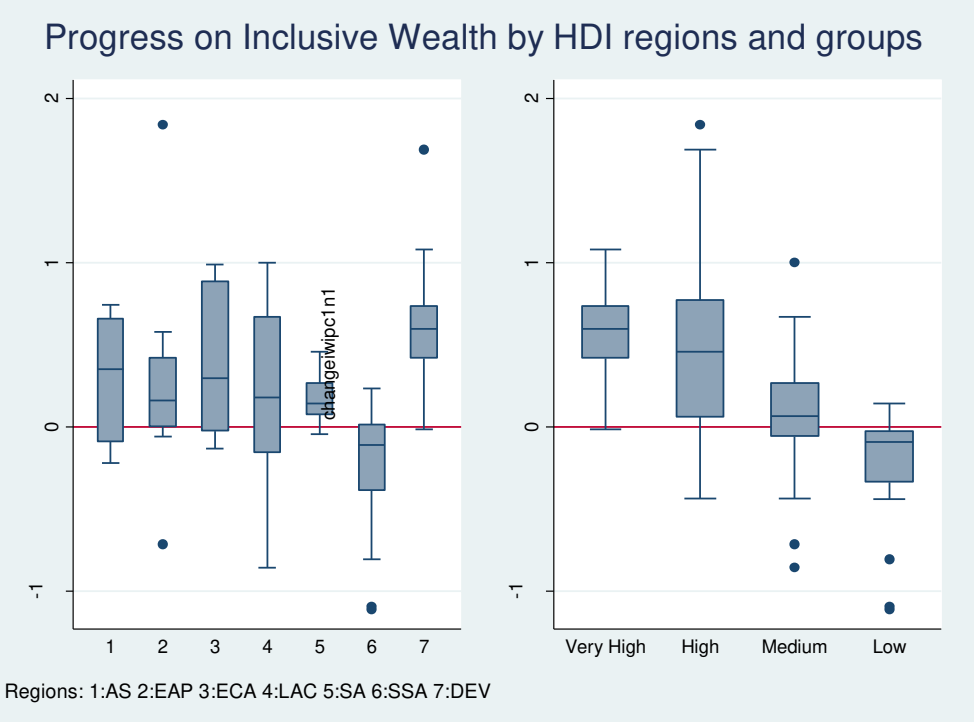

Regions: 1:AS 2:EAP 3:ECA 4:LAC 5:SA 6:SSA 7:DEV

## Progress on Permanent crop by HDI regions and groups




Regions: 1:AS 2:EAP 3:ECA 4:LAC 5:SA 6:SSA 7:DEV




*Source: Authors' calculations.*

*Note: The four categories of human development achievement used in Figure 13 are obtained using the cut-offs: 0.800 for Very High, 0.700 for High, and 0.550 for Medium*[65].

[65] The regions in Figure 13 are: 1) Middle East and North Africa; 2) East Asia and the Pacific; 3) Europe and Central Asia; 4) Latin America and the Caribbean; 5) South Asia; 6) Sub-Saharan Africa; and 7) All countries with HDI very high (HDI>0.8) that do not belong to any of these regions (UNDP, 2014).

## 3.4 COUNTRY RANKING (GEP+) USING THE GEP INDEX AND THE DASHBOARD

As discussed in PAGE (2017), the Protective Criterion can be used to produce a ranking of all GEP Index-dashboard profiles, but not to combine the GEP Index and dashboard information into a synthetic index. Due to sample restrictions, only the results for greenhouse gas emissions, nitrogen emissions and the share of land used as permanent crops will be presented in this section as they make it possible to have a sample of 100 countries for the time period chosen (2004 – 2014)[66]. The full ranking results are presented in Annex III.D.

**Results from the GEP Index and the three dashboard sustainability indicators show that only 17 countries in our sample were able to achieve positive progress (or no regress) in all the Dashboard of Sustainability indicators as well as a positive GEP Index score.** Comparison across countries however, seems to be more valid when we concentrate the comparison among similar countries. This is why the Protective Criterion (Table 18) presents the results for the top 4 countries per HDI group, showing how the Protective Criterion works in determining the ranking within each HDI group [67, 68]. In the case of the Very High HDI group, all 4 top countries have all indicators showing progress; Cyprus has the highest rank because its smallest progress in land use is higher than the lowest of any other country in this group. In the case of the High HDI group, Jamaica is the country with the highest ranking because it is the only country in this group with all indicators demonstrating progress. For the Medium HDI group, there is no country with progress in all indicators, but Dominican Republic is the top ranked country because its regress on greenhouse gas emissions is the smallest regress in all indicators that experience regress for countries in this group. Finally, for the Low HDI group, Zimbabwe is the country with the highest ranking because it is the only country in this group with all indicators showing positive or zero progress. The rest of the countries in this group have experienced regress in at least some indicator. The use of the Protective Criterion gives an intuitive answer to the question: which country is experiencing relatively higher overall progress? The Protective Criterion helps to understand the complexity of comparing countries in a multidimensional setting and has the advantage of synthesizing the information in a meaningful way by comparing those countries that have made the least progress in different areas.

[66] Freshwater withdrawal reduces the sample size to 74 countries.
[67] The sample of 100 countries is distributed across HDI groups as follows: 34 Very High, 27 High, 21 Medium, and 18 Low.
[68] Remember the values use to calculate the GEP+ are the GEP index multiplied by the average of $\hat{\pi}_j$across its indicators and a set of weighted progress of the dashboard $\langle \frac{dK_1}{dK_1^+}\hat{\pi}_1, \ldots, \frac{dK_J}{dK_J^+}\hat{\pi}_J \rangle$, see more PAGE (2017).

**Table 18: Rank GEP Index-dashboard profiles using the Protective Criterion (Top 4 countries per HDI group)**

| Rank | *Country* | *Progress Greenhouse gas emissions* | *Progress Nitrogen emissions* | *Progress Land use* | *GEP Index* | *Protective criterion* | *HDI group* |
|---|---|---|---|---|---|---|---|
| **1** | Cyprus | 0,5566 | 0,5971 | **0,1800** | 0,5862 | 0,1800 | Very High |
| **2** | Portugal | 0,9080 | 0,7315 | 0,1120 | **0,0999** | 0,0999 | Very High |
| **3** | Spain | 1,3180 | 1,7082 | **0,0873** | 0,2118 | 0,0873 | Very High |
| **4** | Italy | 0,9423 | 1,9024 | **0,0664** | 0,2598 | 0,0664 | Very High |
| **1** | Jamaica | 1,1022 | 0,4906 | 0,1682 | **0,1256** | 0,1256 | High |
| **2** | Azerbaijan | **-0,1942** | 0,0018 | 0,0010 | 0,2512 | -0,1942 | High |
| **3** | Jordan | **-0,2369** | 2,1228 | 0,0080 | 0,1523 | -0,2369 | High |
| **4** | Venezuela, RB | **-0,3027** | 0,3700 | 0,0227 | -0,0497 | -0,3027 | High |
| **1** | Dominican Republic | **-0,2539** | -0,2341 | 0,0000 | 0,2801 | -0,2539 | Medium |
| **2** | South Africa | **-0,3429** | 0,6564 | -0,0059 | -0,1977 | -0,3429 | Medium |
| **3** | Philippines | 0,1430 | 0,3621 | **-0,3572** | 0,1978 | -0,3572 | Medium |
| **4** | Honduras | **-0,3793** | 0,6753 | -0,1613 | 0,1329 | -0,3793 | Medium |
| **1** | Zimbabwe | 0,9104 | 0,2037 | **0,0000** | 0,0530 | 0,0000 | Low |
| **2** | Senegal | 0,2000 | 0,0080 | **-0,0052** | 0,1607 | -0,0052 | Low |
| **3** | Cameroon | 0,8613 | 0,0657 | **-0,1058** | 0,2448 | -0,1058 | Low |
| **4** | Mali | **-0,1776** | 1,7463 | -0,0061 | 0,1931 | -0,1776 | Low |

*Source: Authors' calculations.*

*Note: Observations in bold indicate the minimum value among all categories. The ranking presented in this table is based on the following four categories: (a) the GEP Index; (b) greenhouse gas emissions; (c) nitrogen emissions; and (d) the share of land used as permanent crops. If the categories considered change, the ranking would vary as well. Note that each dashboard indicator is multiplied by its weight, while the GEP Index is multiplied by the average of the weights (see PAGE (2017)).*

Table 19 presents the results for the eight PAGE countries in the sample[69]. The country with the highest overall ranking is South Africa, where its highest regress was on the share of land used for permanent crops. Progress in land use was also the lowest value for Senegal. Other interesting cases are Peru and Ghana (the last country in the overall ranking), because they show a positive GEP Index, but they regressed in all the dashboard sustainability indicators (in the case of Ghana the regress was very significant in the nitrogen emissions indicator).

**Table 19: Rank GEP Index-dashboard profiles using the Protective Criterion for PAGE countries (rank on HDI group, number of countries in group in parenthesis)**

| *Country* | *Progress Greenhouse gas emissions* | *Progress Nitrogen* | *Progress Land Use* | *GEP Index* | *Protective criterion* | *Rank* | ***HDI Group*** |
|---|---|---|---|---|---|---|---|
| **Senegal** | 0.200 | 0.008 | **-0.005** | 0.161 | -0.005 | 2 (18) | Low |
| **South Africa** | **-0.343** | 0.656 | -0.006 | -0.198 | -0.343 | 2 (21) | Medium |
| **Ghana** | -0.325 | -0.309 | **-0.527** | 0.050 | -0.527 | 13 (18) | Low |
| **Mongolia** | -0.647 | -0.764 | 0.000 | **-0.796** | -0.796 | 9 (21) | Medium |
| **Brazil** | -0.600 | **-1.290** | 0.006 | -0.006 | -1.290 | 17 (27) | High |
| **Kyrgyz Republic** | **-1.706** | 0.026 | -0.009 | 0.113 | -1.706 | 17 (21) | Medium |
| **Peru** | **-2.065** | -0.110 | -0.029 | 0.305 | -2.065 | 20 (27) | High |
| **China** | **-3.299** | -2.028 | -0.060 | -0.252 | -3.299 | 22 (27) | High |

*Source: Authors' calculations.*
*Note: Observations in bold indicate the minimum value among all categories. The ranking presented in this table is based on the following four categories: (a) the GEP Index; (b) greenhouse gas emissions; (c) nitrogen emissions; and (d) the share of land used as permanent crops. If the categories considered change, the ranking would vary as well. Note that each dashboard indicator is multiplied by its weight, while the GEP Index is multiplied by the average of the weights (see PAGE (2017)).*

## 3.5 FLEXIBILITY OF THE GEP FRAMEWORK FOR POLICY ANALYSIS

In this section, we present results focusing on one aspect of the multidimensionality of an Inclusive Green Economy in order to illustrate the flexibility of the Green Economy Progress measurement framework in the way results can be presented and analysed. To illustrate this aspect, we will concentrate on a very small set of indicators and present comparision across geographical regions. In particular, we will use one indicator included in the GEP Index and one indicator of the Dashboard of Sustainability: the share of renewable energy in total energy supply and greenhouse gas emissions, respectively. The value of the share of renewable energy in the total energy supply gives us an idea about the current greenness of an economy, while the value of greenhouse gas emissions provides a measure of the sustainability of the green progress made.

Tables 20a and 20b present the top two and bottom two countries respectively for each HDI group in terms of current greenness, i.e. share of renewable energy[70]. Tables 21a and 21b show the top two and bottom two countries for each HDI group in terms of progress of greenness. Comparing the two sets of tables, we are able to see how much progress countries have achieved in this indicator, so as to measure the extent of progress on the greenness of the economy. Finally, Tables 22a and 22b,

[69] Values used for GEP index and progress on dashboard indicators are calculated as indicated in Section 2.
[70] See Annex IV for complete information on the GEP Index and Dashboard of Sustainability for all countries in our sample.

and 23a and 23b present a similar analysis but for an indicator of the sustainability of the greenness, the greenhouse gas emissions per capita.

The results across geographical regions in terms of current greenness (Tables 20a and 20b) show that Latin America and the Caribbean, South Asia and Sub-Saharan Africa are the three greenest regions in terms of renewable energy, since even the two bottom countries of these regions show an average value of renewable energy much higher than the threshold. On the other hand, opposite performance is seen in the Middle East and North Africa group, whose second best performing country (Morocco) shows an average value of renewable energy below the threshold.

The results in terms of progress of greenness (captured by the measure of progress on renewable energy presented in Tables 21a and 21b) reveal a different picture than the results based on the current greenness. In particular, it is interesting to note that although all countries in South Asia show a very high average value of renewable energy, they have regressed (negative progress) in this indicator. This result is explained when we consider that for all countries in the South Asia region, the average value of renewable energy from 2000-2004 to 2010-2014 has decreased. Also notice that in the case of the East Asia and the Pacific region, the second highest performance in terms of progress on renewable energy is negative, in other words only one country in our sample for that region experienced progress on the greenness of this indicator.

In terms of sustainability, a similar analysis can be performed considering the greenhouse gas emissions per capita across countries in different regions. Tables 22a and 22b show that except for the case of South Asia, the bottom two countries for all regions show values of greenhouse gas emissions two times higher than the threshold.[71] Moreover, Tables 22a and 22b show that Developed countries are the most polluting group (those with the higher average values of greenhouse gas emissions), however some are experiencing progress in this indicator (Tables 23a and 23b), because they are moving in the "right" direction by significantly decreasing their average greenhouse gas emissions. On the other hand, South Asian countries are the least polluting (Tables 22a and 22b) but their greenhouse gas emissions have increased, and for this reason all of them show regress in this indicator (Tables 23a and 23b).

Although the GEP Measurement Framework is designed to be used in the integrated-multidimensional manner implied by the Inclusive Green Economy concept, it is flexible enough to be adapted to the specific needs and policy questions of decision makers. The simplified version of the analysis presented in this section shows that the indicators included in the GEP Measurement Framework can be presented and used in a variety of different ways depending on the interest and focus of the policy makers.

[71] Notice that the top and bottom countries are different for this table, since a higher (lower) value of greenhouse gas emission per capita means lower (higher) sustainability.

## Table 20a,b: Renewable energy: current greenness

**Table 20a: Renewable energy: Current greenness – top 2 countries by region**

| *Country* | *Region* | *2000-2004 average value of renewable energy = $y^0$* | *2010-2014 average value of renewable energy = $y^1$* | *threshold = t* |
|---|---|---|---|---|
| **Tunisia** | MENA | 12.95 | 14.67 | 5.42 |
| **Morocco** | MENA | 5.02 | 4.61 | 5.42 |
| **Cambodia** | EAP | 79.07 | 71.60 | 5.42 |
| **Philippines** | EAP | 44.74 | 40.05 | 5.42 |
| **Tajikistan** | ECA | 59.92 | 57.52 | 5.42 |
| **Kyrgyz Republic** | ECA | 43.14 | 36.78 | 5.42 |
| **Paraguay** | LAC | 70.10 | 66.74 | 5.42 |
| **Guatemala** | LAC | 57.37 | 66.63 | 5.42 |
| **Nepal** | South Asia | 88.99 | 86.84 | 5.42 |
| **Sri Lanka** | South Asia | 55.37 | 53.83 | 5.42 |
| **Zambia** | Sub-Saharan Africa | 91.82 | 92.36 | 5.42 |
| **Mozambique** | Sub-Saharan Africa | 93.43 | 90.92 | 5.42 |
| **Iceland** | Developed countries | 74.98 | 83.68 | 5.42 |
| **Sweden** | Developed countries | 62.70 | 66.71 | 5.42 |

*Source: Authors' calculations.*

*Note: MENA: Middle East and North Africa; EAP: East Asia and the Pacific; ECA: Europe and Central Asia; LAC: Latin America and the Caribbean; "Developed" are all countries with very high HDI (> 0.8) that do not belong to any of these regions.*

**Table 20b: Renewable energy: Current greenness – bottom 2 countries by region**

| *Country* | *Region* | *2000-2004 average value of renewable energy = $y^0$* | *2010-2014 average value of renewable energy = $y^1$* | *threshold = t* |
|---|---|---|---|---|
| **Yemen, Rep.** | MENA | 1.53 | 1.37 | 5.42 |
| **Algeria** | MENA | 0.25 | 0.15 | 5.42 |
| **Malaysia** | EAP | 6.79 | 5.47 | 5.42 |
| **Mongolia** | EAP | 6.28 | 4.15 | 5.42 |
| **Azerbaijan** | ECA | 1.59 | 2.97 | 5.42 |
| **Kazakhstan** | ECA | 1.85 | 0.98 | 5.42 |
| **Mexico** | LAC | 12.26 | 10.39 | 5.42 |
| **Argentina** | LAC | 12.59 | 9.45 | 5.42 |
| **Bangladesh** | South Asia | 38.37 | 28.53 | 5.42 |
| **India** | South Asia | 34.12 | 27.55 | 5.42 |
| **Namibia** | Sub-Saharan Africa | 28.44 | 20.72 | 5.42 |
| **South Africa** | Sub-Saharan Africa | 14.24 | 12.72 | 5.42 |
| **Luxembourg** | Developed countries | 1.99 | 3.84 | 5.42 |
| **Singapore** | Developed countries | 1.28 | 2.62 | 5.42 |

*Source: Authors' calculations.*

*Note: MENA: Middle East and North Africa; EAP: East Asia and the Pacific; ECA: Europe and Central Asia; LAC: Latin America and the Caribbean; "Developed" are all countries with very high HDI (> 0.8) that do not belong to any of these regions.*

## Table 21a,b: Renewable energy: progress of greenness

**Table 21a: Renewable energy: Progress of greenness – top 2 countries by region**

| *Country* | *Region* | *change = $y^1$-$y^0$* | *rate of change = $(y^1$-$y^0)/y^0$* | *target = $y^*$* | *Progress on renewable energy* |
|---|---|---|---|---|---|
| **Tunisia** | MENA | 1.72 | 0.13 | 21.58 | 0.20 |
| **Jordan** | MENA | 0.53 | 0.37 | 5.42 | 0.13 |
| **Thailand** | EAP | 0.75 | 0.04 | 30.89 | 0.06 |
| **Indonesia** | EAP | -3.55 | -0.10 | 62.14 | -0.14 |
| **Belarus** | ECA | 1.82 | 0.44 | 6.94 | 0.66 |
| **Ukraine** | ECA | 4.26 | 0.27 | 26.53 | 0.40 |
| **Jamaica** | LAC | 4.96 | 0.41 | 20.31 | 0.61 |
| **Guatemala** | LAC | 9.26 | 0.16 | 95.60 | 0.24 |
| **Sri Lanka** | South Asia | -1.54 | -0.03 | 92.27 | -0.04 |
| **Pakistan** | South Asia | -1.89 | -0.05 | 67.82 | -0.07 |
| **Cote d'Ivoire** | Sub-Saharan Africa | 9.26 | 0.13 | 100.00 | 0.29 |
| **Zimbabwe** | Sub-Saharan Africa | 7.26 | 0.11 | 100.00 | 0.20 |
| **Ireland** | Developed countries | 4.06 | 2.31 | 5.42 | 1.11 |
| **Italy** | Developed countries | 6.27 | 1.00 | 12.56 | 1.00 |

*Source: Authors' calculations.*

*Note: MENA: Middle East and North Africa; EAP: East Asia and the Pacific; ECA: Europe and Central Asia; LAC: Latin America and the Caribbean; "Developed" are all countries with very high HDI (> 0.8) that do not belong to any of these regions.*

**Table 21b: Renewable energy: Progress of greenness – bottom 2 countries by region**

| *Country* | *Region* | *change = $y^1$-$y^0$* | *rate of change = ($y^1$-$y^0$)/$y^0$* | *target = $y^*$* | *Progress on renewable energy* |
|---|---|---|---|---|---|
| **Morocco** | MENA | -0.41 | -0.08 | 8.36 | -0.12 |
| **Egypt, Arab Rep.** | MENA | -1.64 | -0.30 | 9.03 | -0.45 |
| **Mongolia** | EAP | -2.13 | -0.34 | 10.47 | -0.51 |
| **Vietnam** | EAP | -19.74 | -0.41 | 80.57 | -0.61 |
| **Turkey** | ECA | -2.81 | -0.21 | 22.12 | -0.32 |
| **Georgia** | ECA | -10.49 | -0.24 | 73.36 | -0.36 |
| **Peru** | LAC | -7.09 | -0.22 | 52.94 | -0.33 |
| **Panama** | LAC | -7.18 | -0.25 | 47.69 | -0.38 |
| **India** | South Asia | -6.57 | -0.19 | 56.86 | -0.29 |
| **Bangladesh** | South Asia | -9.84 | -0.26 | 63.95 | -0.38 |
| **Angola** | Sub-Saharan Africa | -12.11 | -0.17 | 100.00 | -0.44 |
| **Cameroon** | Sub-Saharan Africa | -12.62 | -0.15 | 100.00 | -0.78 |
| **Japan** | Developed countries | -6.63 | -0.36 | 36.33 | -0.37 |
| **Lithuania** | Developed countries | -33.46 | -0.69 | 96.31 | -0.70 |

*Source: Authors' calculations.*
*Note: MENA: Middle East and North Africa; EAP: East Asia and the Pacific; ECA: Europe and Central Asia; LAC: Latin America and the Caribbean; "Developed" are all countries with very high HDI (> 0.8) that do not belong to any of these regions.*

## Table 22a,b: Greenhouse gas emissions: Current sustainability

**Table 22a: Greenhouse gas emissions: Current sustainability – top 2 countries by region**

| *Country* | *Region* | *2000-2004 average value of greenhouse gas emissions = $y^0$* | *2010-2014 average value of greenhouse gas emissions = $y^1$* | *threshold = t* |
|---|---|---|---|---|
| **Algeria** | MENA | 3.80 | 4.67 | 2.00 |
| **Jordan** | MENA | 4.12 | 4.37 | 2.00 |
| **Mongolia** | EAP | 9.97 | 11.00 | 2.00 |
| **Malaysia** | EAP | 8.42 | 9.87 | 2.00 |
| **Kazakhstan** | ECA | 11.61 | 17.52 | 2.00 |
| **Belarus** | ECA | 8.70 | 10.46 | 2.00 |
| **Uruguay** | LAC | 9.05 | 10.07 | 2.00 |
| **Venezuela, RB** | LAC | 8.79 | 9.25 | 2.00 |
| **India** | South Asia | 1.72 | 2.37 | 2.00 |
| **Sri Lanka** | South Asia | 1.66 | 1.82 | 2.00 |
| **Botswana** | Sub-Saharan Africa | 6.81 | 9.46 | 2.00 |
| **South Africa** | Sub-Saharan Africa | 8.32 | 8.84 | 2.00 |
| **Australia** | Developed countries | 29.55 | 27.65 | 2.00 |
| **Luxembourg** | Developed countries | 23.65 | 22.54 | 2.00 |

*Source: Authors' calculations.*
*Note: MENA: Middle East and North Africa; EAP: East Asia and the Pacific; ECA: Europe and Central Asia; LAC: Latin America and the Caribbean; "Developed" are all countries with very high HDI (> 0.8) that do not belong to any of these regions.*

**Table 22b: Greenhouse gas emissions: Current sustainability – bottom 2 countries by region**

| *Country* | *Region* | *2000-2004 average value of greenhouse gas emissions = $y^0$* | *2010-2014 average value of greenhouse gas emissions = $y^1$* | *threshold = t* |
|---|---|---|---|---|
| **Morocco** | MENA | 1.89 | 2.28 | 2.00 |
| **Yemen, Rep.** | MENA | 1.24 | 1.38 | 2.00 |
| **Cambodia** | EAP | 1.53 | 1.78 | 2.00 |
| **Philippines** | EAP | 1.69 | 1.64 | 2.00 |
| **Kyrgyz Republic** | ECA | 1.87 | 2.39 | 2.00 |
| **Tajikistan** | ECA | 0.98 | 1.11 | 2.00 |
| **El Salvador** | LAC | 1.87 | 1.91 | 2.00 |
| **Guatemala** | LAC | 1.71 | 1.60 | 2.00 |
| **Nepal** | South Asia | 1.15 | 1.22 | 2.00 |
| **Bangladesh** | South Asia | 0.85 | 1.01 | 2.00 |
| **Uganda** | Sub-Saharan Africa | 0.74 | 0.88 | 2.00 |
| **Malawi** | Sub-Saharan Africa | 0.56 | 0.61 | 2.00 |
| **Sweden** | Developed countries | 7.62 | 6.03 | 2.00 |
| **Croatia** | Developed countries | 6.07 | 5.89 | 2.00 |

*Source: Authors' calculations.*
*Note: MENA: Middle East and North Africa; EAP: East Asia and the Pacific; ECA: Europe and Central Asia; LAC: Latin America and the Caribbean; "Developed" are all countries with very high HDI (> 0.8) that do not belong to any of these regions.*

## Table 23a,b: Greenhouse gas emissions: Progress of sustainability

**Table 23a: Greenhouse gas emissions: Progress of sustainability – top 2 countries by region**

| Country | Region | change = $y^1-y^0$ | rate of change = $(y^1-y^0)/y^0$ | target = $y^*$ | Progress on Greenhouse gas emissions |
|---|---|---|---|---|---|
| **Jordan** | MENA | 0.24 | 0.06 | 2.00 | -0.11 |
| **Tunisia** | MENA | 0.17 | 0.06 | 2.00 | -0.17 |
| **Philippines** | EAP | -0.04 | -0.03 | 1.43 | 0.17 |
| **Mongolia** | EAP | 1.03 | 0.10 | 2.00 | -0.13 |
| **Ukraine** | ECA | -0.09 | -0.01 | 2.00 | 0.01 |
| **Azerbaijan** | ECA | 0.27 | 0.04 | 2.00 | -0.06 |
| **Jamaica** | LAC | -1.24 | -0.27 | 2.00 | 0.48 |
| **Guatemala** | LAC | -0.11 | -0.07 | 1.45 | 0.43 |
| **Nepal** | South Asia | 0.07 | 0.06 | 0.98 | -0.40 |
| **Sri Lanka** | South Asia | 0.16 | 0.10 | 1.41 | -0.64 |
| **Zimbabwe** | Sub-Saharan Africa | -0.27 | -0.13 | 1.84 | 0.84 |
| **Cameroon** | Sub-Saharan Africa | -1.02 | -0.21 | 2.00 | 0.35 |
| **Sweden** | Developed countries | -1.59 | -0.21 | 2.00 | 0.28 |
| **Spain** | Developed countries | -2.08 | -0.22 | 2.00 | 0.28 |

*Source: Authors' calculations.*
*Note: MENA: Middle East and North Africa; EAP: East Asia and the Pacific; ECA: Europe and Central Asia; LAC: Latin America and the Caribbean; "Developed" are all countries with very high HDI (> 0.8) that do not belong to any of these regions.*

**Table 23b: Greenhouse gas emissions: Progress of sustainability – bottom 2 countries by region**

| Country | Region | change = $y^1-y^0$ | rate of change = $(y^1-y^0)/y^0$ | target = $y^*$ | Progress on Greenhouse gas emissions |
|---|---|---|---|---|---|
| **Egypt, Arab Rep.** | MENA | 0.76 | 0.27 | 2.00 | -0.98 |

| | | | | | |
|---|---|---|---|---|---|
| **Morocco** | MENA | 0.39 | 0.21 | 1.60 | -1.39 |
| **China** | EAP | 3.50 | 0.82 | 2.00 | -1.55 |
| **Vietnam** | EAP | 1.05 | 0.56 | 1.59 | -3.74 |
| **Kyrgyz Republic** | ECA | 0.51 | 0.27 | 1.59 | -1.82 |
| **Armenia** | ECA | 0.74 | 0.39 | 1.63 | -2.56 |
| **Bolivia** | LAC | 0.92 | 0.27 | 2.00 | -0.63 |
| **Peru** | LAC | 0.62 | 0.27 | 1.96 | -1.79 |
| **Bangladesh** | South Asia | 0.16 | 0.19 | 0.73 | -1.24 |
| **India** | South Asia | 0.64 | 0.37 | 1.46 | -2.48 |
| **Uganda** | Sub-Saharan Africa | 0.14 | 0.19 | 0.62 | -1.29 |
| **Kenya** | Sub-Saharan Africa | 0.29 | 0.26 | 0.95 | -1.74 |
| **Lithuania** | Developed countries | 1.03 | 0.17 | 2.00 | -0.26 |
| **Latvia** | Developed countries | 1.17 | 0.23 | 2.00 | -0.39 |

*Source: Authors' calculations.*

*Note: MENA: Middle East and North Africa; EAP: East Asia and the Pacific; ECA: Europe and Central Asia; LAC: Latin America and the Caribbean; "Developed" are all countries with very high HDI (> 0.8) that do not belong to any of these regions.*

# 4. FINAL CONSIDERATIONS

This publication presents an application of the methodology at the global level to Beta test the methodology and to see the different tradeoffs and challenges of the methodology to improve its design, and moreover, to enrich the green economy policy making analyisis.

The main results of the assessment of progress across single indicators (13 indicators are included in the GEP Index) show that, on average, higher levels of progress have been achieved in reducing energy use, gender inequality, and improving education and life expectancy (based on our sample between 2004 and 2014). However, material footprint and air pollution are the areas in which there have, on average, been more regress, meaning material footprint and air pollution have increased.

From a multidimensional perspective of progress, the GEP Index shows that for 2014, 83 out of 105 countries (79 per cent) managed to achieve progress in their transition towards an Inclusive Green Economy, as compared to the year 2004. In regional terms, Middle East and North African and South Asian countries in the sample are leading green economy progress. However, the best performing country in Sub-Saharan Africa, Latin America, Europe and Central Asia and in the Developed country group outperforms the best performer in the Middle East and North African and South Asian regions. The region, where most countries experienced regress, was the East Asia and the Pacific group. When countries are grouped according to their human development level (using the Human Development Index), the high HDI group holds the highest proportion of countries that experienced regress (half of the countries in this region - 14 out of 28 countries).

Results for the GEP Index for the eight PAGE countries in the sample (Brazil, China, Ghana, Kyrgyz Republic, Mongolia, Peru, Senegal and South Africa) were mixed (four countries showed progress, while four regressed). Peru was the country with the highest GEP Index, followed by Senegal, Kyrgyz Republic and Ghana. Mongolia achieved progress in eight out of its 11 indicators, but these positive achievements did not compensate for the large negative effect of a deterioration in material footprint, resulting in a negative GEP Index value (the largest in the sample of 105 countries). Progress in Brazil and China was similarly reduced by regress on material footprint, whereas the main driver of South Africa's negative GEP Index was attributable to increasing income inequality.

Although the GEP Index results are encouraging, they nevertheless show the amount of effort that is still needed to ensure that improving human well-being does not come at the expense of key stocks of capital. Individual results on the Dashboard of Sustainability indicators reveal that countries are, on average, regressing in their sustainability indicators, i.e. they are surpassing planetary boundaries. The only indicator in which the majority of countries are making progress is the Inclusive Wealth Index. However, when only considering the part of the IWI related to natural capital, results show that most countries have regressed. In addition, no country is surpassing its target in terms of greenhouse gas emission reductions, an area of significant concern given the impact of these emissions on global environmental sustainability.

Finally, the ranking of countries, or GEP+, formed by using results from the GEP Index and the Dashboard of Sustainability indicators shows that only 17 countries in our sample were able to make progress in the dashboard and in the GEP Index. Comparison across countries however, seems to be more valid, when we concentrate the comparison among similar countries. Results for the GEP+ are presented for the top 4 countries per HDI group, showing how the Protective Criterion works in determining the ranking within each HDI group.

The Green Economy Progress Measurement Framework, in its current version, proposes a method of measuring progress that monitors changes in key variables, both taking into account global thresholds that should not be surpassed and utilizing achievable targets selected to help countries to move in the right direction through policy intervention. These components are critical to obtaining a useful measure of progress, making the measurement framework a valid instrument for not only practitioners, but also for the wider community of researchers and academics working in the field.

There are important challenges associated with this line of work and it should be borne in mind that there is still much progress to be made. Conceptual challenges remain with respect to the integration of the GEP Measurement Framework and the Inclusive Green Economy narrative, because of the latter's complexity and the different implicit and explicit causal relationships that exist. In addition, there are empirical challenges related to the availability of indicators. In fact, one of the most important limitations of the GEP Measurement Framework is the lack of available data with which to measure progress. While the focus on progress is a significant added value of this work, it also imposes considerable constraints on the potential indicators that can be used. For example, some available indicators are only approximate proxies of what we are attempting to measure, while other indicators are of better quality, but are limited in time and country coverage. From a policy perspective, an additional challenge lies in how to make use of available national indicators, which tend to better capture local realities.

Despite these challenges, there are at least two ways to expand on the GEP Measurement Framework for policymaking in the future. First, the methods used in the framework are flexible when it comes to selecting indicators, thereby making inter-country comparison possible on any particular aspect of an Inclusive Green Economy as long as the underlying data is available. Important indicators that are currently unavailable (such as those that adequately reflect biodiversity and green jobs) may be incorporated into the framework whenever they become accessible, thus expanding the scope of measurement. Second, the framework can build on UN Environment's other related work on indicators (namely *Measuring Progress towards an Inclusive Green Economy - 2012*, *Guidance Manual for Green Economy Indicators - 2014*, and *Indictors for Green Economy Policymaking Synthesis Report of Studies in Ghana, Mauritius and Uruguay - 2015*) by adjusting the choice of indicators to specific country needs and priorities. This extension would make the framework more useful in facilitating policymaking in a specific country. Regardless of the nature of its future use, the GEP Measurement Framework constitutes a useful tool in bridging national and international assessment of progress and assisting countries as they seek to monitor and deliver on the SDGs (the GEP has direct 14 direct links to 10 of the 17 SDGs). This will help not only in the monitoring process but also in the integration and articulation of policies by enhancing the linkages between IGE policies to the overall objectives of sustainable development.

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# ANNEX I –OUTCOMES OF THE TWO WORKSHOPS

In 2015, UN Environment organized two workshops on the GEP Index, bringing together UN Environment researchers with a wide range of experts on indicators, including PAGE partners, the Green Growth Knowledge Platform (GGKP), the Organization for Economic Co-operation and Development (OECD) and non-government organization representatives. A wide-ranging exchange of ideas on different aspects of the index took place at both workshops, which included the work that had been carried out at the conceptual and empirical level and potential policy implications. Participants expressed substantial interest in the design and first results of the GEP Index, and provided many comments on potential improvements to the monitoring framework and suggestions regarding the inclusion of additional indicators.

The main outcomes from the workshops were a series of agreements and specific recommendations on how to develop and improve the index. These were taken on board by UN Environment's economic research team, and form the basis for the future direction of the project.

The first workshop took place in April 2015 and focused on presenting the conceptual framework, as detailed in Section 3. The outcomes of the first workshop focused on four areas:

1. Conceptual framework: The workshop highlighted some areas for improvement in the GEP formula, particularly in the treatment of the "bads".
2. Empirical component: Several points were raised at the workshop on the initial choice of the variables to be included in the prototype and the determination of targets and thresholds.
3. Narrative: Suggestions were made to draft a GEP narrative to help identify the GEP as a green economy indicator rather than a sustainable development one.
4. June workshop: A first draft document outlining the GEP approach and its methodology would be drafted and circulated for the following workshop.

The second workshop took place in June 2015 and focused on presenting the first results of the GEP prototype, based on the conceptual framework previously developed. Participants expressed substantial interest in the design and first results of the GEP Index. Many comments and suggestions were made on how to improve the index. These comments were collected and compiled in a consolidated document. After an internal review and discussion, three main issues emerged:

1. Combining the GEP Index with the dashboard: How could the GEP Index and the sustainability indicators from the dashboard be combined into one single measure? This needs a conceptual discussion on how the GEP Index could address the distinction between current and future well-being. There are important conceptual challenges implied by combining the two.
2. Framing: How do we frame the GEP Index to highlight its difference from a Sustainable Development Index and how does it relate to the SDGs? The framing note should define progress and sustainability as well as what the different areas/aspects of green economy are that the GEP Index aims to capture. The framing note should also discuss how progress and sustainability are combined and the distinction/complementarities with the SDGs.
3. Additional indicators/databases: Which additional indicators could be explored? A more detailed discussion of the rationale for including some of the main indicators into the GEP Index should be prepared. Some indicators that were suggested in the workshop could be interesting to explore (e.g. environmental patents and social indicators).

To address these issues, UN Environment's economic research team proposed to concentrate efforts on the two following aspects as the next steps:

1. Reflect on the possibility of developing a Sustainability Adjusted GEP Index – that is, to find a way to combine the concept of sustainability (the dashboard) with the concept of current wellbeing (the GEP Index).

**2.** Incorporate more social indicators in the GEP Index. In accordance with the common UN system-wide perspective on an Inclusive Green Economy (United Nations, 2011), UN Environment acknowledges the importance of education, healthcare and social protection as important factors capturing a country's progress toward an Inclusive Green Economy. It would be worthwhile to find out whether indicators related to education, healthcare and social protection would be available with good country and time coverage, to complement the indicators capturing income inequality (Palma ratio) and access to basic services (e.g. water, electricity and sanitation).

# ANNEX II - LINKS BETWEEN SDGS AND THE GEP MEASUREMENT FRAMEWORK INDICATORS

| *Goal* | *Target* | *Indicator* |
|---|---|---|
| **Goal 1: End poverty in all its forms everywhere** | 1.3 Implement nationally appropriate social protection systems and measures for all, including floors, and by2030 achieve substantial coverage of the poor and the vulnerable.<br><br>1.4 By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including microfinance. | Pension coverage<br><br>*Access to basic services* |
| **Goal 3: Ensure healthy lives and promote well-being for all at all ages** | 3.1 By 2030, reduce the global maternal mortality ratio to less than 70 per 100,000 live births.<br><br>3.7 By 2030, ensure universal access to sexual and reproductive health-care services, including for family planning, information and education, and the integration of reproductive health into national strategies and programmes.<br><br>3.8 Achieve universal health coverage, including financial risk protection, access to quality essential health-care services and access to safe, effective, quality and affordable essential medicines and vaccines for all.<br><br>3.9 By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination. | *Maternal mortality ratio (Gender Inequality Index)*<br><br>*Adolescent birth rate (Gender Inequality Index)*<br><br>Life expectancy<br><br>PM2.5/ Access to basic services |
| **Goal 4. Ensure inclusive and equitable quality education and promote lifelong learning opportunities for al** | 4.1 By 2030, ensure that all girls and boys complete free, equitable and quality primary and secondary education leading to relevant and effective learning outcomes.<br><br>4.3 By 2030, ensure equal access for all women and men to affordable and quality technical, vocational and tertiary education, including university<br><br>4.5 By 2030, eliminate gender disparities in education and ensure equal access to all levels of education and vocational training for the vulnerable, including persons with disabilities, indigenous peoples and children in vulnerable situations<br><br>4.6 By 2030, ensure that all youth and a substantial proportion of adults, both men and women, achieve literacy and numeracy. | Gender Inequality Index/ Mean years of schooling<br><br>Gender Inequality Index/ Mean years of schooling<br><br>Gender Inequality Index/ Mean years of schooling<br><br>Gender Inequality Index/ Mean years of |

| | | |
|---|---|---|
| | | schooling |
| **Goal 5. Achieve gender equality and empower all women and girls** | 5.5 Ensure women's full and effective participation and equal opportunities for leadership at all levels of decision-making in political, economic and public life.<br><br>5.6 Ensure universal access to sexual and reproductive health and reproductive rights as agreed in accordance with the Programme of Action of the International Conference on Population and Development and the Beijing Platform for Action and the outcome documents of their review conferences. | *Female and male shares of parliamentary seats (Gender Inequality Index)*<br><br>Gender inequality index |
| **Goal 6: Ensure availability and sustainable management of water and sanitation for all** | 6.1 By 2030, achieve universal and equitable access to safe and affordable drinking water for all.<br><br>6.2 By 2030, achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations | *Access to water*<br><br>*Access to sanitation* |
| **Goal 7: Ensure access to affordable, reliable, sustainable and modern energy for all** | 7.1 By 2030, ensure universal access to affordable, reliable and modern energy services<br><br>7.2 By 2030, increase substantially the share of renewable energy in the global energy mix<br><br>7.3 By 2030, double the global rate of improvement in energy efficiency | *Access to electricity*<br><br>*Renewable energy sources*<br><br>*Energy use* |
| **Goal 8: Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all** | 8.2 Achieve higher levels of economic productivity through diversification, technological upgrading and innovation, including through a focus on high-value-added and labour-intensive sectors<br><br>8.4 Improve progressively, through 2030, global resource efficiency in consumption and production and endeavour to decouple economic growth from environmental degradation, in accordance with the 10-year framework of programmes on sustainable consumption and production, with developed countries taking the lead | Trade in environmental goods<br><br>*Material footprint per capita* |
| **Goal 10: Reduce inequality within and among countries** | 10.1 By 2030, progressively achieve and sustain income growth of the bottom 40 per cent of the population at a rate higher than the national average<br><br>10.4 Adopt policies, especially fiscal, wage and social protection policies, and progressively achieve greater equality | *Palma ratio*<br><br>Pension coverage |
| **Goal 11: Make cities and human settlements inclusive,** | 11.6 By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and | *Air pollution* |

| | | |
|---|---|---|
| **safe, resilient and sustainable** | other waste management | |
| **Goal 12: Ensure sustainable consumption and production patterns** | 12.2 By 2030, achieve the sustainable management and efficient use of natural resources<br><br>12.a Support developing countries to strengthen their scientific and technological capacity to move towards more sustainable patterns of consumption and production | *Material footprint per capita*<br><br>Green patents |
| **Goal 14: Conserve and sustainably use the oceans, seas and marine resources for sustainable development** | 14.1 By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution<br><br>14.5 By 2020, conserve at least 10 per cent of coastal and marine areas, consistent with national and international law and based on the best available scientific information | Nitrogen emissions<br><br>*Marine protected areas* |
| **Goal 15: Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss** | 15.1 By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements<br><br>15.3 By 2030, combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land degradation-neutral world<br><br>15.4 By 2030, ensure the conservation of mountain ecosystems, including their biodiversity, in order to enhance their capacity to provide benefits that are essential for sustainable development | Terrestrial protected areas<br><br>Land use<br><br>Terrestrial protected areas |

*Note: Indicators in italics are directly linked or correspond to the shortlisted SDG headline indicators.*

# ANNEX III – STATISTICAL ANNEX: RESULTS FOR THE GEP INDEX, THE DASHBOARD OF SUSTAINABILITY AND THE PROTECTIVE CRITERION

This Annex includes four parts. Part 1 presents results for each of the 13 indicators included in the GEP Index for the 105 countries in the sample. Part 2 presents results for each of the indicators included in the Dashboard of Sustainability for the 105 countries in the sample. Part 3 shows the values of the GEP Index for each of the 105 countries in the sample. Part 4 presents the ranking (GEP+) of countries formed by using results from the GEP Index and three dashboard sustainability indicators (greenhouse gas emissions, nitrogen emissions, and land use). Results for the GEP+ are presented by HDI group.

## A. INDICATORS FOR THE GEP INDEX

### Material footprint per capita

| Country | *Current greenness* | | | *Progress of greenness* | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 2000-2004 average value of material footprint = $y^0$ | 2010-2014 average value of material footprint = $y^1$ | threshold = t | change = $y^1$-$y^0$ | rate of change = ($y^1$-$y^0$ )/$y^0$ | target = $y^*$ | Weight $\tilde{\pi}$ | Weight $\pi$ | progress on material footprint |
| **Albania** | 4.44 | 9.09 | 5.00 | 4.65 | 1.05 | 3.72 | 0.89 | 0.09 | -6.43 |
| **Algeria** | 2.22 | 3.10 | 5.00 | 0.89 | 0.40 | 1.93 | 0.44 | 0.04 | -3.12 |
| **Angola** | 1.97 | 3.18 | 5.00 | 1.21 | 0.61 | 1.72 | 0.39 | 0.04 | -4.78 |
| **Argentina** | 10.59 | 12.06 | 5.00 | 1.47 | 0.14 | 5.00 | 2.12 | 0.16 | -0.26 |
| **Armenia** | 2.94 | 4.83 | 5.00 | 1.89 | 0.64 | 2.46 | 0.59 | 0.06 | -3.94 |
| **Australia** | 34.48 | 37.99 | 5.00 | 3.51 | 0.10 | 5.00 | 6.90 | 0.52 | -0.12 |
| **Austria** | 28.50 | 29.86 | 5.00 | 1.35 | 0.05 | 5.00 | 5.70 | 0.50 | -0.06 |
| **Azerbaijan** | 2.70 | 4.49 | 5.00 | 1.79 | 0.66 | 2.26 | 0.54 | 0.04 | -4.08 |
| **Bangladesh** | 1.49 | 1.49 | 5.00 | 0.00 | 0.00 | 1.30 | 0.30 | 0.02 | 0.00 |
| **Belarus** | 0.04 | 0.05 | 5.00 | 0.01 | 0.16 | 0.04 | 0.01 | 0.00 | -0.98 |
| **Belgium** | 19.63 | 19.30 | 5.00 | -0.33 | -0.02 | 5.00 | 3.93 | 0.38 | 0.02 |
| **Benin** | 2.05 | 3.57 | 5.00 | 1.52 | 0.74 | 1.79 | 0.41 | 0.03 | -5.78 |
| **Bolivia** | 4.25 | 4.56 | 5.00 | 0.31 | 0.07 | 3.70 | 0.85 | 0.10 | -0.58 |
| **Botswana** | 14.11 | 17.42 | 5.00 | 3.31 | 0.23 | 5.00 | 2.82 | 0.28 | -0.36 |
| **Brazil** | 8.47 | 12.98 | 5.00 | 4.51 | 0.53 | 5.00 | 1.69 | 0.18 | -1.30 |
| **Bulgaria** | 5.87 | 10.36 | 5.00 | 4.49 | 0.77 | 4.91 | 1.17 | 0.10 | -4.70 |
| **Cambodia** | 1.40 | 3.66 | 5.00 | 2.25 | 1.61 | 1.22 | 0.28 | 0.02 | -12.53 |
| **Cameroon** | 1.63 | 1.83 | 5.00 | 0.20 | 0.12 | 1.42 | 0.33 | 0.02 | -0.95 |
| **Canada** | 26.50 | 28.47 | 5.00 | 1.97 | 0.07 | 5.00 | 5.30 | 0.39 | -0.09 |
| **Chile** | 17.16 | 17.40 | 5.00 | 0.25 | 0.01 | 5.00 | 3.43 | 0.31 | -0.02 |
| **China** | 7.06 | 15.00 | 5.00 | 7.95 | 1.13 | 5.00 | 1.41 | 0.07 | -3.87 |
| **Colombia** | 6.10 | 7.87 | 5.00 | 1.78 | 0.29 | 5.00 | 1.22 | 0.12 | -1.62 |
| **Costa Rica** | 6.24 | 5.80 | 5.00 | -0.44 | -0.07 | 5.00 | 1.25 | 0.17 | 0.35 |
| **Cote d'Ivoire** | 1.24 | 1.01 | 5.00 | -0.23 | -0.18 | 1.08 | 0.25 | 0.03 | 1.43 |
| **Croatia** | 12.70 | 12.74 | 5.00 | 0.04 | 0.00 | 5.00 | 2.54 | 0.20 | -0.01 |
| **Cyprus** | 24.83 | 24.11 | 5.00 | -0.72 | -0.03 | 5.00 | 4.97 | 0.30 | 0.04 |
| **Czech Republic** | 18.66 | 21.31 | 5.00 | 2.65 | 0.14 | 5.00 | 3.73 | 0.35 | -0.19 |
| **Denmark** | 22.80 | 23.88 | 5.00 | 1.08 | 0.05 | 5.00 | 4.56 | 0.46 | -0.06 |
| **Dominican Republic** | 4.92 | 4.42 | 5.00 | -0.50 | -0.10 | 4.29 | 0.98 | 0.12 | 0.79 |
| **Ecuador** | 7.10 | 8.91 | 5.00 | 1.81 | 0.25 | 5.00 | 1.42 | 0.15 | -0.86 |
| **Egypt, Arab Rep.** | 4.72 | 6.21 | 5.00 | 1.50 | 0.32 | 4.11 | 0.94 | 0.07 | -2.47 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **El Salvador** | 5.05 | 5.04 | 5.00 | -0.01 | 0.00 | 4.41 | 1.01 | 0.14 | 0.02 |
| **Estonia** | 14.62 | 18.16 | 5.00 | 3.54 | 0.24 | 5.00 | 2.92 | 0.33 | -0.37 |
| **Finland** | 37.48 | 34.46 | 5.00 | -3.03 | -0.08 | 5.00 | 7.50 | 0.59 | 0.09 |
| **France** | 21.26 | 20.02 | 5.00 | -1.24 | -0.06 | 5.00 | 4.25 | 0.42 | 0.08 |
| **Georgia** | 4.04 | 6.67 | 5.00 | 2.63 | 0.65 | 3.38 | 0.81 | 0.07 | -3.99 |
| **Germany** | 21.98 | 21.42 | 5.00 | -0.56 | -0.03 | 5.00 | 4.40 | 0.43 | 0.03 |
| **Ghana** | 2.40 | 3.28 | 5.00 | 0.88 | 0.36 | 2.10 | 0.48 | 0.04 | -2.85 |
| **Greece** | 30.76 | 28.32 | 5.00 | -2.44 | -0.08 | 5.00 | 6.15 | 0.43 | 0.09 |
| **Guatemala** | 3.49 | 3.44 | 5.00 | -0.05 | -0.01 | 3.04 | 0.70 | 0.07 | 0.11 |
| **Honduras** | 3.45 | 4.09 | 5.00 | 0.64 | 0.19 | 3.01 | 0.69 | 0.05 | -1.45 |
| **Hungary** | 12.98 | 12.95 | 5.00 | -0.03 | 0.00 | 5.00 | 2.60 | 0.23 | 0.00 |
| **Iceland** | 32.08 | 26.81 | 5.00 | -5.28 | -0.16 | 5.00 | 6.42 | 0.45 | 0.19 |
| **India** | 2.54 | 3.56 | 5.00 | 1.02 | 0.40 | 2.21 | 0.51 | 0.03 | -3.15 |
| **Indonesia** | 3.37 | 5.04 | 5.00 | 1.68 | 0.50 | 2.94 | 0.67 | 0.06 | -3.89 |
| **Ireland** | 33.16 | 25.88 | 5.00 | -7.29 | -0.22 | 5.00 | 6.63 | 0.39 | 0.26 |
| **Israel** | 20.69 | 18.06 | 5.00 | -2.62 | -0.13 | 5.00 | 4.14 | 0.31 | 0.17 |
| **Italy** | 21.02 | 19.58 | 5.00 | -1.45 | -0.07 | 5.00 | 4.20 | 0.31 | 0.09 |
| **Jamaica** | 8.97 | 7.31 | 5.00 | -1.66 | -0.18 | 5.00 | 1.79 | 0.19 | 0.42 |
| **Japan** | 23.07 | 20.09 | 5.00 | -2.98 | -0.13 | 5.00 | 4.61 | 0.39 | 0.16 |
| **Jordan** | 7.23 | 8.35 | 5.00 | 1.12 | 0.16 | 5.00 | 1.45 | 0.11 | -0.50 |
| **Kazakhstan** | 14.36 | 17.94 | 5.00 | 3.58 | 0.25 | 5.00 | 2.87 | 0.15 | -0.38 |
| **Kenya** | 2.75 | 3.05 | 5.00 | 0.30 | 0.11 | 2.40 | 0.55 | 0.05 | -0.85 |
| **Korea, Rep.** | 22.88 | 22.77 | 5.00 | -0.11 | 0.00 | 5.00 | 4.58 | 0.28 | 0.01 |
| **Kyrgyz Republic** | 6.15 | 6.93 | 5.00 | 0.78 | 0.13 | 5.00 | 1.23 | 0.12 | -0.68 |
| **Latvia** | 14.97 | 21.19 | 5.00 | 6.22 | 0.42 | 5.00 | 2.99 | 0.33 | -0.62 |
| **Lithuania** | 16.96 | 24.91 | 5.00 | 7.95 | 0.47 | 5.00 | 3.39 | 0.35 | -0.66 |
| **Luxembourg** | | | | | | | | | |
| **Macedonia, FYR** | 7.14 | 10.37 | 5.00 | 3.22 | 0.45 | 5.00 | 1.43 | 0.14 | -1.50 |
| **Malawi** | 0.94 | 1.16 | 5.00 | 0.21 | 0.23 | 0.82 | 0.19 | 0.02 | -1.77 |
| **Malaysia** | 14.19 | 17.35 | 5.00 | 3.15 | 0.22 | 5.00 | 2.84 | 0.20 | -0.34 |
| **Mali** | 3.09 | 4.27 | 5.00 | 1.18 | 0.38 | 2.70 | 0.62 | 0.03 | -2.98 |
| **Mexico** | 8.83 | 8.39 | 5.00 | -0.44 | -0.05 | 5.00 | 1.77 | 0.15 | 0.12 |
| **Moldova** | 0.07 | 0.52 | 5.00 | 0.46 | 6.73 | 0.06 | 0.01 | 0.00 | -52.53 |
| **Mongolia** | 3.72 | 10.21 | 5.00 | 6.48 | 1.74 | 3.25 | 0.74 | 0.08 | -13.60 |
| **Morocco** | 3.04 | 3.56 | 5.00 | 0.52 | 0.17 | 2.65 | 0.61 | 0.06 | -1.33 |
| **Mozambique** | 1.43 | 1.55 | 5.00 | 0.12 | 0.08 | 1.24 | 0.29 | 0.02 | -0.64 |
| **Namibia** | 5.78 | 6.11 | 5.00 | 0.33 | 0.06 | 5.00 | 1.16 | 0.12 | -0.42 |
| **Nepal** | 1.35 | 2.13 | 5.00 | 0.78 | 0.58 | 1.18 | 0.27 | 0.02 | -4.52 |
| **Netherlands** | 21.16 | 23.49 | 5.00 | 2.33 | 0.11 | 5.00 | 4.23 | 0.38 | -0.14 |
| **New Zealand** | 23.92 | 21.45 | 5.00 | -2.46 | -0.10 | 5.00 | 4.78 | 0.44 | 0.13 |
| **Nicaragua** | 3.27 | 3.35 | 5.00 | 0.08 | 0.02 | 2.85 | 0.65 | 0.07 | -0.18 |
| **Norway** | 33.12 | 36.12 | 5.00 | 3.00 | 0.09 | 5.00 | 6.62 | 0.43 | -0.11 |
| **Pakistan** | 2.32 | 2.71 | 5.00 | 0.39 | 0.17 | 2.02 | 0.46 | 0.03 | -1.31 |
| **Panama** | 7.54 | 7.63 | 5.00 | 0.09 | 0.01 | 5.00 | 1.51 | 0.15 | -0.04 |
| **Paraguay** | 12.44 | 13.75 | 5.00 | 1.31 | 0.11 | 5.00 | 2.49 | 0.21 | -0.18 |
| **Peru** | 10.62 | 12.17 | 5.00 | 1.55 | 0.15 | 5.00 | 2.12 | 0.17 | -0.28 |
| **Philippines** | 3.67 | 3.90 | 5.00 | 0.24 | 0.06 | 3.20 | 0.73 | 0.07 | -0.50 |
| **Poland** | 13.75 | 16.45 | 5.00 | 2.70 | 0.20 | 5.00 | 2.75 | 0.23 | -0.31 |
| **Portugal** | 20.43 | 22.04 | 5.00 | 1.61 | 0.08 | 5.00 | 4.09 | 0.35 | -0.10 |
| **Russian Federation** | 6.28 | 8.07 | 5.00 | 1.79 | 0.29 | 5.00 | 1.26 | 0.13 | -1.40 |
| **Senegal** | 2.32 | 2.91 | 5.00 | 0.58 | 0.25 | 2.03 | 0.46 | 0.03 | -1.96 |
| **Singapore** | 56.67 | 70.50 | 5.00 | 13.83 | 0.24 | 5.00 | 11.33 | 0.38 | -0.27 |
| **Slovak Republic** | 24.86 | 37.49 | 5.00 | 12.63 | 0.51 | 5.00 | 4.97 | 0.42 | -0.64 |
| **Slovenia** | 20.74 | 22.55 | 5.00 | 1.81 | 0.09 | 5.00 | 4.15 | 0.37 | -0.11 |
| **South Africa** | 8.94 | 8.84 | 5.00 | -0.10 | -0.01 | 5.00 | 1.79 | 0.14 | 0.03 |
| **Spain** | 26.15 | 23.08 | 5.00 | -3.06 | -0.12 | 5.00 | 5.23 | 0.46 | 0.14 |
| **Sri Lanka** | 1.52 | 2.47 | 5.00 | 0.94 | 0.62 | 1.28 | 0.30 | 0.03 | -3.79 |
| **Sweden** | 23.04 | 23.58 | 5.00 | 0.53 | 0.02 | 5.00 | 4.61 | 0.47 | -0.03 |
| **Switzerland** | 25.34 | 26.95 | 5.00 | 1.61 | 0.06 | 5.00 | 5.07 | 0.49 | -0.08 |
| **Tajikistan** | 0.85 | 1.78 | 5.00 | 0.94 | 1.11 | 0.74 | 0.17 | 0.02 | -8.64 |
| **Thailand** | 7.25 | 9.77 | 5.00 | 2.52 | 0.35 | 5.00 | 1.45 | 0.13 | -1.12 |
| **Togo** | 2.07 | 2.10 | 5.00 | 0.03 | 0.01 | 1.81 | 0.41 | 0.03 | -0.10 |
| **Tunisia** | 6.23 | 6.07 | 5.00 | -0.16 | -0.03 | 5.00 | 1.25 | 0.07 | 0.13 |
| **Turkey** | 8.96 | 12.74 | 5.00 | 3.77 | 0.42 | 5.00 | 1.79 | 0.12 | -0.95 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Uganda** | 2.19 | 2.67 | 5.00 | 0.48 | 0.22 | 1.91 | 0.44 | 0.03 | -1.69 |
| **Ukraine** | 4.73 | 7.03 | 5.00 | 2.30 | 0.49 | 3.96 | 0.95 | 0.08 | -2.99 |
| **United Kingdom** | 21.18 | 19.23 | 5.00 | -1.95 | -0.09 | 5.00 | 4.24 | 0.38 | 0.12 |
| **United States** | 31.83 | 27.26 | 5.00 | -4.56 | -0.14 | 5.00 | 6.37 | 0.47 | 0.17 |
| **Uruguay** | 20.87 | 32.37 | 5.00 | 11.50 | 0.55 | 5.00 | 4.17 | 0.44 | -0.73 |
| **Venezuela, RB** | 6.58 | 7.28 | 5.00 | 0.71 | 0.11 | 5.00 | 1.32 | 0.16 | -0.45 |
| **Vietnam** | 3.92 | 7.22 | 5.00 | 3.30 | 0.84 | 3.42 | 0.78 | 0.06 | -6.58 |
| **Yemen, Rep.** | 1.22 | 1.52 | 5.00 | 0.30 | 0.25 | 1.06 | 0.24 | 0.01 | -1.93 |
| **Zambia** | 2.69 | 3.23 | 5.00 | 0.54 | 0.20 | 2.34 | 0.54 | 0.05 | -1.58 |
| **Zimbabwe** | 1.18 | 1.06 | 5.00 | -0.12 | -0.11 | 1.03 | 0.24 | 0.02 | 0.82 |

*Source: Authors' calculations.*

## Air pollution

| Country | *Current greenness* | | | *Progress of greenness* | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 2000-2004 average value of air pollution = $y^0$ | 2010-2014 average value of air pollution = $y^1$ | threshold = t | change = $y^1$-$y^0$ | rate of change = ($y^1$-$y^0$ )/$y^0$ | target = $y^*$ | Weight $\tilde{\pi}$ | Weight $\pi$ | progress on air pollution |
| **Albania** | 16.41 | 14.30 | 10.00 | -2.11 | -0.13 | 10.00 | 1.64 | 0.16 | 0.33 |
| **Algeria** | 22.44 | 22.05 | 10.00 | -0.39 | -0.02 | 10.00 | 2.24 | 0.19 | 0.03 |
| **Angola** | 10.36 | 11.23 | 10.00 | 0.87 | 0.08 | 8.92 | 1.04 | 0.11 | -0.61 |
| **Argentina** | 5.21 | 4.99 | 10.00 | -0.23 | -0.04 | 4.33 | 0.52 | 0.04 | 0.26 |
| **Armenia** | 19.93 | 18.73 | 10.00 | -1.20 | -0.06 | 10.00 | 1.99 | 0.19 | 0.12 |
| **Australia** | 5.01 | 5.69 | 10.00 | 0.68 | 0.13 | 4.16 | 0.50 | 0.04 | -0.80 |
| **Austria** | 15.02 | 13.23 | 10.00 | -1.79 | -0.12 | 10.00 | 1.50 | 0.13 | 0.36 |
| **Azerbaijan** | 18.74 | 17.29 | 10.00 | -1.45 | -0.08 | 10.00 | 1.87 | 0.14 | 0.17 |
| **Bangladesh** | 29.84 | 31.13 | 10.00 | 1.29 | 0.04 | 10.00 | 2.98 | 0.20 | -0.06 |
| **Belarus** | 10.29 | 10.64 | 10.00 | 0.35 | 0.03 | 8.81 | 1.03 | 0.12 | -0.24 |
| **Belgium** | 22.08 | 18.81 | 10.00 | -3.27 | -0.15 | 10.00 | 2.21 | 0.21 | 0.27 |
| **Benin** | 22.20 | 21.93 | 10.00 | -0.28 | -0.01 | 10.00 | 2.22 | 0.15 | 0.02 |
| **Bolivia** | 5.85 | 6.05 | 10.00 | 0.19 | 0.03 | 5.04 | 0.59 | 0.07 | -0.24 |
| **Botswana** | 5.00 | 5.17 | 10.00 | 0.16 | 0.03 | 4.31 | 0.50 | 0.05 | -0.23 |
| **Brazil** | 5.25 | 5.08 | 10.00 | -0.17 | -0.03 | 4.49 | 0.53 | 0.06 | 0.23 |
| **Bulgaria** | 19.53 | 16.82 | 10.00 | -2.71 | -0.14 | 10.00 | 1.95 | 0.17 | 0.28 |
| **Cambodia** | 17.55 | 17.43 | 10.00 | -0.12 | -0.01 | 10.00 | 1.75 | 0.10 | 0.02 |
| **Cameroon** | 22.09 | 22.17 | 10.00 | 0.09 | 0.00 | 10.00 | 2.21 | 0.16 | -0.01 |
| **Canada** | 10.29 | 10.14 | 10.00 | -0.14 | -0.01 | 8.55 | 1.03 | 0.08 | 0.08 |
| **Chile** | 8.12 | 8.14 | 10.00 | 0.02 | 0.00 | 6.75 | 0.81 | 0.07 | -0.01 |
| **China** | 64.00 | 72.57 | 10.00 | 8.57 | 0.13 | 10.00 | 6.40 | 0.33 | -0.16 |
| **Colombia** | 5.26 | 5.41 | 10.00 | 0.14 | 0.03 | 4.50 | 0.53 | 0.05 | -0.19 |
| **Costa Rica** | 5.03 | 8.20 | 10.00 | 3.17 | 0.63 | 4.30 | 0.50 | 0.07 | -4.37 |
| **Cote d'Ivoire** | 15.47 | 15.24 | 10.00 | -0.23 | -0.01 | 10.00 | 1.55 | 0.17 | 0.04 |
| **Croatia** | 16.93 | 14.37 | 10.00 | -2.56 | -0.15 | 10.00 | 1.69 | 0.13 | 0.37 |
| **Cyprus** | 19.76 | 18.97 | 10.00 | -0.80 | -0.04 | 10.00 | 1.98 | 0.12 | 0.08 |
| **Czech Republic** | 19.46 | 15.66 | 10.00 | -3.80 | -0.20 | 10.00 | 1.95 | 0.18 | 0.40 |
| **Denmark** | 11.54 | 11.70 | 10.00 | 0.17 | 0.01 | 9.59 | 1.15 | 0.12 | -0.09 |
| **Dominican Republic** | 9.57 | 8.90 | 10.00 | -0.67 | -0.07 | 8.24 | 0.96 | 0.12 | 0.50 |
| **Ecuador** | 5.84 | 5.62 | 10.00 | -0.22 | -0.04 | 5.00 | 0.58 | 0.06 | 0.26 |
| **Egypt, Arab Rep.** | 33.59 | 32.58 | 10.00 | -1.01 | -0.03 | 10.00 | 3.36 | 0.23 | 0.04 |
| **El Salvador** | 5.05 | 5.25 | 10.00 | 0.19 | 0.04 | 4.35 | 0.51 | 0.07 | -0.28 |
| **Estonia** | 5.00 | 7.25 | 10.00 | 2.25 | 0.45 | 4.16 | 0.50 | 0.06 | -2.66 |
| **Finland** | 4.99 | 5.22 | 10.00 | 0.23 | 0.05 | 4.15 | 0.50 | 0.04 | -0.27 |
| **France** | 15.62 | 14.33 | 10.00 | -1.28 | -0.08 | 10.00 | 1.56 | 0.16 | 0.23 |
| **Georgia** | 11.78 | 12.01 | 10.00 | 0.23 | 0.02 | 10.00 | 1.18 | 0.10 | -0.13 |
| **Germany** | 19.04 | 15.86 | 10.00 | -3.19 | -0.17 | 10.00 | 1.90 | 0.19 | 0.35 |
| **Ghana** | 18.38 | 18.01 | 10.00 | -0.37 | -0.02 | 10.00 | 1.84 | 0.14 | 0.04 |
| **Greece** | 18.91 | 16.90 | 10.00 | -2.01 | -0.11 | 10.00 | 1.89 | 0.13 | 0.23 |
| **Guatemala** | 10.63 | 11.85 | 10.00 | 1.22 | 0.11 | 9.15 | 1.06 | 0.10 | -0.83 |
| **Honduras** | 6.71 | 6.73 | 10.00 | 0.02 | 0.00 | 5.78 | 0.67 | 0.05 | -0.02 |
| **Hungary** | 19.85 | 16.25 | 10.00 | -3.60 | -0.18 | 10.00 | 1.98 | 0.18 | 0.37 |
| **Iceland** | 5.69 | 5.84 | 10.00 | 0.15 | 0.03 | 4.73 | 0.57 | 0.04 | -0.16 |
| **India** | 31.47 | 32.02 | 10.00 | 0.55 | 0.02 | 10.00 | 3.15 | 0.19 | -0.03 |
| **Indonesia** | 13.94 | 13.81 | 10.00 | -0.13 | -0.01 | 10.00 | 1.39 | 0.13 | 0.03 |
| **Ireland** | 7.05 | 8.67 | 10.00 | 1.62 | 0.23 | 5.86 | 0.70 | 0.04 | -1.37 |
| **Israel** | 26.88 | 26.18 | 10.00 | -0.70 | -0.03 | 10.00 | 2.69 | 0.20 | 0.04 |
| **Italy** | 21.74 | 19.05 | 10.00 | -2.69 | -0.12 | 10.00 | 2.17 | 0.16 | 0.23 |
| **Jamaica** | 10.18 | 11.96 | 10.00 | 1.79 | 0.18 | 8.71 | 1.02 | 0.11 | -1.22 |
| **Japan** | 22.79 | 21.81 | 10.00 | -0.98 | -0.04 | 10.00 | 2.28 | 0.19 | 0.08 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Jordan** | 29.53 | 28.78 | 10.00 | -0.76 | -0.03 | 10.00 | 2.95 | 0.23 | 0.04 |
| **Kazakhstan** | 13.17 | 13.39 | 10.00 | 0.22 | 0.02 | 10.00 | 1.32 | 0.07 | -0.07 |
| **Kenya** | 5.09 | 5.85 | 10.00 | 0.76 | 0.15 | 4.38 | 0.51 | 0.05 | -1.08 |
| **Korea, Rep.** | 40.09 | 37.52 | 10.00 | -2.57 | -0.06 | 10.00 | 4.01 | 0.25 | 0.09 |
| **Kyrgyz Republic** | 18.23 | 15.98 | 10.00 | -2.25 | -0.12 | 10.00 | 1.82 | 0.17 | 0.27 |
| **Latvia** | 5.01 | 9.14 | 10.00 | 4.13 | 0.82 | 4.29 | 0.50 | 0.06 | -5.70 |
| **Lithuania** | 7.88 | 10.16 | 10.00 | 2.27 | 0.29 | 6.55 | 0.79 | 0.08 | -1.71 |
| **Luxembourg** | 15.68 | 13.29 | 10.00 | -2.39 | -0.15 | 10.00 | 1.57 | 0.20 | 0.42 |
| **Macedonia, FYR** | 19.15 | 16.86 | 10.00 | -2.29 | -0.12 | 10.00 | 1.91 | 0.19 | 0.25 |
| **Malawi** | 5.00 | 4.88 | 10.00 | -0.12 | -0.02 | 4.31 | 0.50 | 0.04 | 0.18 |
| **Malaysia** | 13.09 | 12.94 | 10.00 | -0.14 | -0.01 | 10.00 | 1.31 | 0.09 | 0.05 |
| **Mali** | 34.62 | 34.11 | 10.00 | -0.51 | -0.01 | 10.00 | 3.46 | 0.15 | 0.02 |
| **Mexico** | 16.84 | 16.65 | 10.00 | -0.19 | -0.01 | 10.00 | 1.68 | 0.14 | 0.03 |
| **Moldova** | 16.84 | 13.79 | 10.00 | -3.05 | -0.18 | 10.00 | 1.68 | 0.20 | 0.45 |
| **Mongolia** | 9.32 | 9.21 | 10.00 | -0.11 | -0.01 | 8.03 | 0.93 | 0.11 | 0.09 |
| **Morocco** | 20.14 | 19.98 | 10.00 | -0.16 | -0.01 | 10.00 | 2.01 | 0.20 | 0.02 |
| **Mozambique** | 5.00 | 5.11 | 10.00 | 0.11 | 0.02 | 4.31 | 0.50 | 0.03 | -0.16 |
| **Namibia** | 5.25 | 4.45 | 10.00 | -0.80 | -0.15 | 4.52 | 0.53 | 0.05 | 1.10 |
| **Nepal** | 30.66 | 32.66 | 10.00 | 2.00 | 0.07 | 10.00 | 3.07 | 0.26 | -0.10 |
| **Netherlands** | 21.73 | 18.55 | 10.00 | -3.18 | -0.15 | 10.00 | 2.17 | 0.19 | 0.27 |
| **New Zealand** | 5.14 | 5.58 | 10.00 | 0.45 | 0.09 | 4.27 | 0.51 | 0.05 | -0.52 |
| **Nicaragua** | 5.10 | 5.34 | 10.00 | 0.25 | 0.05 | 4.39 | 0.51 | 0.06 | -0.35 |
| **Norway** | 5.56 | 4.41 | 10.00 | -1.16 | -0.21 | 4.62 | 0.56 | 0.04 | 1.23 |
| **Pakistan** | 37.28 | 38.10 | 10.00 | 0.82 | 0.02 | 10.00 | 3.73 | 0.28 | -0.03 |
| **Panama** | 5.01 | 5.30 | 10.00 | 0.29 | 0.06 | 4.28 | 0.50 | 0.05 | -0.41 |
| **Paraguay** | 5.00 | 4.48 | 10.00 | -0.53 | -0.11 | 4.31 | 0.50 | 0.04 | 0.76 |
| **Peru** | 10.16 | 9.80 | 10.00 | -0.36 | -0.04 | 8.69 | 1.02 | 0.08 | 0.24 |
| **Philippines** | 6.96 | 7.07 | 10.00 | 0.10 | 0.01 | 6.00 | 0.70 | 0.07 | -0.11 |
| **Poland** | 18.99 | 15.78 | 10.00 | -3.20 | -0.17 | 10.00 | 1.90 | 0.16 | 0.36 |
| **Portugal** | 11.77 | 12.54 | 10.00 | 0.76 | 0.06 | 9.79 | 1.18 | 0.10 | -0.38 |
| **Russian Federation** | 8.75 | 9.60 | 10.00 | 0.84 | 0.10 | 7.49 | 0.88 | 0.09 | -0.67 |
| **Senegal** | 41.36 | 41.20 | 10.00 | -0.16 | 0.00 | 10.00 | 4.14 | 0.31 | 0.01 |
| **Singapore** | 20.85 | 19.83 | 10.00 | -1.02 | -0.05 | 10.00 | 2.09 | 0.07 | 0.09 |
| **Slovak Republic** | 18.22 | 15.00 | 10.00 | -3.22 | -0.18 | 10.00 | 1.82 | 0.15 | 0.39 |
| **Slovenia** | 17.65 | 15.24 | 10.00 | -2.41 | -0.14 | 10.00 | 1.76 | 0.16 | 0.32 |
| **South Africa** | 7.21 | 7.80 | 10.00 | 0.59 | 0.08 | 6.21 | 0.72 | 0.06 | -0.59 |
| **Spain** | 14.82 | 13.99 | 10.00 | -0.83 | -0.06 | 10.00 | 1.48 | 0.13 | 0.17 |
| **Sri Lanka** | 10.24 | 8.62 | 10.00 | -1.63 | -0.16 | 8.77 | 1.02 | 0.10 | 1.10 |
| **Sweden** | 5.85 | 5.99 | 10.00 | 0.14 | 0.02 | 4.86 | 0.59 | 0.06 | -0.14 |
| **Switzerland** | 15.92 | 13.86 | 10.00 | -2.06 | -0.13 | 10.00 | 1.59 | 0.15 | 0.35 |
| **Tajikistan** | 18.58 | 16.68 | 10.00 | -1.89 | -0.10 | 10.00 | 1.86 | 0.17 | 0.22 |
| **Thailand** | 20.88 | 21.08 | 10.00 | 0.20 | 0.01 | 10.00 | 2.09 | 0.18 | -0.02 |
| **Togo** | 21.34 | 20.98 | 10.00 | -0.36 | -0.02 | 10.00 | 2.13 | 0.17 | 0.03 |
| **Tunisia** | 19.77 | 19.05 | 10.00 | -0.72 | -0.04 | 10.00 | 1.98 | 0.12 | 0.07 |
| **Turkey** | 18.50 | 17.45 | 10.00 | -1.05 | -0.06 | 10.00 | 1.85 | 0.13 | 0.12 |
| **Uganda** | 10.88 | 10.04 | 10.00 | -0.84 | -0.08 | 9.37 | 1.09 | 0.06 | 0.56 |
| **Ukraine** | 15.49 | 12.70 | 10.00 | -2.79 | -0.18 | 10.00 | 1.55 | 0.13 | 0.51 |
| **United Kingdom** | 14.92 | 13.70 | 10.00 | -1.22 | -0.08 | 10.00 | 1.49 | 0.13 | 0.25 |
| **United States** | 13.74 | 13.38 | 10.00 | -0.35 | -0.03 | 10.00 | 1.37 | 0.10 | 0.09 |
| **Uruguay** | 5.00 | 5.81 | 10.00 | 0.80 | 0.16 | 4.28 | 0.50 | 0.05 | -1.11 |
| **Venezuela, RB** | 6.28 | 8.09 | 10.00 | 1.81 | 0.29 | 5.37 | 0.63 | 0.08 | -2.00 |
| **Vietnam** | 28.87 | 29.80 | 10.00 | 0.93 | 0.03 | 10.00 | 2.89 | 0.22 | -0.05 |
| **Yemen, Rep.** | 30.82 | 30.16 | 10.00 | -0.65 | -0.02 | 10.00 | 3.08 | 0.15 | 0.03 |
| **Zambia** | 5.09 | 5.64 | 10.00 | 0.55 | 0.11 | 4.38 | 0.51 | 0.05 | -0.78 |
| **Zimbabwe** | 5.00 | 4.78 | 10.00 | -0.22 | -0.04 | 4.31 | 0.50 | 0.05 | 0.32 |

*Source: Authors' calculations.*

## Energy use

| Country | *Current greenness* | | | *Progress of greenness* | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 2000-2004 average value of energy use = $y^0$ | 2010-2014 average value of energy use = $y^1$ | threshold = t | change = $y^1-y^0$ | rate of change = $(y^1-y^0)/y^0$ | target = $y^*$ | Weight $\tilde{\pi}$ | Weight $\pi$ | progress on energy use |
| **Albania** | 105.98 | 76.50 | 179.09 | -29.48 | -0.28 | 71.59 | 0.59 | 0.06 | 0.86 |
| **Algeria** | 82.87 | 87.26 | 179.09 | 4.40 | 0.05 | 53.44 | 0.46 | 0.04 | -0.15 |
| **Angola** | 153.77 | 95.97 | 179.09 | -57.80 | -0.38 | 95.97 | 0.86 | 0.09 | 1.00 |
| **Argentina** | 115.71 | 95.43 | 179.09 | -20.28 | -0.18 | 79.05 | 0.65 | 0.05 | 0.55 |
| **Armenia** | 180.46 | 131.63 | 179.09 | -48.83 | -0.27 | 121.90 | 1.01 | 0.10 | 0.83 |
| **Australia** | 152.83 | 134.92 | 179.09 | -17.91 | -0.12 | 104.41 | 0.85 | 0.06 | 0.37 |
| **Austria** | 96.24 | 90.45 | 179.09 | -5.79 | -0.06 | 65.75 | 0.54 | 0.05 | 0.19 |
| **Azerbaijan** | 271.94 | 83.57 | 179.09 | -188.37 | -0.69 | 179.09 | 1.52 | 0.11 | 2.03 |
| **Bangladesh** | 88.25 | 80.92 | 179.09 | -7.33 | -0.08 | 55.08 | 0.49 | 0.03 | 0.22 |
| **Belarus** | 311.91 | 186.68 | 179.09 | -125.24 | -0.40 | 179.09 | 1.74 | 0.20 | 0.94 |
| **Belgium** | 147.83 | 131.16 | 179.09 | -16.67 | -0.11 | 101.00 | 0.83 | 0.08 | 0.36 |
| **Benin** | 191.90 | 234.38 | 179.09 | 42.48 | 0.22 | 119.76 | 1.07 | 0.07 | -0.59 |
| **Bolivia** | 90.64 | 136.77 | 179.09 | 46.13 | 0.51 | 58.45 | 0.51 | 0.06 | -1.43 |
| **Botswana** | 98.04 | 82.72 | 179.09 | -15.31 | -0.16 | 63.22 | 0.55 | 0.05 | 0.44 |
| **Brazil** | 98.01 | 96.43 | 179.09 | -1.57 | -0.02 | 66.20 | 0.55 | 0.06 | 0.05 |
| **Bulgaria** | 235.29 | 166.86 | 179.09 | -68.43 | -0.29 | 158.94 | 1.31 | 0.11 | 0.90 |
| **Cambodia** | 188.97 | 138.57 | 179.09 | -50.39 | -0.27 | 121.86 | 1.06 | 0.06 | 0.75 |
| **Cameroon** | 158.44 | 126.33 | 179.09 | -32.11 | -0.20 | 98.88 | 0.88 | 0.06 | 0.54 |
| **Canada** | 213.20 | 177.90 | 179.09 | -35.29 | -0.17 | 145.65 | 1.19 | 0.09 | 0.52 |
| **Chile** | 106.60 | 93.02 | 179.09 | -13.58 | -0.13 | 72.83 | 0.60 | 0.05 | 0.40 |
| **China** | 244.13 | 202.97 | 179.09 | -41.16 | -0.17 | 164.91 | 1.36 | 0.07 | 0.52 |
| **Colombia** | 72.59 | 61.83 | 179.09 | -10.76 | -0.15 | 49.03 | 0.41 | 0.04 | 0.46 |
| **Costa Rica** | 79.97 | 79.07 | 179.09 | -0.89 | -0.01 | 54.02 | 0.45 | 0.06 | 0.03 |
| **Cote d'Ivoire** | 148.28 | 196.30 | 179.09 | 48.02 | 0.32 | 92.54 | 0.83 | 0.09 | -0.86 |
| **Croatia** | 110.05 | 96.41 | 179.09 | -13.64 | -0.12 | 75.19 | 0.61 | 0.05 | 0.39 |
| **Cyprus** | 106.18 | 93.61 | 179.09 | -12.57 | -0.12 | 72.54 | 0.59 | 0.04 | 0.37 |
| **Czech Republic** | 189.78 | 146.77 | 179.09 | -43.00 | -0.23 | 129.66 | 1.06 | 0.10 | 0.72 |
| **Denmark** | 86.19 | 76.44 | 179.09 | -9.75 | -0.11 | 58.89 | 0.48 | 0.05 | 0.36 |
| **Dominican Republic** | 100.20 | 64.61 | 179.09 | -35.58 | -0.36 | 64.61 | 0.56 | 0.07 | 1.00 |
| **Ecuador** | 89.35 | 87.44 | 179.09 | -1.91 | -0.02 | 60.35 | 0.50 | 0.05 | 0.07 |
| **Egypt, Arab Rep.** | 85.59 | 90.37 | 179.09 | 4.79 | 0.06 | 55.19 | 0.48 | 0.03 | -0.16 |
| **El Salvador** | 108.76 | 93.72 | 179.09 | -15.03 | -0.14 | 70.13 | 0.61 | 0.08 | 0.39 |
| **Estonia** | 210.86 | 182.08 | 179.09 | -28.77 | -0.14 | 144.06 | 1.18 | 0.13 | 0.43 |
| **Finland** | 185.74 | 162.93 | 179.09 | -22.81 | -0.12 | 126.90 | 1.04 | 0.08 | 0.39 |
| **France** | 119.88 | 105.31 | 179.09 | -14.57 | -0.12 | 81.90 | 0.67 | 0.07 | 0.38 |
| **Georgia** | 165.71 | 121.53 | 179.09 | -44.19 | -0.27 | 111.94 | 0.93 | 0.08 | 0.82 |
| **Germany** | 109.72 | 92.27 | 179.09 | -17.45 | -0.16 | 74.96 | 0.61 | 0.06 | 0.50 |
| **Ghana** | 176.08 | 128.99 | 179.09 | -47.09 | -0.27 | 109.89 | 0.98 | 0.07 | 0.71 |
| **Greece** | 94.84 | 88.65 | 179.09 | -6.18 | -0.07 | 64.79 | 0.53 | 0.04 | 0.21 |
| **Guatemala** | 97.93 | 101.84 | 179.09 | 3.91 | 0.04 | 63.15 | 0.55 | 0.05 | -0.11 |
| **Honduras** | 145.77 | 140.31 | 179.09 | -5.46 | -0.04 | 94.00 | 0.81 | 0.06 | 0.11 |
| **Hungary** | 130.08 | 110.18 | 179.09 | -19.90 | -0.15 | 88.87 | 0.73 | 0.06 | 0.48 |
| **Iceland** | 321.86 | 449.46 | 179.09 | 127.61 | 0.40 | 179.09 | 1.80 | 0.13 | -0.89 |
| **India** | 159.89 | 127.56 | 179.09 | -32.33 | -0.20 | 103.10 | 0.89 | 0.05 | 0.57 |
| **Indonesia** | 129.99 | 105.49 | 179.09 | -24.50 | -0.19 | 83.82 | 0.73 | 0.07 | 0.53 |
| **Ireland** | 81.94 | 66.46 | 179.09 | -15.49 | -0.19 | 55.98 | 0.46 | 0.03 | 0.60 |
| **Israel** | 117.59 | 100.78 | 179.09 | -16.81 | -0.14 | 80.33 | 0.66 | 0.05 | 0.45 |
| **Italy** | 83.75 | 78.29 | 179.09 | -5.46 | -0.07 | 57.22 | 0.47 | 0.03 | 0.21 |
| **Jamaica** | 180.77 | 129.74 | 179.09 | -51.03 | -0.28 | 122.11 | 1.01 | 0.11 | 0.87 |
| **Japan** | 123.84 | 106.55 | 179.09 | -17.29 | -0.14 | 84.61 | 0.69 | 0.06 | 0.44 |
| **Jordan** | 126.71 | 102.81 | 179.09 | -23.90 | -0.19 | 85.59 | 0.71 | 0.06 | 0.58 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Kazakhstan** | 226.33 | 229.89 | 179.09 | 3.56 | 0.02 | 152.88 | 1.26 | 0.07 | -0.05 |
| **Kenya** | 206.33 | 189.19 | 179.09 | -17.15 | -0.08 | 128.77 | 1.15 | 0.11 | 0.22 |
| **Korea, Rep.** | 183.45 | 166.02 | 179.09 | -17.43 | -0.10 | 125.33 | 1.02 | 0.06 | 0.30 |
| **Kyrgyz Republic** | 217.68 | 188.43 | 179.09 | -29.25 | -0.13 | 140.37 | 1.22 | 0.12 | 0.38 |
| **Latvia** | 135.06 | 115.20 | 179.09 | -19.86 | -0.15 | 91.23 | 0.75 | 0.08 | 0.45 |
| **Lithuania** | 177.73 | 109.20 | 179.09 | -68.53 | -0.39 | 121.42 | 0.99 | 0.10 | 1.22 |
| **Luxembourg** | 100.77 | 89.64 | 179.09 | -11.13 | -0.11 | 68.84 | 0.56 | 0.07 | 0.35 |
| **Macedonia, FYR** | 149.76 | 127.72 | 179.09 | -22.03 | -0.15 | 101.16 | 0.84 | 0.08 | 0.45 |
| **Malawi** | | | | | | | | | |
| **Malaysia** | 131.69 | 125.53 | 179.09 | -6.16 | -0.05 | 88.96 | 0.74 | 0.05 | 0.14 |
| **Mali** | | | | | | | | | |
| **Mexico** | 97.91 | 97.90 | 179.09 | -0.01 | 0.00 | 66.14 | 0.55 | 0.05 | 0.00 |
| **Moldova** | 326.73 | 234.91 | 179.09 | -91.82 | -0.28 | 179.09 | 1.82 | 0.21 | 0.62 |
| **Mongolia** | 242.48 | 185.70 | 179.09 | -56.78 | -0.23 | 156.36 | 1.35 | 0.15 | 0.66 |
| **Morocco** | 77.08 | 78.51 | 179.09 | 1.42 | 0.02 | 49.71 | 0.43 | 0.04 | -0.05 |
| **Mozambique** | 608.77 | 433.26 | 179.09 | -175.52 | -0.29 | 179.09 | 3.40 | 0.19 | 0.41 |
| **Namibia** | 85.47 | 83.30 | 179.09 | -2.16 | -0.03 | 55.11 | 0.48 | 0.05 | 0.07 |
| **Nepal** | 218.24 | 188.81 | 179.09 | -29.43 | -0.13 | 136.21 | 1.22 | 0.10 | 0.36 |
| **Netherlands** | 112.92 | 104.23 | 179.09 | -8.70 | -0.08 | 77.15 | 0.63 | 0.06 | 0.24 |
| **New Zealand** | 149.38 | 131.33 | 179.09 | -18.05 | -0.12 | 102.05 | 0.83 | 0.08 | 0.38 |
| **Nicaragua** | 142.13 | 123.70 | 179.09 | -18.43 | -0.13 | 91.65 | 0.79 | 0.09 | 0.37 |
| **Norway** | 96.94 | 97.73 | 179.09 | 0.80 | 0.01 | 66.23 | 0.54 | 0.04 | -0.03 |
| **Pakistan** | 130.01 | 114.21 | 179.09 | -15.80 | -0.12 | 81.14 | 0.73 | 0.05 | 0.32 |
| **Panama** | 83.28 | 67.17 | 179.09 | -16.11 | -0.19 | 56.26 | 0.47 | 0.05 | 0.60 |
| **Paraguay** | 119.46 | 104.31 | 179.09 | -15.15 | -0.13 | 77.04 | 0.67 | 0.06 | 0.36 |
| **Peru** | 67.33 | 66.42 | 179.09 | -0.91 | -0.01 | 45.48 | 0.38 | 0.03 | 0.04 |
| **Philippines** | 109.51 | 75.81 | 179.09 | -33.70 | -0.31 | 70.62 | 0.61 | 0.06 | 0.87 |
| **Poland** | 154.74 | 118.37 | 179.09 | -36.37 | -0.24 | 105.72 | 0.86 | 0.07 | 0.74 |
| **Portugal** | 93.20 | 81.81 | 179.09 | -11.39 | -0.12 | 63.67 | 0.52 | 0.04 | 0.39 |
| **Russian Federation** | 294.01 | 226.74 | 179.09 | -67.27 | -0.23 | 179.09 | 1.64 | 0.17 | 0.59 |
| **Senegal** | 126.50 | 121.56 | 179.09 | -4.94 | -0.04 | 78.95 | 0.71 | 0.05 | 0.10 |
| **Singapore** | 106.44 | 90.26 | 179.09 | -16.18 | -0.15 | 72.72 | 0.59 | 0.02 | 0.48 |
| **Slovak Republic** | 202.22 | 125.79 | 179.09 | -76.43 | -0.38 | 138.16 | 1.13 | 0.10 | 1.19 |
| **Slovenia** | 141.29 | 123.61 | 179.09 | -17.67 | -0.13 | 96.53 | 0.79 | 0.07 | 0.39 |
| **South Africa** | 258.43 | 235.04 | 179.09 | -23.39 | -0.09 | 166.65 | 1.44 | 0.11 | 0.25 |
| **Spain** | 98.29 | 83.08 | 179.09 | -15.20 | -0.15 | 67.15 | 0.55 | 0.05 | 0.49 |
| **Sri Lanka** | 85.12 | 62.25 | 179.09 | -22.87 | -0.27 | 57.50 | 0.48 | 0.04 | 0.83 |
| **Sweden** | 147.89 | 121.20 | 179.09 | -26.68 | -0.18 | 101.03 | 0.83 | 0.08 | 0.57 |
| **Switzerland** | 72.59 | 60.04 | 179.09 | -12.55 | -0.17 | 49.59 | 0.41 | 0.04 | 0.55 |
| **Tajikistan** | 245.10 | 142.90 | 179.09 | -102.20 | -0.42 | 158.05 | 1.37 | 0.12 | 1.17 |
| **Thailand** | 135.44 | 138.88 | 179.09 | 3.45 | 0.03 | 91.49 | 0.76 | 0.07 | -0.08 |
| **Togo** | 345.62 | 338.98 | 179.09 | -6.64 | -0.02 | 179.09 | 1.93 | 0.15 | 0.04 |
| **Tunisia** | 102.21 | 87.55 | 179.09 | -14.67 | -0.14 | 69.04 | 0.57 | 0.03 | 0.44 |
| **Turkey** | 89.28 | 86.22 | 179.09 | -3.07 | -0.03 | 60.31 | 0.50 | 0.03 | 0.11 |
| **Uganda** | | | | | | | | | |
| **Ukraine** | 499.66 | 350.30 | 179.09 | -149.36 | -0.30 | 179.09 | 2.79 | 0.24 | 0.47 |
| **United Kingdom** | 109.13 | 84.06 | 179.09 | -25.06 | -0.23 | 74.55 | 0.61 | 0.05 | 0.72 |
| **United States** | 168.34 | 140.19 | 179.09 | -28.15 | -0.17 | 115.01 | 0.94 | 0.07 | 0.53 |
| **Uruguay** | 70.11 | 74.62 | 179.09 | 4.51 | 0.06 | 47.36 | 0.39 | 0.04 | -0.20 |
| **Venezuela, RB** | 163.85 | 148.75 | 179.09 | -15.09 | -0.09 | 110.68 | 0.91 | 0.11 | 0.28 |
| **Vietnam** | 142.27 | 149.39 | 179.09 | 7.12 | 0.05 | 91.75 | 0.79 | 0.06 | -0.14 |
| **Yemen, Rep.** | 70.81 | 81.92 | 179.09 | 11.11 | 0.16 | 44.19 | 0.40 | 0.02 | -0.42 |
| **Zambia** | 267.42 | 175.52 | 179.09 | -91.90 | -0.34 | 166.90 | 1.49 | 0.14 | 0.91 |
| **Zimbabwe** | 349.77 | 446.20 | 179.09 | 96.43 | 0.28 | 179.09 | 1.95 | 0.19 | -0.57 |

*Source: Authors' calculations.*

## Green trade

| Country | *Current greenness* | | | *Progress of greenness* | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 2000-2004 average value of green trade = $y^0$ | 2010-2014 average value of green trade = $y^1$ | threshold = t | change = $y^1$-$y^0$ | rate of change = ($y^1$-$y^0$ )/$y^0$ | target = $y^*$ | Weight $\tilde{\pi}$ | Weight $\pi$ | progress on green trade |
| **Albania** | 0.41 | 0.32 | 0.47 | -0.09 | -0.23 | 1.64 | 1.13 | 0.11 | -0.08 |
| **Algeria** | 0.21 | 0.21 | 0.47 | 0.01 | 0.03 | 0.82 | 2.26 | 0.19 | 0.01 |
| **Angola** | | | | | | | | | |
| **Argentina** | 1.70 | 1.30 | 0.47 | -0.40 | -0.23 | 6.73 | 0.28 | 0.02 | -0.08 |
| **Armenia** | 0.66 | 0.71 | 0.47 | 0.05 | 0.08 | 2.60 | 0.71 | 0.07 | 0.03 |
| **Australia** | 1.76 | 1.16 | 0.47 | -0.59 | -0.34 | 6.96 | 0.27 | 0.02 | -0.11 |
| **Austria** | 5.52 | 6.41 | 0.47 | 0.89 | 0.16 | 21.87 | 0.08 | 0.01 | 0.05 |
| **Azerbaijan** | 0.39 | 0.06 | 0.47 | -0.33 | -0.84 | 1.56 | 1.19 | 0.09 | -0.28 |
| **Bangladesh** | 0.41 | 0.14 | 0.47 | -0.28 | -0.67 | 6.17 | 1.13 | 0.08 | -0.05 |
| **Belarus** | 2.28 | 1.73 | 0.47 | -0.55 | -0.24 | 9.02 | 0.21 | 0.02 | -0.08 |
| **Belgium** | 3.00 | 3.30 | 0.47 | 0.31 | 0.10 | 11.87 | 0.16 | 0.02 | 0.03 |
| **Benin** | 0.20 | 0.35 | 0.47 | 0.16 | 0.80 | 2.92 | 2.39 | 0.16 | 0.06 |
| **Bolivia** | 1.57 | 0.59 | 0.47 | -0.98 | -0.62 | 6.20 | 0.30 | 0.04 | -0.21 |
| **Botswana** | | | | | | | | | |
| **Brazil** | 3.32 | 3.06 | 0.47 | -0.27 | -0.08 | 13.15 | 0.14 | 0.02 | -0.03 |
| **Bulgaria** | 2.35 | 3.37 | 0.47 | 1.01 | 0.43 | 9.32 | 0.20 | 0.02 | 0.15 |
| **Cambodia** | | | | | | | | | |
| **Cameroon** | 0.19 | 1.30 | 0.47 | 1.11 | 5.89 | 2.80 | 2.49 | 0.18 | 0.42 |
| **Canada** | 3.00 | 3.08 | 0.47 | 0.08 | 0.03 | 11.89 | 0.16 | 0.01 | 0.01 |
| **Chile** | 2.20 | 0.61 | 0.47 | -1.59 | -0.72 | 8.72 | 0.21 | 0.02 | -0.24 |
| **China** | 2.84 | 4.78 | 0.47 | 1.94 | 0.68 | 11.24 | 0.17 | 0.01 | 0.23 |
| **Colombia** | 0.90 | 0.49 | 0.47 | -0.41 | -0.46 | 3.58 | 0.52 | 0.05 | -0.15 |
| **Costa Rica** | 1.83 | 1.98 | 0.47 | 0.15 | 0.08 | 7.24 | 0.26 | 0.04 | 0.03 |
| **Cote d'Ivoire** | 0.41 | 0.37 | 0.47 | -0.04 | -0.10 | 6.10 | 1.14 | 0.13 | -0.01 |
| **Croatia** | 2.56 | 3.73 | 0.47 | 1.17 | 0.46 | 10.14 | 0.18 | 0.01 | 0.15 |
| **Cyprus** | 1.94 | 4.86 | 0.47 | 2.92 | 1.51 | 7.68 | 0.24 | 0.01 | 0.51 |
| **Czech Republic** | 5.25 | 6.31 | 0.47 | 1.05 | 0.20 | 20.80 | 0.09 | 0.01 | 0.07 |
| **Denmark** | 6.94 | 7.05 | 0.47 | 0.11 | 0.02 | 27.47 | 0.07 | 0.01 | 0.01 |
| **Dominican Republic** | 1.24 | 2.31 | 0.47 | 1.06 | 0.86 | 4.93 | 0.38 | 0.05 | 0.29 |
| **Ecuador** | 0.52 | 0.57 | 0.47 | 0.04 | 0.08 | 2.07 | 0.90 | 0.09 | 0.03 |
| **Egypt, Arab Rep.** | 0.48 | 2.78 | 0.47 | 2.30 | 4.77 | 1.91 | 0.97 | 0.07 | 1.61 |
| **El Salvador** | 1.07 | 2.23 | 0.47 | 1.15 | 1.07 | 4.25 | 0.44 | 0.06 | 0.36 |
| **Estonia** | 3.18 | 3.73 | 0.47 | 0.55 | 0.17 | 12.60 | 0.15 | 0.02 | 0.06 |
| **Finland** | 4.64 | 6.16 | 0.47 | 1.52 | 0.33 | 18.38 | 0.10 | 0.01 | 0.11 |
| **France** | 4.68 | 4.94 | 0.47 | 0.26 | 0.05 | 18.53 | 0.10 | 0.01 | 0.02 |
| **Georgia** | 1.09 | 1.05 | 0.47 | -0.04 | -0.03 | 4.30 | 0.43 | 0.04 | -0.01 |
| **Germany** | 7.25 | 8.59 | 0.47 | 1.34 | 0.19 | 28.69 | 0.06 | 0.01 | 0.06 |
| **Ghana** | 0.64 | 0.77 | 0.47 | 0.13 | 0.20 | 9.58 | 0.73 | 0.05 | 0.01 |
| **Greece** | 2.50 | 1.81 | 0.47 | -0.68 | -0.27 | 9.89 | 0.19 | 0.01 | -0.09 |
| **Guatemala** | 1.26 | 1.98 | 0.47 | 0.72 | 0.58 | 4.98 | 0.37 | 0.04 | 0.19 |
| **Honduras** | 0.66 | 0.70 | 0.47 | 0.04 | 0.06 | 2.62 | 0.71 | 0.05 | 0.02 |
| **Hungary** | 4.60 | 8.79 | 0.47 | 4.19 | 0.91 | 18.23 | 0.10 | 0.01 | 0.31 |
| **Iceland** | 0.29 | 0.66 | 0.47 | 0.37 | 1.29 | 1.14 | 1.63 | 0.11 | 0.44 |
| **India** | 1.81 | 2.24 | 0.47 | 0.43 | 0.24 | 7.15 | 0.26 | 0.02 | 0.08 |
| **Indonesia** | 1.33 | 1.32 | 0.47 | -0.01 | -0.01 | 5.25 | 0.35 | 0.03 | 0.00 |
| **Ireland** | 1.39 | 1.79 | 0.47 | 0.40 | 0.29 | 5.50 | 0.34 | 0.02 | 0.10 |
| **Israel** | 4.81 | 4.55 | 0.47 | -0.25 | -0.05 | 19.04 | 0.10 | 0.01 | -0.02 |
| **Italy** | 7.14 | 7.66 | 0.47 | 0.53 | 0.07 | 28.25 | 0.07 | 0.00 | 0.02 |
| **Jamaica** | 3.89 | 5.85 | 0.47 | 1.96 | 0.50 | 15.42 | 0.12 | 0.01 | 0.17 |
| **Japan** | 8.22 | 9.56 | 0.47 | 1.34 | 0.16 | 32.55 | 0.06 | 0.00 | 0.06 |
| **Jordan** | 2.07 | 1.37 | 0.47 | -0.70 | -0.34 | 8.20 | 0.23 | 0.02 | -0.11 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Kazakhstan** | 0.38 | 0.15 | 0.47 | -0.23 | -0.59 | 1.51 | 1.23 | 0.06 | -0.20 |
| **Kenya** | 0.53 | 1.15 | 0.47 | 0.62 | 1.17 | 7.85 | 0.89 | 0.09 | 0.08 |
| **Korea, Rep.** | 2.68 | 4.72 | 0.47 | 2.05 | 0.77 | 10.60 | 0.18 | 0.01 | 0.26 |
| **Kyrgyz Republic** | | | | | | | | | |
| **Latvia** | 2.13 | 2.49 | 0.47 | 0.36 | 0.17 | 8.45 | 0.22 | 0.02 | 0.06 |
| **Lithuania** | 2.44 | 3.56 | 0.47 | 1.12 | 0.46 | 9.66 | 0.19 | 0.02 | 0.16 |
| **Luxembourg** | 3.73 | 5.65 | 0.47 | 1.91 | 0.51 | 14.79 | 0.13 | 0.02 | 0.17 |
| **Macedonia, FYR** | 0.77 | 4.39 | 0.47 | 3.61 | 4.67 | 3.06 | 0.61 | 0.06 | 1.58 |
| **Malawi** | 0.21 | 1.01 | 0.47 | 0.80 | 3.78 | 3.15 | 2.22 | 0.18 | 0.27 |
| **Malaysia** | 2.75 | 4.69 | 0.47 | 1.94 | 0.71 | 10.88 | 0.17 | 0.01 | 0.24 |
| **Mali** | 0.29 | 0.30 | 0.47 | 0.01 | 0.05 | 4.28 | 1.63 | 0.07 | 0.00 |
| **Mexico** | 4.79 | 5.08 | 0.47 | 0.29 | 0.06 | 18.97 | 0.10 | 0.01 | 0.02 |
| **Moldova** | 2.21 | 2.70 | 0.47 | 0.49 | 0.22 | 8.74 | 0.21 | 0.02 | 0.08 |
| **Mongolia** | | | | | | | | | |
| **Morocco** | 0.78 | 0.63 | 0.47 | -0.14 | -0.19 | 3.07 | 0.60 | 0.06 | -0.06 |
| **Mozambique** | 0.47 | 1.85 | 0.47 | 1.38 | 2.94 | 6.96 | 1.00 | 0.06 | 0.21 |
| **Namibia** | 0.70 | 0.97 | 0.47 | 0.26 | 0.38 | 2.77 | 0.67 | 0.07 | 0.13 |
| **Nepal** | | | | | | | | | |
| **Netherlands** | 3.15 | 4.68 | 0.47 | 1.53 | 0.49 | 12.46 | 0.15 | 0.01 | 0.16 |
| **New Zealand** | 3.46 | 1.46 | 0.47 | -2.00 | -0.58 | 13.69 | 0.14 | 0.01 | -0.20 |
| **Nicaragua** | 1.00 | 0.23 | 0.47 | -0.77 | -0.77 | 3.96 | 0.47 | 0.05 | -0.26 |
| **Norway** | 1.93 | 2.58 | 0.47 | 0.65 | 0.33 | 7.65 | 0.24 | 0.02 | 0.11 |
| **Pakistan** | | | | | | | | | |
| **Panama** | 0.89 | 0.90 | 0.47 | 0.01 | 0.01 | 3.52 | 0.53 | 0.05 | 0.00 |
| **Paraguay** | | | | | | | | | |
| **Peru** | 0.47 | 0.80 | 0.47 | 0.33 | 0.71 | 1.86 | 1.00 | 0.08 | 0.24 |
| **Philippines** | 0.98 | 4.33 | 0.47 | 3.35 | 3.44 | 3.86 | 0.48 | 0.05 | 1.16 |
| **Poland** | 4.02 | 4.76 | 0.47 | 0.75 | 0.19 | 15.90 | 0.12 | 0.01 | 0.06 |
| **Portugal** | 3.38 | 4.36 | 0.47 | 0.99 | 0.29 | 13.36 | 0.14 | 0.01 | 0.10 |
| **Russian Federation** | 1.55 | 0.87 | 0.47 | -0.69 | -0.44 | 6.14 | 0.30 | 0.03 | -0.15 |
| **Senegal** | 1.20 | 0.70 | 0.47 | -0.50 | -0.42 | 17.82 | 0.39 | 0.03 | -0.03 |
| **Singapore** | 3.25 | 4.53 | 0.47 | 1.28 | 0.39 | 12.88 | 0.14 | 0.00 | 0.13 |
| **Slovak Republic** | 3.26 | 3.48 | 0.47 | 0.22 | 0.07 | 12.90 | 0.14 | 0.01 | 0.02 |
| **Slovenia** | 5.90 | 6.16 | 0.47 | 0.27 | 0.05 | 23.36 | 0.08 | 0.01 | 0.02 |
| **South Africa** | 5.50 | 4.71 | 0.47 | -0.79 | -0.14 | 21.78 | 0.09 | 0.01 | -0.05 |
| **Spain** | 3.37 | 3.44 | 0.47 | 0.08 | 0.02 | 13.33 | 0.14 | 0.01 | 0.01 |
| **Sri Lanka** | | | | | | | | | |
| **Sweden** | 5.27 | 5.31 | 0.47 | 0.04 | 0.01 | 20.85 | 0.09 | 0.01 | 0.00 |
| **Switzerland** | 6.79 | 6.28 | 0.47 | -0.50 | -0.07 | 26.87 | 0.07 | 0.01 | -0.02 |
| **Tajikistan** | | | | | | | | | |
| **Thailand** | 2.03 | 3.28 | 0.47 | 1.25 | 0.62 | 8.04 | 0.23 | 0.02 | 0.21 |
| **Togo** | 0.41 | 1.89 | 0.47 | 1.48 | 3.64 | 6.06 | 1.15 | 0.09 | 0.26 |
| **Tunisia** | 1.52 | 4.03 | 0.47 | 2.51 | 1.65 | 6.02 | 0.31 | 0.02 | 0.56 |
| **Turkey** | 2.77 | 3.30 | 0.47 | 0.52 | 0.19 | 10.98 | 0.17 | 0.01 | 0.06 |
| **Uganda** | 0.55 | 0.86 | 0.47 | 0.31 | 0.55 | 8.24 | 0.85 | 0.05 | 0.04 |
| **Ukraine** | 4.88 | 3.22 | 0.47 | -1.67 | -0.34 | 19.34 | 0.10 | 0.01 | -0.12 |
| **United Kingdom** | 5.04 | 5.01 | 0.47 | -0.03 | -0.01 | 19.94 | 0.09 | 0.01 | 0.00 |
| **United States** | 6.95 | 6.47 | 0.47 | -0.49 | -0.07 | 27.54 | 0.07 | 0.01 | -0.02 |
| **Uruguay** | 0.77 | 0.45 | 0.47 | -0.32 | -0.41 | 3.05 | 0.61 | 0.06 | -0.14 |
| **Venezuela, RB** | 0.84 | 0.38 | 0.47 | -0.45 | -0.54 | 3.32 | 0.56 | 0.07 | -0.18 |
| **Vietnam** | 0.62 | 1.31 | 0.47 | 0.70 | 1.13 | 2.45 | 0.76 | 0.06 | 0.38 |
| **Yemen, Rep.** | | | | | | | | | |
| **Zambia** | | | | | | | | | |
| **Zimbabwe** | 0.44 | 0.31 | 0.47 | -0.14 | -0.31 | 6.58 | 1.06 | 0.10 | -0.02 |

*Source: Authors' calculations.*

## Environmental patents

| Country | *Current greenness* | | | *Progress of greenness* | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 2000-2004 average value of environmental patents = $y^0$ | 2010-2014 average value of environmental patents = $y^1$ | threshold = t | change = $y^1$-$y^0$ | rate of change = ($y^1$-$y^0$ )/$y^0$ | target = $y^*$ | Weight $\tilde{\pi}$ | Weight $\pi$ | progress on environmental patents |
| **Albania** | | | | | | | | | |
| **Algeria** | 0.02 | 0.00 | 0.01 | -0.02 | -0.93 | 0.05 | 0.43 | 0.04 | -0.66 |
| **Angola** | | | | | | | | | |
| **Argentina** | 0.01 | 0.00 | 0.01 | 0.00 | -0.48 | 0.02 | 0.85 | 0.06 | -0.38 |
| **Armenia** | | | | | | | | | |
| **Australia** | 0.01 | 0.01 | 0.01 | 0.00 | 0.17 | 0.02 | 0.74 | 0.06 | 0.13 |
| **Austria** | 0.02 | 0.02 | 0.01 | 0.00 | -0.08 | 0.04 | 0.45 | 0.04 | -0.06 |
| **Azerbaijan** | | | | | | | | | |
| **Bangladesh** | | | | | | | | | |
| **Belarus** | | | | | | | | | |
| **Belgium** | 0.03 | 0.00 | 0.01 | -0.03 | -0.91 | 0.06 | 0.29 | 0.03 | -0.71 |
| **Benin** | | | | | | | | | |
| **Bolivia** | | | | | | | | | |
| **Botswana** | | | | | | | | | |
| **Brazil** | 0.01 | 0.01 | 0.01 | -0.01 | -0.47 | 0.03 | 0.63 | 0.07 | -0.46 |
| **Bulgaria** | 0.01 | 0.02 | 0.01 | 0.00 | 0.21 | 0.03 | 0.57 | 0.05 | 0.21 |
| **Cambodia** | | | | | | | | | |
| **Cameroon** | | | | | | | | | |
| **Canada** | 0.01 | 0.02 | 0.01 | 0.00 | 0.09 | 0.03 | 0.57 | 0.04 | 0.07 |
| **Chile** | | | | | | | | | |
| **China** | 0.01 | 0.02 | 0.01 | 0.01 | 0.43 | 0.02 | 0.69 | 0.04 | 0.42 |
| **Colombia** | 0.01 | 0.01 | 0.01 | 0.00 | 0.42 | 0.02 | 0.82 | 0.08 | 0.41 |
| **Costa Rica** | | | | | | | | | |
| **Cote d'Ivoire** | | | | | | | | | |
| **Croatia** | 0.01 | 0.03 | 0.01 | 0.02 | 1.27 | 0.03 | 0.58 | 0.04 | 1.00 |
| **Cyprus** | 0.01 | 0.13 | 0.01 | 0.11 | 7.63 | 0.03 | 0.55 | 0.03 | 5.98 |
| **Czech Republic** | 0.02 | 0.03 | 0.01 | 0.01 | 0.31 | 0.05 | 0.40 | 0.04 | 0.24 |
| **Denmark** | 0.01 | 0.01 | 0.01 | 0.00 | 0.22 | 0.02 | 0.84 | 0.08 | 0.17 |
| **Dominican Republic** | | | | | | | | | |
| **Ecuador** | 0.01 | 0.00 | 0.01 | -0.01 | -0.56 | 0.02 | 0.81 | 0.08 | -0.54 |
| **Egypt, Arab Rep.** | 0.01 | 0.01 | 0.01 | 0.00 | -0.15 | 0.02 | 0.89 | 0.06 | -0.11 |
| **El Salvador** | | | | | | | | | |
| **Estonia** | 0.02 | 0.06 | 0.01 | 0.04 | 2.21 | 0.05 | 0.40 | 0.04 | 1.74 |
| **Finland** | 0.02 | 0.02 | 0.01 | 0.00 | -0.01 | 0.05 | 0.36 | 0.03 | -0.01 |
| **France** | 0.02 | 0.02 | 0.01 | 0.00 | 0.24 | 0.04 | 0.41 | 0.04 | 0.19 |
| **Georgia** | 0.01 | 0.01 | 0.01 | 0.00 | -0.46 | 0.02 | 0.79 | 0.07 | -0.44 |
| **Germany** | 0.01 | 0.02 | 0.01 | 0.00 | 0.17 | 0.03 | 0.57 | 0.06 | 0.14 |
| **Ghana** | | | | | | | | | |
| **Greece** | 0.03 | 0.02 | 0.01 | -0.01 | -0.27 | 0.06 | 0.31 | 0.02 | -0.21 |
| **Guatemala** | 0.01 | 0.00 | 0.01 | 0.00 | -0.53 | 0.02 | 1.22 | 0.12 | -0.37 |
| **Honduras** | | | | | | | | | |
| **Hungary** | 0.01 | 0.02 | 0.01 | 0.01 | 1.00 | 0.03 | 0.70 | 0.06 | 0.78 |
| **Iceland** | | | | | | | | | |
| **India** | 0.00 | 0.00 | 0.01 | 0.00 | -0.90 | 0.01 | 2.34 | 0.14 | -0.64 |
| **Indonesia** | | | | | | | | | |
| **Ireland** | 0.01 | 0.02 | 0.01 | 0.01 | 0.66 | 0.03 | 0.68 | 0.04 | 0.52 |
| **Israel** | 0.01 | 0.00 | 0.01 | -0.01 | -0.70 | 0.02 | 0.84 | 0.06 | -0.55 |
| **Italy** | 0.01 | 0.00 | 0.01 | -0.01 | -0.86 | 0.02 | 1.04 | 0.08 | -0.68 |
| **Jamaica** | | | | | | | | | |
| **Japan** | 0.02 | 0.01 | 0.01 | 0.00 | -0.16 | 0.04 | 0.48 | 0.04 | -0.13 |

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|---|---|---|---|---|---|---|---|---|---|
| **Jordan** | | | | | | | | | |
| **Kazakhstan** | | | | | | | | | |
| **Kenya** | | | | | | | | | |
| **Korea, Rep.** | 0.02 | 0.02 | 0.01 | 0.00 | 0.09 | 0.04 | 0.51 | 0.03 | 0.07 |
| **Kyrgyz Republic** | | | | | | | | | |
| **Latvia** | | | | | | | | | |
| **Lithuania** | 0.06 | 0.03 | 0.01 | -0.02 | -0.40 | 0.13 | 0.14 | 0.01 | -0.31 |
| **Luxembourg** | 0.06 | 0.01 | 0.01 | -0.05 | -0.81 | 0.14 | 0.13 | 0.02 | -0.64 |
| **Macedonia, FYR** | | | | | | | | | |
| **Malawi** | | | | | | | | | |
| **Malaysia** | 0.00 | 0.00 | 0.01 | 0.00 | -0.07 | 0.01 | 1.70 | 0.12 | -0.07 |
| **Mali** | | | | | | | | | |
| **Mexico** | 0.01 | 0.01 | 0.01 | 0.01 | 0.91 | 0.01 | 1.18 | 0.10 | 0.88 |
| **Moldova** | 0.03 | 0.07 | 0.01 | 0.04 | 1.41 | 0.07 | 0.28 | 0.03 | 1.00 |
| **Mongolia** | | | | | | | | | |
| **Morocco** | 0.03 | 0.02 | 0.01 | -0.01 | -0.48 | 0.07 | 0.27 | 0.03 | -0.34 |
| **Mozambique** | | | | | | | | | |
| **Namibia** | | | | | | | | | |
| **Nepal** | | | | | | | | | |
| **Netherlands** | 0.03 | 0.03 | 0.01 | 0.00 | 0.10 | 0.06 | 0.31 | 0.03 | 0.08 |
| **New Zealand** | 0.01 | 0.01 | 0.01 | 0.00 | 0.27 | 0.02 | 1.15 | 0.10 | 0.22 |
| **Nicaragua** | | | | | | | | | |
| **Norway** | 0.01 | 0.02 | 0.01 | 0.00 | 0.22 | 0.03 | 0.54 | 0.04 | 0.17 |
| **Pakistan** | | | | | | | | | |
| **Panama** | 0.01 | 0.00 | 0.01 | -0.01 | -0.81 | 0.02 | 0.71 | 0.07 | -0.78 |
| **Paraguay** | | | | | | | | | |
| **Peru** | 0.01 | 0.02 | 0.01 | 0.01 | 0.57 | 0.02 | 0.72 | 0.06 | 0.55 |
| **Philippines** | | | | | | | | | |
| **Poland** | 0.02 | 0.03 | 0.01 | 0.01 | 0.38 | 0.05 | 0.39 | 0.03 | 0.30 |
| **Portugal** | 0.03 | 0.01 | 0.01 | -0.02 | -0.54 | 0.06 | 0.29 | 0.02 | -0.43 |
| **Russian Federation** | 0.02 | 0.02 | 0.01 | 0.00 | 0.21 | 0.03 | 0.53 | 0.05 | 0.20 |
| **Senegal** | | | | | | | | | |
| **Singapore** | 0.00 | 0.00 | 0.01 | 0.00 | -0.68 | 0.01 | 2.79 | 0.09 | -0.38 |
| **Slovak Republic** | 0.02 | 0.04 | 0.01 | 0.02 | 1.12 | 0.04 | 0.41 | 0.04 | 0.88 |
| **Slovenia** | 0.02 | 0.01 | 0.01 | -0.01 | -0.45 | 0.05 | 0.35 | 0.03 | -0.35 |
| **South Africa** | 0.01 | 0.00 | 0.01 | -0.01 | -0.95 | 0.02 | 0.91 | 0.07 | -0.67 |
| **Spain** | 0.02 | 0.03 | 0.01 | 0.01 | 0.45 | 0.04 | 0.42 | 0.04 | 0.35 |
| **Sri Lanka** | | | | | | | | | |
| **Sweden** | 0.02 | 0.04 | 0.01 | 0.02 | 0.74 | 0.05 | 0.37 | 0.04 | 0.58 |
| **Switzerland** | 0.01 | 0.01 | 0.01 | 0.01 | 0.75 | 0.02 | 1.07 | 0.10 | 0.59 |
| **Tajikistan** | | | | | | | | | |
| **Thailand** | | | | | | | | | |
| **Togo** | | | | | | | | | |
| **Tunisia** | | | | | | | | | |
| **Turkey** | | | | | | | | | |
| **Uganda** | | | | | | | | | |
| **Ukraine** | 0.01 | 0.00 | 0.01 | -0.01 | -0.95 | 0.03 | 0.63 | 0.05 | -0.92 |
| **United Kingdom** | 0.01 | 0.01 | 0.01 | 0.00 | -0.06 | 0.02 | 0.85 | 0.08 | -0.05 |
| **United States** | 0.01 | 0.01 | 0.01 | 0.00 | -0.16 | 0.02 | 0.94 | 0.07 | -0.13 |
| **Uruguay** | | | | | | | | | |
| **Venezuela, RB** | | | | | | | | | |
| **Vietnam** | | | | | | | | | |
| **Yemen, Rep.** | | | | | | | | | |
| **Zambia** | | | | | | | | | |
| **Zimbabwe** | | | | | | | | | |

*Source: Authors' calculations.*

## Renewable energy

| Country | *Current greenness* | | | *Progress of greenness* | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 2000-2004 average value of renewable energy = $y^0$ | 2010-2014 average value of renewable energy = $y^1$ | threshold = t | change = $y^1$-$y^0$ | rate of change = ($y^1$-$y^0$ )/$y^0$ | target = $y^*$ | Weight $\tilde{\pi}$ | Weight $\pi$ | progress on renewable energy |
| **Albania** | 32.16 | 34.25 | 5.42 | 2.09 | 0.06 | 53.60 | 0.17 | 0.02 | 0.10 |
| **Algeria** | | | | | | | | | |
| **Angola** | 72.38 | 60.27 | 5.42 | -12.11 | -0.17 | 100.00 | 0.07 | 0.01 | -0.44 |
| **Argentina** | 12.59 | 9.45 | 5.42 | -3.14 | -0.25 | 25.13 | 0.43 | 0.03 | -0.25 |
| **Armenia** | 34.77 | 34.01 | 5.42 | -0.76 | -0.02 | 57.93 | 0.16 | 0.02 | -0.03 |
| **Australia** | 6.13 | 4.90 | 5.42 | -1.23 | -0.20 | 12.24 | 0.88 | 0.07 | -0.20 |
| **Austria** | 22.11 | 30.21 | 5.42 | 8.10 | 0.37 | 44.14 | 0.25 | 0.02 | 0.37 |
| **Azerbaijan** | 1.59 | 2.97 | 5.42 | 1.38 | 0.87 | 5.42 | 3.42 | 0.25 | 0.36 |
| **Bangladesh** | 38.37 | 28.53 | 5.42 | -9.84 | -0.26 | 63.95 | 0.14 | 0.01 | -0.38 |
| **Belarus** | 4.16 | 5.99 | 5.42 | 1.82 | 0.44 | 6.94 | 1.30 | 0.15 | 0.66 |
| **Belgium** | 23.38 | 28.33 | 5.42 | 4.94 | 0.21 | 46.68 | 0.23 | 0.02 | 0.21 |
| **Benin** | 68.63 | 56.21 | 5.42 | -12.42 | -0.18 | 100.00 | 0.08 | 0.01 | -0.40 |
| **Bolivia** | 25.97 | 27.05 | 5.42 | 1.08 | 0.04 | 43.28 | 0.21 | 0.03 | 0.06 |
| **Botswana** | 27.66 | 21.91 | 5.42 | -5.75 | -0.21 | 46.09 | 0.20 | 0.02 | -0.31 |
| **Brazil** | 41.52 | 44.81 | 5.42 | 3.29 | 0.08 | 69.19 | 0.13 | 0.01 | 0.12 |
| **Bulgaria** | 29.79 | 29.95 | 5.42 | 0.16 | 0.01 | 49.65 | 0.18 | 0.02 | 0.01 |
| **Cambodia** | 79.07 | 71.60 | 5.42 | -7.47 | -0.09 | 100.00 | 0.07 | 0.00 | -0.36 |
| **Cameroon** | 83.75 | 71.13 | 5.42 | -12.62 | -0.15 | 100.00 | 0.06 | 0.00 | -0.78 |
| **Canada** | 24.17 | 27.40 | 5.42 | 3.23 | 0.13 | 48.26 | 0.22 | 0.02 | 0.13 |
| **Chile** | 25.34 | 23.08 | 5.42 | -2.26 | -0.09 | 50.59 | 0.21 | 0.02 | -0.09 |
| **China** | 18.16 | 12.05 | 5.42 | -6.11 | -0.34 | 30.26 | 0.30 | 0.02 | -0.51 |
| **Colombia** | 24.92 | 22.94 | 5.42 | -1.98 | -0.08 | 41.53 | 0.22 | 0.02 | -0.12 |
| **Costa Rica** | 45.44 | 52.12 | 5.42 | 6.68 | 0.15 | 75.72 | 0.12 | 0.02 | 0.22 |
| **Cote d'Ivoire** | 68.57 | 77.83 | 5.42 | 9.26 | 0.13 | 100.00 | 0.08 | 0.01 | 0.29 |
| **Croatia** | 10.32 | 11.92 | 5.42 | 1.61 | 0.16 | 20.59 | 0.53 | 0.04 | 0.16 |
| **Cyprus** | 2.25 | 4.86 | 5.42 | 2.61 | 1.16 | 5.42 | 2.41 | 0.14 | 0.82 |
| **Czech Republic** | 15.84 | 24.77 | 5.42 | 8.93 | 0.56 | 31.62 | 0.34 | 0.03 | 0.57 |
| **Denmark** | 13.18 | 24.47 | 5.42 | 11.28 | 0.86 | 26.32 | 0.41 | 0.04 | 0.86 |
| **Dominican Republic** | 12.13 | 10.82 | 5.42 | -1.31 | -0.11 | 20.21 | 0.45 | 0.06 | -0.16 |
| **Ecuador** | 14.62 | 12.04 | 5.42 | -2.57 | -0.18 | 24.36 | 0.37 | 0.04 | -0.26 |
| **Egypt, Arab Rep.** | 5.42 | 3.78 | 5.42 | -1.64 | -0.30 | 9.03 | 1.00 | 0.07 | -0.45 |
| **El Salvador** | 54.57 | 52.80 | 5.42 | -1.76 | -0.03 | 90.93 | 0.10 | 0.01 | -0.05 |
| **Estonia** | 11.19 | 14.88 | 5.42 | 3.69 | 0.33 | 22.34 | 0.48 | 0.05 | 0.33 |
| **Finland** | 39.97 | 44.49 | 5.42 | 4.52 | 0.11 | 79.79 | 0.14 | 0.01 | 0.11 |
| **France** | 49.44 | 52.30 | 5.42 | 2.86 | 0.06 | 98.69 | 0.11 | 0.01 | 0.06 |
| **Georgia** | 44.02 | 33.53 | 5.42 | -10.49 | -0.24 | 73.36 | 0.12 | 0.01 | -0.36 |
| **Germany** | 16.81 | 20.94 | 5.42 | 4.13 | 0.25 | 33.55 | 0.32 | 0.03 | 0.25 |
| **Ghana** | 73.35 | 64.27 | 5.42 | -9.07 | -0.12 | 100.00 | 0.07 | 0.01 | -0.34 |
| **Greece** | 5.22 | 8.25 | 5.42 | 3.03 | 0.58 | 10.42 | 1.04 | 0.07 | 0.58 |
| **Guatemala** | 57.37 | 66.63 | 5.42 | 9.26 | 0.16 | 95.60 | 0.09 | 0.01 | 0.24 |
| **Honduras** | 46.14 | 48.68 | 5.42 | 2.54 | 0.06 | 76.89 | 0.12 | 0.01 | 0.08 |
| **Hungary** | 16.85 | 24.78 | 5.42 | 7.93 | 0.47 | 33.64 | 0.32 | 0.03 | 0.47 |
| **Iceland** | 74.98 | 83.68 | 5.42 | 8.71 | 0.12 | 100.00 | 0.07 | 0.01 | 0.35 |
| **India** | 34.12 | 27.55 | 5.42 | -6.57 | -0.19 | 56.86 | 0.16 | 0.01 | -0.29 |
| **Indonesia** | 37.29 | 33.74 | 5.42 | -3.55 | -0.10 | 62.14 | 0.15 | 0.01 | -0.14 |
| **Ireland** | 1.76 | 5.82 | 5.42 | 4.06 | 2.31 | 5.42 | 3.09 | 0.18 | 1.11 |
| **Israel** | 3.52 | 4.90 | 5.42 | 1.38 | 0.39 | 7.02 | 1.54 | 0.11 | 0.39 |
| **Italy** | 6.29 | 12.56 | 5.42 | 6.27 | 1.00 | 12.56 | 0.86 | 0.06 | 1.00 |
| **Jamaica** | 12.19 | 17.14 | 5.42 | 4.96 | 0.41 | 20.31 | 0.44 | 0.05 | 0.61 |
| **Japan** | 18.20 | 11.58 | 5.42 | -6.63 | -0.36 | 36.33 | 0.30 | 0.03 | -0.37 |
| **Jordan** | 1.43 | 1.95 | 5.42 | 0.53 | 0.37 | 5.42 | 3.80 | 0.30 | 0.13 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Kazakhstan** | 1.85 | 0.98 | 5.42 | -0.87 | -0.47 | 5.42 | 2.92 | 0.15 | -0.24 |
| **Kenya** | 84.46 | 80.15 | 5.42 | -4.31 | -0.05 | 100.00 | 0.06 | 0.01 | -0.28 |
| **Korea, Rep.** | 16.83 | 17.15 | 5.42 | 0.32 | 0.02 | 33.60 | 0.32 | 0.02 | 0.02 |
| **Kyrgyz Republic** | 43.14 | 36.78 | 5.42 | -6.36 | -0.15 | 71.90 | 0.13 | 0.01 | -0.22 |
| **Latvia** | 31.46 | 34.13 | 5.42 | 2.67 | 0.08 | 52.43 | 0.17 | 0.02 | 0.13 |
| **Lithuania** | 48.25 | 14.79 | 5.42 | -33.46 | -0.69 | 96.31 | 0.11 | 0.01 | -0.70 |
| **Luxembourg** | 1.99 | 3.84 | 5.42 | 1.85 | 0.93 | 5.42 | 2.73 | 0.35 | 0.54 |
| **Macedonia, FYR** | 10.42 | 12.51 | 5.42 | 2.09 | 0.20 | 17.37 | 0.52 | 0.05 | 0.30 |
| **Malawi** | | | | | | | | | |
| **Malaysia** | 6.79 | 5.47 | 5.42 | -1.31 | -0.19 | 11.31 | 0.80 | 0.06 | -0.29 |
| **Mali** | | | | | | | | | |
| **Mexico** | 12.26 | 10.39 | 5.42 | -1.87 | -0.15 | 20.42 | 0.44 | 0.04 | -0.23 |
| **Moldova** | 3.22 | 3.43 | 5.42 | 0.21 | 0.07 | 5.42 | 1.68 | 0.20 | 0.10 |
| **Mongolia** | 6.28 | 4.15 | 5.42 | -2.13 | -0.34 | 10.47 | 0.86 | 0.10 | -0.51 |
| **Morocco** | 5.02 | 4.61 | 5.42 | -0.41 | -0.08 | 8.36 | 1.08 | 0.11 | -0.12 |
| **Mozambique** | 93.43 | 90.92 | 5.42 | -2.51 | -0.03 | 100.00 | 0.06 | 0.00 | -0.38 |
| **Namibia** | 28.44 | 20.72 | 5.42 | -7.71 | -0.27 | 47.39 | 0.19 | 0.02 | -0.41 |
| **Nepal** | 88.99 | 86.84 | 5.42 | -2.16 | -0.02 | 100.00 | 0.06 | 0.01 | -0.20 |
| **Netherlands** | 4.07 | 6.41 | 5.42 | 2.33 | 0.57 | 8.13 | 1.33 | 0.12 | 0.58 |
| **New Zealand** | 29.84 | 39.21 | 5.42 | 9.37 | 0.31 | 59.56 | 0.18 | 0.02 | 0.32 |
| **Nicaragua** | 52.88 | 51.16 | 5.42 | -1.72 | -0.03 | 88.12 | 0.10 | 0.01 | -0.05 |
| **Norway** | 44.83 | 42.70 | 5.42 | -2.13 | -0.05 | 89.48 | 0.12 | 0.01 | -0.05 |
| **Pakistan** | 40.70 | 38.80 | 5.42 | -1.89 | -0.05 | 67.82 | 0.13 | 0.01 | -0.07 |
| **Panama** | 28.62 | 21.44 | 5.42 | -7.18 | -0.25 | 47.69 | 0.19 | 0.02 | -0.38 |
| **Paraguay** | 70.10 | 66.74 | 5.42 | -3.36 | -0.05 | 100.00 | 0.08 | 0.01 | -0.11 |
| **Peru** | 31.77 | 24.68 | 5.42 | -7.09 | -0.22 | 52.94 | 0.17 | 0.01 | -0.33 |
| **Philippines** | 44.74 | 40.05 | 5.42 | -4.69 | -0.10 | 74.56 | 0.12 | 0.01 | -0.16 |
| **Poland** | 5.08 | 8.68 | 5.42 | 3.60 | 0.71 | 10.15 | 1.07 | 0.09 | 0.71 |
| **Portugal** | 15.71 | 22.92 | 5.42 | 7.21 | 0.46 | 31.35 | 0.35 | 0.03 | 0.46 |
| **Russian Federation** | 9.22 | 9.33 | 5.42 | 0.11 | 0.01 | 15.37 | 0.59 | 0.06 | 0.02 |
| **Senegal** | 46.36 | 46.39 | 5.42 | 0.03 | 0.00 | 77.25 | 0.12 | 0.01 | 0.00 |
| **Singapore** | 1.28 | 2.62 | 5.42 | 1.35 | 1.06 | 5.42 | 4.25 | 0.14 | 0.33 |
| **Slovak Republic** | 28.88 | 30.90 | 5.42 | 2.02 | 0.07 | 57.65 | 0.19 | 0.02 | 0.07 |
| **Slovenia** | 31.35 | 35.22 | 5.42 | 3.87 | 0.12 | 62.58 | 0.17 | 0.02 | 0.12 |
| **South Africa** | 14.24 | 12.72 | 5.42 | -1.52 | -0.11 | 23.72 | 0.38 | 0.03 | -0.16 |
| **Spain** | 18.92 | 24.37 | 5.42 | 5.46 | 0.29 | 37.77 | 0.29 | 0.03 | 0.29 |
| **Sri Lanka** | 55.37 | 53.83 | 5.42 | -1.54 | -0.03 | 92.27 | 0.10 | 0.01 | -0.04 |
| **Sweden** | 62.70 | 66.71 | 5.42 | 4.00 | 0.06 | 100.00 | 0.09 | 0.01 | 0.11 |
| **Switzerland** | 47.18 | 48.87 | 5.42 | 1.69 | 0.04 | 94.17 | 0.11 | 0.01 | 0.04 |
| **Tajikistan** | 59.92 | 57.52 | 5.42 | -2.40 | -0.04 | 99.85 | 0.09 | 0.01 | -0.06 |
| **Thailand** | 18.53 | 19.28 | 5.42 | 0.75 | 0.04 | 30.89 | 0.29 | 0.03 | 0.06 |
| **Togo** | 84.01 | 82.67 | 5.42 | -1.34 | -0.02 | 100.00 | 0.06 | 0.01 | -0.08 |
| **Tunisia** | 12.95 | 14.67 | 5.42 | 1.72 | 0.13 | 21.58 | 0.42 | 0.02 | 0.20 |
| **Turkey** | 13.27 | 10.46 | 5.42 | -2.81 | -0.21 | 22.12 | 0.41 | 0.03 | -0.32 |
| **Uganda** | | | | | | | | | |
| **Ukraine** | 15.92 | 20.18 | 5.42 | 4.26 | 0.27 | 26.53 | 0.34 | 0.03 | 0.40 |
| **United Kingdom** | 11.58 | 13.28 | 5.42 | 1.70 | 0.15 | 23.12 | 0.47 | 0.04 | 0.15 |
| **United States** | 13.75 | 16.07 | 5.42 | 2.32 | 0.17 | 27.45 | 0.39 | 0.03 | 0.17 |
| **Uruguay** | 40.52 | 45.60 | 5.42 | 5.08 | 0.13 | 67.52 | 0.13 | 0.01 | 0.19 |
| **Venezuela, RB** | 10.74 | 10.40 | 5.42 | -0.34 | -0.03 | 17.91 | 0.50 | 0.06 | -0.05 |
| **Vietnam** | 48.35 | 28.61 | 5.42 | -19.74 | -0.41 | 80.57 | 0.11 | 0.01 | -0.61 |
| **Yemen, Rep.** | 1.53 | 1.37 | 5.42 | -0.16 | -0.10 | 5.42 | 3.54 | 0.17 | -0.04 |
| **Zambia** | 91.82 | 92.36 | 5.42 | 0.54 | 0.01 | 100.00 | 0.06 | 0.01 | 0.07 |
| **Zimbabwe** | 63.79 | 71.05 | 5.42 | 7.26 | 0.11 | 100.00 | 0.08 | 0.01 | 0.20 |

Source: Authors' calculations.

## Palma ratio

| Country | *Current greenness* | | | *Progress of greenness* | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 2000-2004 average value of Palma ratio = $y^0$ | 2010-2014 average value of Palma ratio = $y^1$ | threshold = t | change = $y^1$-$y^0$ | rate of change = ($y^1$-$y^0$ )/$y^0$ | target = $y^*$ | Weight $\tilde{\pi}$ | Weight $\pi$ | progress on Palma ratio |
| **Albania** | 0.81 | 0.78 | 1.57 | -0.04 | -0.04 | 0.67 | 0.52 | 0.05 | 0.26 |
| **Algeria** | | | | | | | | | |
| **Angola** | 2.06 | 1.19 | 1.57 | -0.87 | -0.42 | 1.56 | 1.32 | 0.14 | 1.74 |
| **Argentina** | 1.58 | 1.30 | 1.57 | -0.28 | -0.18 | 1.31 | 1.01 | 0.08 | 1.05 |
| **Armenia** | 1.03 | 0.87 | 1.57 | -0.16 | -0.16 | 0.85 | 0.66 | 0.06 | 0.94 |
| **Australia** | 1.17 | 1.29 | 1.57 | 0.11 | 0.10 | 0.97 | 0.75 | 0.06 | -0.57 |
| **Austria** | 0.95 | 0.94 | 1.57 | -0.01 | -0.01 | 0.79 | 0.61 | 0.05 | 0.07 |
| **Azerbaijan** | 0.64 | 0.69 | 1.57 | 0.05 | 0.09 | 0.53 | 0.41 | 0.03 | -0.50 |
| **Bangladesh** | 0.95 | 0.92 | 1.57 | -0.02 | -0.03 | 0.72 | 0.60 | 0.04 | 0.11 |
| **Belarus** | 0.71 | 0.70 | 1.57 | -0.01 | -0.02 | 0.59 | 0.45 | 0.05 | 0.11 |
| **Belgium** | 1.05 | 0.94 | 1.57 | -0.11 | -0.11 | 0.87 | 0.67 | 0.06 | 0.62 |
| **Benin** | 1.11 | 1.31 | 1.57 | 0.20 | 0.18 | 0.84 | 0.71 | 0.05 | -0.73 |
| **Bolivia** | 2.20 | 1.69 | 1.57 | -0.51 | -0.23 | 1.57 | 1.40 | 0.17 | 0.81 |
| **Botswana** | 2.93 | 2.51 | 1.57 | -0.41 | -0.14 | 1.57 | 1.87 | 0.18 | 0.30 |
| **Brazil** | 2.26 | 1.95 | 1.57 | -0.31 | -0.14 | 1.57 | 1.45 | 0.16 | 0.45 |
| **Bulgaria** | 0.78 | 0.85 | 1.57 | 0.07 | 0.09 | 0.64 | 0.50 | 0.04 | -0.55 |
| **Cambodia** | 1.00 | 1.00 | 1.57 | 0.01 | 0.01 | 0.83 | 0.64 | 0.04 | -0.04 |
| **Cameroon** | 1.26 | 1.14 | 1.57 | -0.11 | -0.09 | 0.95 | 0.80 | 0.06 | 0.37 |
| **Canada** | 1.17 | 1.20 | 1.57 | 0.03 | 0.03 | 0.97 | 0.75 | 0.05 | -0.16 |
| **Chile** | 2.10 | 1.85 | 1.57 | -0.25 | -0.12 | 1.57 | 1.34 | 0.12 | 0.47 |
| **China** | 1.09 | 1.13 | 1.57 | 0.03 | 0.03 | 0.91 | 0.70 | 0.04 | -0.19 |
| **Colombia** | 2.21 | 2.06 | 1.57 | -0.15 | -0.07 | 1.57 | 1.41 | 0.14 | 0.23 |
| **Costa Rica** | 1.47 | 1.54 | 1.57 | 0.07 | 0.05 | 1.22 | 0.94 | 0.13 | -0.29 |
| **Cote d'Ivoire** | 1.15 | 1.22 | 1.57 | 0.07 | 0.06 | 0.87 | 0.74 | 0.08 | -0.24 |
| **Croatia** | 0.75 | 0.95 | 1.57 | 0.19 | 0.25 | 0.63 | 0.48 | 0.04 | -1.49 |
| **Cyprus** | | | | | | | | | |
| **Czech Republic** | 0.93 | 0.91 | 1.57 | -0.03 | -0.03 | 0.77 | 0.59 | 0.06 | 0.16 |
| **Denmark** | 0.77 | 0.83 | 1.57 | 0.06 | 0.08 | 0.63 | 0.49 | 0.05 | -0.49 |
| **Dominican Republic** | 1.69 | 1.56 | 1.57 | -0.13 | -0.08 | 1.40 | 1.08 | 0.13 | 0.47 |
| **Ecuador** | 1.99 | 1.66 | 1.57 | -0.33 | -0.17 | 1.57 | 1.27 | 0.13 | 0.78 |
| **Egypt, Arab Rep.** | 0.96 | 0.90 | 1.57 | -0.06 | -0.06 | 0.79 | 0.61 | 0.04 | 0.34 |
| **El Salvador** | 1.62 | 1.35 | 1.57 | -0.28 | -0.17 | 1.35 | 1.04 | 0.14 | 1.00 |
| **Estonia** | 1.37 | 1.20 | 1.57 | -0.17 | -0.12 | 1.14 | 0.88 | 0.10 | 0.72 |
| **Finland** | 0.89 | 0.94 | 1.57 | 0.04 | 0.05 | 0.74 | 0.57 | 0.05 | -0.29 |
| **France** | 1.05 | 1.11 | 1.57 | 0.06 | 0.06 | 0.87 | 0.67 | 0.07 | -0.35 |
| **Georgia** | 1.09 | 1.12 | 1.57 | 0.03 | 0.03 | 0.90 | 0.69 | 0.06 | -0.18 |
| **Germany** | 0.97 | 1.05 | 1.57 | 0.07 | 0.08 | 0.81 | 0.62 | 0.06 | -0.45 |
| **Ghana** | 1.07 | 1.22 | 1.57 | 0.15 | 0.14 | 0.81 | 0.68 | 0.05 | -0.58 |
| **Greece** | 1.40 | 1.32 | 1.57 | -0.08 | -0.05 | 1.16 | 0.89 | 0.06 | 0.32 |
| **Guatemala** | 1.91 | 1.89 | 1.57 | -0.02 | -0.01 | 1.57 | 1.22 | 0.12 | 0.06 |
| **Honduras** | 1.98 | 1.97 | 1.57 | -0.01 | -0.01 | 1.57 | 1.26 | 0.09 | 0.03 |
| **Hungary** | 0.72 | 0.74 | 1.57 | 0.01 | 0.02 | 0.60 | 0.46 | 0.04 | -0.12 |
| **Iceland** | 0.92 | 0.99 | 1.57 | 0.07 | 0.07 | 0.76 | 0.59 | 0.04 | -0.42 |
| **India** | | | | | | | | | |
| **Indonesia** | 0.82 | 0.96 | 1.57 | 0.14 | 0.16 | 0.68 | 0.52 | 0.05 | -0.97 |
| **Ireland** | 1.25 | 1.15 | 1.57 | -0.10 | -0.08 | 1.04 | 0.80 | 0.05 | 0.49 |
| **Israel** | 1.33 | 1.61 | 1.57 | 0.28 | 0.21 | 1.10 | 0.85 | 0.06 | -1.25 |
| **Italy** | 1.26 | 1.20 | 1.57 | -0.06 | -0.05 | 1.04 | 0.80 | 0.06 | 0.29 |
| **Jamaica** | | | | | | | | | |
| **Japan** | 1.26 | 1.27 | 1.57 | 0.01 | 0.01 | 1.05 | 0.81 | 0.07 | -0.05 |
| **Jordan** | 1.07 | 0.92 | 1.57 | -0.15 | -0.14 | 0.89 | 0.68 | 0.05 | 0.82 |

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|---|---|---|---|---|---|---|---|---|---|
| **Kazakhstan** | 0.80 | 0.76 | 1.57 | -0.05 | -0.06 | 0.67 | 0.51 | 0.03 | 0.34 |
| **Kenya** | 1.48 | 1.52 | 1.57 | 0.05 | 0.03 | 1.12 | 0.94 | 0.09 | -0.13 |
| **Korea, Rep.** | | | | | | | | | |
| **Kyrgyz Republic** | 0.82 | 0.95 | 1.57 | 0.13 | 0.15 | 0.68 | 0.52 | 0.05 | -0.89 |
| **Latvia** | 0.90 | 0.93 | 1.57 | 0.03 | 0.04 | 0.74 | 0.57 | 0.06 | -0.22 |
| **Lithuania** | 0.86 | 0.91 | 1.57 | 0.05 | 0.05 | 0.71 | 0.55 | 0.06 | -0.32 |
| **Luxembourg** | 0.91 | 0.99 | 1.57 | 0.08 | 0.09 | 0.75 | 0.58 | 0.07 | -0.54 |
| **Macedonia, FYR** | 0.94 | 1.18 | 1.57 | 0.24 | 0.26 | 0.78 | 0.60 | 0.06 | -1.51 |
| **Malawi** | 1.50 | 1.48 | 1.57 | -0.02 | -0.01 | 1.13 | 0.96 | 0.08 | 0.05 |
| **Malaysia** | 1.28 | 1.33 | 1.57 | 0.05 | 0.04 | 1.06 | 0.82 | 0.06 | -0.22 |
| **Mali** | 1.08 | 0.97 | 1.57 | -0.11 | -0.10 | 0.82 | 0.69 | 0.03 | 0.42 |
| **Mexico** | 1.58 | 1.58 | 1.57 | 0.01 | 0.00 | 1.31 | 1.01 | 0.09 | -0.03 |
| **Moldova** | 1.02 | 0.88 | 1.57 | -0.14 | -0.14 | 0.85 | 0.65 | 0.08 | 0.82 |
| **Mongolia** | 0.78 | 0.97 | 1.57 | 0.20 | 0.25 | 0.64 | 0.50 | 0.06 | -1.48 |
| **Morocco** | 1.14 | 1.22 | 1.57 | 0.08 | 0.07 | 0.95 | 0.73 | 0.07 | -0.43 |
| **Mozambique** | 1.60 | 1.45 | 1.57 | -0.15 | -0.10 | 1.21 | 1.02 | 0.06 | 0.39 |
| **Namibia** | 3.02 | 2.67 | 1.57 | -0.35 | -0.12 | 1.57 | 1.93 | 0.19 | 0.24 |
| **Nepal** | 1.41 | 0.88 | 1.57 | -0.53 | -0.38 | 1.07 | 0.90 | 0.08 | 1.56 |
| **Netherlands** | 1.08 | 1.03 | 1.57 | -0.05 | -0.05 | 0.89 | 0.69 | 0.06 | 0.27 |
| **New Zealand** | 1.32 | 1.25 | 1.57 | -0.07 | -0.05 | 1.09 | 0.84 | 0.08 | 0.30 |
| **Nicaragua** | 1.34 | 1.25 | 1.57 | -0.09 | -0.07 | 1.11 | 0.85 | 0.10 | 0.38 |
| **Norway** | 0.98 | 0.84 | 1.57 | -0.13 | -0.14 | 0.81 | 0.62 | 0.04 | 0.80 |
| **Pakistan** | 0.88 | 0.88 | 1.57 | 0.00 | 0.00 | 0.66 | 0.56 | 0.04 | -0.01 |
| **Panama** | 1.97 | 1.74 | 1.57 | -0.24 | -0.12 | 1.57 | 1.26 | 0.13 | 0.58 |
| **Paraguay** | 1.95 | 1.72 | 1.57 | -0.23 | -0.12 | 1.57 | 1.24 | 0.11 | 0.60 |
| **Peru** | 1.70 | 1.40 | 1.57 | -0.30 | -0.18 | 1.41 | 1.09 | 0.09 | 1.02 |
| **Philippines** | 1.38 | 1.25 | 1.57 | -0.13 | -0.09 | 1.14 | 0.88 | 0.08 | 0.54 |
| **Poland** | 1.64 | 1.17 | 1.57 | -0.47 | -0.29 | 1.36 | 1.05 | 0.09 | 1.68 |
| **Portugal** | 1.69 | 1.48 | 1.57 | -0.21 | -0.12 | 1.40 | 1.08 | 0.09 | 0.73 |
| **Russian Federation** | 1.02 | 1.03 | 1.57 | 0.01 | 0.01 | 0.85 | 0.65 | 0.07 | -0.07 |
| **Senegal** | 1.24 | 1.09 | 1.57 | -0.14 | -0.12 | 0.94 | 0.79 | 0.06 | 0.48 |
| **Singapore** | | | | | | | | | |
| **Slovak Republic** | 0.94 | 0.90 | 1.57 | -0.03 | -0.04 | 0.78 | 0.60 | 0.05 | 0.21 |
| **Slovenia** | 0.83 | 0.81 | 1.57 | -0.02 | -0.02 | 0.68 | 0.53 | 0.05 | 0.11 |
| **South Africa** | 2.05 | 3.05 | 1.57 | 0.99 | 0.48 | 1.57 | 1.31 | 0.10 | -2.04 |
| **Spain** | 1.26 | 1.21 | 1.57 | -0.05 | -0.04 | 1.04 | 0.80 | 0.07 | 0.22 |
| **Sri Lanka** | 1.24 | 1.12 | 1.57 | -0.12 | -0.09 | 1.03 | 0.79 | 0.07 | 0.55 |
| **Sweden** | 0.81 | 0.93 | 1.57 | 0.12 | 0.15 | 0.67 | 0.52 | 0.05 | -0.87 |
| **Switzerland** | | | | | | | | | |
| **Tajikistan** | 0.83 | 0.80 | 1.57 | -0.02 | -0.03 | 0.69 | 0.53 | 0.05 | 0.16 |
| **Thailand** | 1.23 | 1.16 | 1.57 | -0.08 | -0.06 | 1.02 | 0.79 | 0.07 | 0.36 |
| **Togo** | | | | | | | | | |
| **Tunisia** | 1.14 | 0.97 | 1.57 | -0.17 | -0.15 | 0.95 | 0.73 | 0.04 | 0.88 |
| **Turkey** | 1.16 | 1.06 | 1.57 | -0.10 | -0.09 | 0.96 | 0.74 | 0.05 | 0.52 |
| **Uganda** | 1.40 | 1.35 | 1.57 | -0.05 | -0.04 | 1.06 | 0.89 | 0.05 | 0.16 |
| **Ukraine** | 0.74 | 0.71 | 1.57 | -0.02 | -0.03 | 0.61 | 0.47 | 0.04 | 0.19 |
| **United Kingdom** | 1.35 | 1.37 | 1.57 | 0.02 | 0.01 | 1.12 | 0.86 | 0.08 | -0.07 |
| **United States** | 1.47 | 1.68 | 1.57 | 0.22 | 0.15 | 1.22 | 0.94 | 0.07 | -0.86 |
| **Uruguay** | 1.29 | 1.30 | 1.57 | 0.02 | 0.01 | 1.07 | 0.82 | 0.09 | -0.07 |
| **Venezuela, RB** | 1.41 | 1.37 | 1.57 | -0.04 | -0.03 | 1.17 | 0.90 | 0.11 | 0.15 |
| **Vietnam** | 1.02 | 0.99 | 1.57 | -0.03 | -0.03 | 0.85 | 0.65 | 0.05 | 0.17 |
| **Yemen, Rep.** | 0.87 | 1.04 | 1.57 | 0.18 | 0.20 | 0.65 | 0.55 | 0.03 | -0.84 |
| **Zambia** | 1.57 | 2.07 | 1.57 | 0.50 | 0.32 | 1.19 | 1.00 | 0.09 | -1.33 |
| **Zimbabwe** | | | | | | | | | |

*Source: Authors' calculations.*

## Gender inequality

| Country | *Current greenness* | | | *Progress of greenness* | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 2000-2004 average value of gender inequality = $y^0$ | 2010-2014 average value of gender inequality = $y^1$ | threshold = t | change = $y^1$-$y^0$ | rate of change = ($y^1$-$y^0$ )/$y^0$ | target = $y^*$ | Weight $\tilde{\pi}$ | Weight $\pi$ | progress on gender inequality |
| **Albania** | 0.37 | 0.26 | 0.59 | -0.11 | -0.30 | 0.25 | 0.63 | 0.06 | 0.91 |
| **Algeria** | 0.59 | 0.47 | 0.59 | -0.12 | -0.21 | 0.39 | 1.00 | 0.08 | 0.63 |
| **Angola** | | | | | | | | | |
| **Argentina** | 0.40 | 0.38 | 0.59 | -0.02 | -0.05 | 0.22 | 0.69 | 0.05 | 0.11 |
| **Armenia** | 0.43 | 0.33 | 0.59 | -0.09 | -0.22 | 0.29 | 0.72 | 0.07 | 0.67 |
| **Australia** | 0.15 | 0.12 | 0.59 | -0.03 | -0.17 | 0.08 | 0.25 | 0.02 | 0.37 |
| **Austria** | 0.14 | 0.09 | 0.59 | -0.06 | -0.39 | 0.08 | 0.25 | 0.02 | 0.84 |
| **Azerbaijan** | | | | | | | | | |
| **Bangladesh** | 0.59 | 0.53 | 0.59 | -0.05 | -0.09 | 0.39 | 1.00 | 0.07 | 0.27 |
| **Belarus** | | | | | | | | | |
| **Belgium** | 0.11 | 0.08 | 0.59 | -0.03 | -0.29 | 0.06 | 0.19 | 0.02 | 0.63 |
| **Benin** | 0.65 | 0.61 | 0.59 | -0.04 | -0.06 | 0.44 | 1.11 | 0.07 | 0.18 |
| **Bolivia** | 0.56 | 0.48 | 0.59 | -0.08 | -0.15 | 0.38 | 0.95 | 0.12 | 0.46 |
| **Botswana** | 0.53 | 0.49 | 0.59 | -0.04 | -0.08 | 0.36 | 0.91 | 0.09 | 0.23 |
| **Brazil** | 0.49 | 0.44 | 0.59 | -0.05 | -0.10 | 0.33 | 0.84 | 0.09 | 0.31 |
| **Bulgaria** | 0.22 | 0.22 | 0.59 | 0.00 | -0.02 | 0.15 | 0.38 | 0.03 | 0.05 |
| **Cambodia** | 0.58 | 0.50 | 0.59 | -0.08 | -0.13 | 0.39 | 0.98 | 0.06 | 0.40 |
| **Cameroon** | 0.67 | 0.63 | 0.59 | -0.04 | -0.06 | 0.45 | 1.14 | 0.08 | 0.17 |
| **Canada** | 0.14 | 0.14 | 0.59 | 0.00 | -0.02 | 0.08 | 0.24 | 0.02 | 0.05 |
| **Chile** | 0.42 | 0.36 | 0.59 | -0.06 | -0.14 | 0.22 | 0.71 | 0.06 | 0.30 |
| **China** | 0.40 | 0.21 | 0.59 | -0.19 | -0.48 | 0.27 | 0.67 | 0.03 | 1.46 |
| **Colombia** | 0.51 | 0.46 | 0.59 | -0.05 | -0.10 | 0.35 | 0.88 | 0.09 | 0.30 |
| **Costa Rica** | 0.42 | 0.35 | 0.59 | -0.07 | -0.17 | 0.28 | 0.71 | 0.10 | 0.52 |
| **Cote d'Ivoire** | 0.67 | 0.65 | 0.59 | -0.02 | -0.03 | 0.45 | 1.14 | 0.13 | 0.10 |
| **Croatia** | 0.20 | 0.18 | 0.59 | -0.02 | -0.11 | 0.11 | 0.34 | 0.03 | 0.25 |
| **Cyprus** | 0.15 | 0.14 | 0.59 | -0.01 | -0.09 | 0.08 | 0.26 | 0.02 | 0.19 |
| **Czech Republic** | 0.18 | 0.11 | 0.59 | -0.07 | -0.38 | 0.10 | 0.31 | 0.03 | 0.82 |
| **Denmark** | 0.07 | 0.06 | 0.59 | -0.01 | -0.16 | 0.04 | 0.13 | 0.01 | 0.34 |
| **Dominican Republic** | 0.52 | 0.51 | 0.59 | -0.01 | -0.03 | 0.35 | 0.88 | 0.11 | 0.08 |
| **Ecuador** | 0.50 | 0.44 | 0.59 | -0.06 | -0.12 | 0.33 | 0.85 | 0.09 | 0.36 |
| **Egypt, Arab Rep.** | 0.63 | 0.58 | 0.59 | -0.05 | -0.08 | 0.42 | 1.08 | 0.07 | 0.25 |
| **El Salvador** | 0.52 | 0.45 | 0.59 | -0.06 | -0.12 | 0.35 | 0.88 | 0.12 | 0.37 |
| **Estonia** | 0.27 | 0.15 | 0.59 | -0.11 | -0.42 | 0.14 | 0.45 | 0.05 | 0.91 |
| **Finland** | 0.09 | 0.08 | 0.59 | -0.01 | -0.14 | 0.05 | 0.15 | 0.01 | 0.31 |
| **France** | 0.17 | 0.10 | 0.59 | -0.07 | -0.40 | 0.09 | 0.29 | 0.03 | 0.86 |
| **Georgia** | | | | | | | | | |
| **Germany** | 0.12 | 0.07 | 0.59 | -0.05 | -0.43 | 0.07 | 0.21 | 0.02 | 0.92 |
| **Ghana** | 0.58 | 0.56 | 0.59 | -0.02 | -0.04 | 0.39 | 0.99 | 0.07 | 0.12 |
| **Greece** | 0.18 | 0.15 | 0.59 | -0.03 | -0.15 | 0.10 | 0.31 | 0.02 | 0.32 |
| **Guatemala** | 0.58 | 0.54 | 0.59 | -0.04 | -0.07 | 0.39 | 0.98 | 0.10 | 0.22 |
| **Honduras** | 0.52 | 0.49 | 0.59 | -0.02 | -0.04 | 0.35 | 0.88 | 0.06 | 0.14 |
| **Hungary** | 0.23 | 0.26 | 0.59 | 0.03 | 0.13 | 0.13 | 0.40 | 0.04 | -0.28 |
| **Iceland** | 0.13 | 0.09 | 0.59 | -0.04 | -0.30 | 0.07 | 0.22 | 0.02 | 0.64 |
| **India** | 0.62 | 0.58 | 0.59 | -0.04 | -0.07 | 0.42 | 1.06 | 0.06 | 0.22 |
| **Indonesia** | 0.55 | 0.50 | 0.59 | -0.05 | -0.09 | 0.37 | 0.94 | 0.08 | 0.26 |
| **Ireland** | 0.20 | 0.14 | 0.59 | -0.06 | -0.29 | 0.11 | 0.34 | 0.02 | 0.63 |
| **Israel** | 0.18 | 0.12 | 0.59 | -0.06 | -0.33 | 0.10 | 0.31 | 0.02 | 0.71 |
| **Italy** | 0.18 | 0.10 | 0.59 | -0.08 | -0.47 | 0.10 | 0.31 | 0.02 | 1.02 |
| **Jamaica** | 0.46 | 0.46 | 0.59 | 0.00 | 0.00 | 0.31 | 0.79 | 0.08 | 0.01 |
| **Japan** | 0.14 | 0.13 | 0.59 | -0.01 | -0.09 | 0.08 | 0.24 | 0.02 | 0.19 |
| **Jordan** | 0.61 | 0.50 | 0.59 | -0.11 | -0.18 | 0.41 | 1.03 | 0.08 | 0.56 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Kazakhstan** | 0.39 | 0.33 | 0.59 | -0.06 | -0.15 | 0.26 | 0.66 | 0.03 | 0.45 |
| **Kenya** | 0.66 | 0.58 | 0.59 | -0.09 | -0.13 | 0.44 | 1.13 | 0.11 | 0.39 |
| **Korea, Rep.** | | | | | | | | | |
| **Kyrgyz Republic** | 0.58 | 0.35 | 0.59 | -0.23 | -0.40 | 0.39 | 0.99 | 0.10 | 1.22 |
| **Latvia** | 0.26 | 0.24 | 0.59 | -0.02 | -0.08 | 0.17 | 0.44 | 0.05 | 0.24 |
| **Lithuania** | 0.19 | 0.14 | 0.59 | -0.05 | -0.27 | 0.10 | 0.33 | 0.03 | 0.58 |
| **Luxembourg** | 0.17 | 0.17 | 0.59 | -0.01 | -0.04 | 0.09 | 0.29 | 0.04 | 0.08 |
| **Macedonia, FYR** | | | | | | | | | |
| **Malawi** | 0.65 | 0.60 | 0.59 | -0.06 | -0.09 | 0.44 | 1.12 | 0.09 | 0.27 |
| **Malaysia** | 0.30 | 0.24 | 0.59 | -0.06 | -0.20 | 0.20 | 0.51 | 0.04 | 0.61 |
| **Mali** | 0.71 | 0.68 | 0.59 | -0.03 | -0.04 | 0.47 | 1.20 | 0.05 | 0.12 |
| **Mexico** | 0.46 | 0.39 | 0.59 | -0.07 | -0.15 | 0.31 | 0.79 | 0.07 | 0.46 |
| **Moldova** | | | | | | | | | |
| **Mongolia** | 0.40 | 0.36 | 0.59 | -0.04 | -0.09 | 0.27 | 0.68 | 0.08 | 0.29 |
| **Morocco** | 0.59 | 0.47 | 0.59 | -0.12 | -0.20 | 0.40 | 1.00 | 0.10 | 0.60 |
| **Mozambique** | 0.68 | 0.66 | 0.59 | -0.02 | -0.02 | 0.45 | 1.16 | 0.06 | 0.07 |
| **Namibia** | 0.51 | 0.46 | 0.59 | -0.05 | -0.10 | 0.34 | 0.87 | 0.09 | 0.30 |
| **Nepal** | 0.64 | 0.49 | 0.59 | -0.16 | -0.24 | 0.43 | 1.10 | 0.09 | 0.74 |
| **Netherlands** | 0.07 | 0.05 | 0.59 | -0.02 | -0.27 | 0.04 | 0.13 | 0.01 | 0.59 |
| **New Zealand** | 0.19 | 0.19 | 0.59 | 0.00 | 0.00 | 0.10 | 0.33 | 0.03 | 0.01 |
| **Nicaragua** | 0.53 | 0.48 | 0.59 | -0.05 | -0.09 | 0.35 | 0.90 | 0.10 | 0.27 |
| **Norway** | 0.10 | 0.07 | 0.59 | -0.02 | -0.25 | 0.05 | 0.16 | 0.01 | 0.55 |
| **Pakistan** | 0.61 | 0.56 | 0.59 | -0.05 | -0.08 | 0.41 | 1.05 | 0.08 | 0.25 |
| **Panama** | 0.49 | 0.51 | 0.59 | 0.02 | 0.05 | 0.33 | 0.83 | 0.08 | -0.14 |
| **Paraguay** | 0.53 | 0.47 | 0.59 | -0.06 | -0.12 | 0.36 | 0.90 | 0.08 | 0.35 |
| **Peru** | 0.44 | 0.39 | 0.59 | -0.06 | -0.13 | 0.30 | 0.75 | 0.06 | 0.39 |
| **Philippines** | 0.47 | 0.42 | 0.59 | -0.05 | -0.11 | 0.31 | 0.80 | 0.08 | 0.32 |
| **Poland** | 0.18 | 0.15 | 0.59 | -0.03 | -0.18 | 0.10 | 0.31 | 0.03 | 0.38 |
| **Portugal** | 0.18 | 0.13 | 0.59 | -0.05 | -0.29 | 0.10 | 0.31 | 0.03 | 0.63 |
| **Russian Federation** | 0.39 | 0.32 | 0.59 | -0.07 | -0.17 | 0.26 | 0.66 | 0.07 | 0.53 |
| **Senegal** | 0.61 | 0.55 | 0.59 | -0.06 | -0.10 | 0.41 | 1.03 | 0.08 | 0.31 |
| **Singapore** | 0.14 | 0.09 | 0.59 | -0.05 | -0.33 | 0.07 | 0.23 | 0.01 | 0.71 |
| **Slovak Republic** | 0.22 | 0.18 | 0.59 | -0.04 | -0.19 | 0.12 | 0.38 | 0.03 | 0.42 |
| **Slovenia** | 0.14 | 0.08 | 0.59 | -0.07 | -0.46 | 0.08 | 0.24 | 0.02 | 1.00 |
| **South Africa** | 0.51 | 0.47 | 0.59 | -0.04 | -0.09 | 0.34 | 0.87 | 0.07 | 0.27 |
| **Spain** | 0.12 | 0.11 | 0.59 | -0.01 | -0.10 | 0.06 | 0.20 | 0.02 | 0.22 |
| **Sri Lanka** | 0.45 | 0.40 | 0.59 | -0.05 | -0.11 | 0.30 | 0.76 | 0.07 | 0.34 |
| **Sweden** | 0.06 | 0.05 | 0.59 | -0.01 | -0.10 | 0.03 | 0.10 | 0.01 | 0.21 |
| **Switzerland** | 0.09 | 0.05 | 0.59 | -0.04 | -0.47 | 0.05 | 0.16 | 0.02 | 1.03 |
| **Tajikistan** | 0.42 | 0.38 | 0.59 | -0.04 | -0.09 | 0.28 | 0.71 | 0.06 | 0.27 |
| **Thailand** | 0.43 | 0.37 | 0.59 | -0.06 | -0.14 | 0.29 | 0.74 | 0.06 | 0.42 |
| **Togo** | 0.63 | 0.59 | 0.59 | -0.04 | -0.07 | 0.42 | 1.07 | 0.08 | 0.20 |
| **Tunisia** | 0.34 | 0.27 | 0.59 | -0.07 | -0.21 | 0.22 | 0.57 | 0.03 | 0.64 |
| **Turkey** | 0.52 | 0.39 | 0.59 | -0.13 | -0.25 | 0.35 | 0.88 | 0.06 | 0.75 |
| **Uganda** | 0.62 | 0.53 | 0.59 | -0.09 | -0.14 | 0.41 | 1.05 | 0.06 | 0.43 |
| **Ukraine** | 0.36 | 0.34 | 0.59 | -0.02 | -0.05 | 0.24 | 0.61 | 0.05 | 0.16 |
| **United Kingdom** | 0.22 | 0.20 | 0.59 | -0.03 | -0.12 | 0.12 | 0.38 | 0.03 | 0.26 |
| **United States** | 0.29 | 0.27 | 0.59 | -0.01 | -0.05 | 0.16 | 0.49 | 0.04 | 0.11 |
| **Uruguay** | 0.39 | 0.36 | 0.59 | -0.03 | -0.09 | 0.26 | 0.67 | 0.07 | 0.26 |
| **Venezuela, RB** | 0.47 | 0.47 | 0.59 | -0.01 | -0.02 | 0.32 | 0.81 | 0.10 | 0.05 |
| **Vietnam** | 0.35 | 0.33 | 0.59 | -0.02 | -0.06 | 0.23 | 0.59 | 0.04 | 0.19 |
| **Yemen, Rep.** | 0.80 | 0.74 | 0.59 | -0.06 | -0.07 | 0.53 | 1.36 | 0.06 | 0.22 |
| **Zambia** | 0.64 | 0.62 | 0.59 | -0.02 | -0.03 | 0.43 | 1.08 | 0.10 | 0.09 |
| **Zimbabwe** | 0.58 | 0.54 | 0.59 | -0.04 | -0.06 | 0.39 | 0.98 | 0.09 | 0.20 |

*Source: Authors' calculations.*

## Access to basic services

| Country | *Current greenness* | | | *Progress of greenness* | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 2000-2004 average value of access to basic services = $y^0$ | 2010-2014 average value of access to basic services = $y^1$ | threshold = t | change = $y^1$-$y^0$ | rate of change = ($y^1$-$y^0$ )/$y^0$ | target = $y^*$ | Weight $\tilde{\pi}$ | Weight $\pi$ | progress on access to basic services |
| **Albania** | 93.54 | 95.08 | 57.92 | 1.54 | 0.02 | 100.00 | 0.62 | 0.06 | 0.24 |
| **Algeria** | 93.13 | 92.80 | 57.92 | -0.34 | 0.00 | 100.00 | 0.62 | 0.05 | -0.05 |
| **Angola** | 40.01 | 47.02 | 57.92 | 7.01 | 0.18 | 57.92 | 1.45 | 0.15 | 0.39 |
| **Argentina** | 91.18 | 94.02 | 57.92 | 2.84 | 0.03 | 100.00 | 0.64 | 0.05 | 0.32 |
| **Armenia** | 93.30 | 95.83 | 57.92 | 2.53 | 0.03 | 100.00 | 0.62 | 0.06 | 0.38 |
| **Australia** | | | | | | | | | |
| **Austria** | | | | | | | | | |
| **Azerbaijan** | 78.02 | 86.57 | 57.92 | 8.55 | 0.11 | 92.33 | 0.74 | 0.05 | 0.60 |
| **Bangladesh** | 51.13 | 63.66 | 57.92 | 12.53 | 0.25 | 65.70 | 1.13 | 0.08 | 0.86 |
| **Belarus** | | | | | | | | | |
| **Belgium** | | | | | | | | | |
| **Benin** | 33.73 | 38.15 | 57.92 | 4.42 | 0.13 | 57.92 | 1.72 | 0.11 | 0.18 |
| **Bolivia** | 64.47 | 70.09 | 57.92 | 5.61 | 0.09 | 76.29 | 0.90 | 0.11 | 0.47 |
| **Botswana** | 62.36 | 67.09 | 57.92 | 4.74 | 0.08 | 73.79 | 0.93 | 0.09 | 0.41 |
| **Brazil** | 88.37 | 91.59 | 57.92 | 3.23 | 0.04 | 100.00 | 0.66 | 0.07 | 0.28 |
| **Bulgaria** | | | | | | | | | |
| **Cambodia** | 25.51 | 41.46 | 57.92 | 15.95 | 0.63 | 57.92 | 2.27 | 0.13 | 0.49 |
| **Cameroon** | 50.26 | 54.61 | 57.92 | 4.35 | 0.09 | 64.58 | 1.15 | 0.08 | 0.30 |
| **Canada** | | | | | | | | | |
| **Chile** | 94.95 | 98.08 | 57.92 | 3.13 | 0.03 | 100.00 | 0.61 | 0.05 | 0.62 |
| **China** | 74.80 | 83.53 | 57.92 | 8.73 | 0.12 | 88.52 | 0.77 | 0.04 | 0.64 |
| **Colombia** | 86.00 | 88.76 | 57.92 | 2.76 | 0.03 | 100.00 | 0.67 | 0.07 | 0.20 |
| **Costa Rica** | 93.99 | 96.11 | 57.92 | 2.12 | 0.02 | 100.00 | 0.62 | 0.09 | 0.35 |
| **Cote d'Ivoire** | 48.95 | 52.95 | 57.92 | 4.00 | 0.08 | 62.90 | 1.18 | 0.13 | 0.29 |
| **Croatia** | | | | | | | | | |
| **Cyprus** | | | | | | | | | |
| **Czech Republic** | | | | | | | | | |
| **Denmark** | | | | | | | | | |
| **Dominican Republic** | 85.16 | 87.14 | 57.92 | 1.98 | 0.02 | 100.00 | 0.68 | 0.08 | 0.13 |
| **Ecuador** | 81.04 | 87.08 | 57.92 | 6.04 | 0.07 | 95.90 | 0.71 | 0.07 | 0.41 |
| **Egypt, Arab Rep.** | 93.42 | 97.65 | 57.92 | 4.23 | 0.05 | 100.00 | 0.62 | 0.04 | 0.64 |
| **El Salvador** | 77.72 | 83.19 | 57.92 | 5.47 | 0.07 | 91.97 | 0.75 | 0.10 | 0.38 |
| **Estonia** | | | | | | | | | |
| **Finland** | | | | | | | | | |
| **France** | | | | | | | | | |
| **Georgia** | 94.95 | 96.65 | 57.92 | 1.70 | 0.02 | 100.00 | 0.61 | 0.05 | 0.34 |
| **Germany** | | | | | | | | | |
| **Ghana** | 42.31 | 52.13 | 57.92 | 9.82 | 0.23 | 57.92 | 1.37 | 0.10 | 0.63 |
| **Greece** | | | | | | | | | |
| **Guatemala** | 79.26 | 84.06 | 57.92 | 4.79 | 0.06 | 93.79 | 0.73 | 0.07 | 0.33 |
| **Honduras** | 74.22 | 81.14 | 57.92 | 6.92 | 0.09 | 87.82 | 0.78 | 0.06 | 0.51 |
| **Hungary** | | | | | | | | | |
| **Iceland** | | | | | | | | | |
| **India** | 56.45 | 65.70 | 57.92 | 9.25 | 0.16 | 66.80 | 1.03 | 0.06 | 0.89 |
| **Indonesia** | 71.01 | 77.54 | 57.92 | 6.53 | 0.09 | 84.03 | 0.82 | 0.07 | 0.50 |
| **Ireland** | | | | | | | | | |
| **Israel** | | | | | | | | | |
| **Italy** | | | | | | | | | |
| **Jamaica** | 86.61 | 88.43 | 57.92 | 1.82 | 0.02 | 100.00 | 0.67 | 0.07 | 0.14 |
| **Japan** | | | | | | | | | |
| **Jordan** | | | | | | | | | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Kazakhstan** | 95.85 | 96.85 | 57.92 | 1.00 | 0.01 | 100.00 | 0.60 | 0.03 | 0.24 |
| **Kenya** | 31.23 | 36.90 | 57.92 | 5.67 | 0.18 | 57.92 | 1.85 | 0.18 | 0.21 |
| **Korea, Rep.** | 94.60 | 96.89 | 57.92 | 2.29 | 0.02 | 100.00 | 0.61 | 0.04 | 0.42 |
| **Kyrgyz Republic** | 90.25 | 92.83 | 57.92 | 2.57 | 0.03 | 100.00 | 0.64 | 0.06 | 0.26 |
| **Latvia** | 92.34 | 92.33 | 57.92 | 0.00 | 0.00 | 100.00 | 0.63 | 0.07 | 0.00 |
| **Lithuania** | 93.39 | 95.70 | 57.92 | 2.31 | 0.02 | 100.00 | 0.62 | 0.06 | 0.35 |
| **Luxembourg** | | | | | | | | | |
| **Macedonia, FYR** | 94.89 | 96.38 | 57.92 | 1.50 | 0.02 | 100.00 | 0.61 | 0.06 | 0.29 |
| **Malawi** | 26.14 | 32.48 | 57.92 | 6.34 | 0.24 | 57.92 | 2.22 | 0.18 | 0.20 |
| **Malaysia** | 95.25 | 98.17 | 57.92 | 2.92 | 0.03 | 100.00 | 0.61 | 0.04 | 0.61 |
| **Mali** | 27.15 | 32.76 | 57.92 | 5.60 | 0.21 | 57.92 | 2.13 | 0.09 | 0.18 |
| **Mexico** | 87.50 | 91.63 | 57.92 | 4.13 | 0.05 | 100.00 | 0.66 | 0.06 | 0.33 |
| **Moldova** | 89.15 | 92.80 | 57.92 | 3.65 | 0.04 | 100.00 | 0.65 | 0.08 | 0.34 |
| **Mongolia** | 67.11 | 73.59 | 57.92 | 6.48 | 0.10 | 79.41 | 0.86 | 0.10 | 0.53 |
| **Morocco** | 71.29 | 84.36 | 57.92 | 13.07 | 0.18 | 84.36 | 0.81 | 0.08 | 1.00 |
| **Mozambique** | 20.96 | 26.93 | 57.92 | 5.97 | 0.28 | 57.92 | 2.76 | 0.15 | 0.16 |
| **Namibia** | 48.00 | 54.27 | 57.92 | 6.27 | 0.13 | 57.92 | 1.21 | 0.12 | 0.63 |
| **Nepal** | 57.16 | 64.46 | 57.92 | 7.29 | 0.13 | 73.45 | 1.01 | 0.09 | 0.45 |
| **Netherlands** | | | | | | | | | |
| **New Zealand** | | | | | | | | | |
| **Nicaragua** | 67.12 | 69.88 | 57.92 | 2.76 | 0.04 | 79.42 | 0.86 | 0.10 | 0.22 |
| **Norway** | | | | | | | | | |
| **Pakistan** | 68.61 | 75.87 | 57.92 | 7.26 | 0.11 | 88.15 | 0.84 | 0.06 | 0.37 |
| **Panama** | 80.88 | 84.41 | 57.92 | 3.53 | 0.04 | 95.71 | 0.72 | 0.07 | 0.24 |
| **Paraguay** | 75.19 | 87.14 | 57.92 | 11.95 | 0.16 | 88.98 | 0.77 | 0.07 | 0.87 |
| **Peru** | 72.12 | 80.17 | 57.92 | 8.05 | 0.11 | 85.34 | 0.80 | 0.06 | 0.61 |
| **Philippines** | 75.03 | 82.32 | 57.92 | 7.29 | 0.10 | 88.79 | 0.77 | 0.07 | 0.53 |
| **Poland** | 94.80 | 94.75 | 57.92 | -0.05 | 0.00 | 100.00 | 0.61 | 0.05 | -0.01 |
| **Portugal** | | | | | | | | | |
| **Russian Federation** | 89.05 | 89.11 | 57.92 | 0.06 | 0.00 | 100.00 | 0.65 | 0.07 | 0.01 |
| **Senegal** | 48.86 | 59.16 | 57.92 | 10.30 | 0.21 | 62.78 | 1.19 | 0.09 | 0.74 |
| **Singapore** | 89.70 | 90.87 | 57.92 | 1.17 | 0.01 | 100.00 | 0.65 | 0.02 | 0.11 |
| **Slovak Republic** | | | | | | | | | |
| **Slovenia** | | | | | | | | | |
| **South Africa** | 72.94 | 82.45 | 57.92 | 9.52 | 0.13 | 86.31 | 0.79 | 0.06 | 0.71 |
| **Spain** | | | | | | | | | |
| **Sri Lanka** | 79.95 | 87.65 | 57.92 | 7.70 | 0.10 | 94.61 | 0.72 | 0.07 | 0.53 |
| **Sweden** | | | | | | | | | |
| **Switzerland** | | | | | | | | | |
| **Tajikistan** | 83.26 | 87.12 | 57.92 | 3.85 | 0.05 | 98.53 | 0.70 | 0.06 | 0.25 |
| **Thailand** | 93.22 | 96.21 | 57.92 | 2.99 | 0.03 | 100.00 | 0.62 | 0.05 | 0.44 |
| **Togo** | 27.59 | 32.48 | 57.92 | 4.90 | 0.18 | 57.92 | 2.10 | 0.17 | 0.16 |
| **Tunisia** | 89.01 | 94.17 | 57.92 | 5.16 | 0.06 | 100.00 | 0.65 | 0.04 | 0.47 |
| **Turkey** | 93.52 | 96.19 | 57.92 | 2.67 | 0.03 | 100.00 | 0.62 | 0.04 | 0.41 |
| **Uganda** | 31.93 | 38.91 | 57.92 | 6.97 | 0.22 | 57.92 | 1.81 | 0.10 | 0.27 |
| **Ukraine** | 96.09 | 97.33 | 57.92 | 1.24 | 0.01 | 100.00 | 0.60 | 0.05 | 0.32 |
| **United Kingdom** | | | | | | | | | |
| **United States** | | | | | | | | | |
| **Uruguay** | 95.71 | 97.86 | 57.92 | 2.15 | 0.02 | 100.00 | 0.61 | 0.06 | 0.50 |
| **Venezuela, RB** | 93.61 | 94.53 | 57.92 | 0.92 | 0.01 | 100.00 | 0.62 | 0.07 | 0.14 |
| **Vietnam** | 74.18 | 85.03 | 57.92 | 10.86 | 0.15 | 87.77 | 0.78 | 0.06 | 0.80 |
| **Yemen, Rep.** | 47.02 | 50.37 | 57.92 | 3.35 | 0.07 | 60.41 | 1.23 | 0.06 | 0.25 |
| **Zambia** | 37.39 | 40.39 | 57.92 | 3.00 | 0.08 | 57.92 | 1.55 | 0.14 | 0.15 |
| **Zimbabwe** | 51.34 | 52.22 | 57.92 | 0.88 | 0.02 | 65.97 | 1.13 | 0.11 | 0.06 |

*Source: Authors' calculations.*

## Mean years of schooling

| Country | *Current greenness* | | | *Progress of greenness* | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 2000-2004 average value of mean years of schooling = $y^0$ | 2010-2014 average value of mean years of schooling = $y^1$ | threshold = t | change = $y^1$-$y^0$ | rate of change = ($y^1$-$y^0$ )/$y^0$ | target = $y^*$ | Weight $\tilde{\pi}$ | Weight $\pi$ | progress on mean years of schooling |
| **Albania** | 8.50 | 9.18 | 4.60 | 0.68 | 0.08 | 11.57 | 0.54 | 0.05 | 0.22 |
| **Algeria** | 5.90 | 7.48 | 4.60 | 1.58 | 0.27 | 8.03 | 0.78 | 0.07 | 0.74 |
| **Angola** | 4.40 | 4.65 | 4.60 | 0.25 | 0.06 | 6.70 | 1.05 | 0.11 | 0.11 |
| **Argentina** | 9.10 | 9.68 | 4.60 | 0.58 | 0.06 | 12.38 | 0.51 | 0.04 | 0.18 |
| **Armenia** | 10.80 | 10.88 | 4.60 | 0.08 | 0.01 | 14.00 | 0.43 | 0.04 | 0.03 |
| **Australia** | 11.90 | 12.82 | 4.60 | 0.92 | 0.08 | 14.00 | 0.39 | 0.03 | 0.44 |
| **Austria** | 9.00 | 10.65 | 4.60 | 1.65 | 0.18 | 12.25 | 0.51 | 0.04 | 0.51 |
| **Azerbaijan** | 10.60 | 11.07 | 4.60 | 0.47 | 0.04 | 14.00 | 0.43 | 0.03 | 0.14 |
| **Bangladesh** | 4.10 | 4.97 | 4.60 | 0.87 | 0.21 | 6.24 | 1.12 | 0.07 | 0.41 |
| **Belarus** | 8.90 | 11.55 | 4.60 | 2.65 | 0.30 | 12.11 | 0.52 | 0.06 | 0.83 |
| **Belgium** | 10.00 | 11.15 | 4.60 | 1.15 | 0.12 | 13.61 | 0.46 | 0.04 | 0.32 |
| **Benin** | 2.60 | 3.23 | 4.60 | 0.63 | 0.24 | 4.60 | 1.77 | 0.12 | 0.32 |
| **Bolivia** | 7.40 | 7.87 | 4.60 | 0.47 | 0.06 | 10.07 | 0.62 | 0.08 | 0.17 |
| **Botswana** | 7.60 | 8.80 | 4.60 | 1.20 | 0.16 | 10.34 | 0.61 | 0.06 | 0.44 |
| **Brazil** | 5.60 | 7.05 | 4.60 | 1.45 | 0.26 | 7.62 | 0.82 | 0.09 | 0.72 |
| **Bulgaria** | 9.50 | 10.53 | 4.60 | 1.03 | 0.11 | 12.93 | 0.48 | 0.04 | 0.30 |
| **Cambodia** | 3.20 | 4.25 | 4.60 | 1.05 | 0.33 | 4.60 | 1.44 | 0.08 | 0.75 |
| **Cameroon** | 4.80 | 5.57 | 4.60 | 0.77 | 0.16 | 7.30 | 0.96 | 0.07 | 0.31 |
| **Canada** | 11.00 | 12.82 | 4.60 | 1.82 | 0.17 | 14.00 | 0.42 | 0.03 | 0.61 |
| **Chile** | 8.80 | 9.75 | 4.60 | 0.95 | 0.11 | 11.98 | 0.52 | 0.05 | 0.30 |
| **China** | 6.50 | 7.35 | 4.60 | 0.85 | 0.13 | 8.85 | 0.71 | 0.04 | 0.36 |
| **Colombia** | 6.50 | 7.18 | 4.60 | 0.68 | 0.11 | 8.85 | 0.71 | 0.07 | 0.29 |
| **Costa Rica** | 8.00 | 8.27 | 4.60 | 0.27 | 0.03 | 10.89 | 0.58 | 0.08 | 0.09 |
| **Cote d'Ivoire** | | | | | | | | | |
| **Croatia** | 9.40 | 10.75 | 4.60 | 1.35 | 0.14 | 12.79 | 0.49 | 0.04 | 0.40 |
| **Cyprus** | 10.00 | 11.37 | 4.60 | 1.37 | 0.14 | 13.61 | 0.46 | 0.03 | 0.38 |
| **Czech Republic** | 12.90 | 12.43 | 4.60 | -0.47 | -0.04 | 14.00 | 0.36 | 0.03 | -0.42 |
| **Denmark** | 10.70 | 12.72 | 4.60 | 2.02 | 0.19 | 14.00 | 0.43 | 0.04 | 0.61 |
| **Dominican Republic** | 6.40 | 7.38 | 4.60 | 0.98 | 0.15 | 8.71 | 0.72 | 0.09 | 0.43 |
| **Ecuador** | 7.00 | 7.53 | 4.60 | 0.53 | 0.08 | 9.53 | 0.66 | 0.07 | 0.21 |
| **Egypt, Arab Rep.** | 4.80 | 6.35 | 4.60 | 1.55 | 0.32 | 6.53 | 0.96 | 0.07 | 0.89 |
| **El Salvador** | 5.20 | 6.35 | 4.60 | 1.15 | 0.22 | 7.08 | 0.88 | 0.12 | 0.61 |
| **Estonia** | 12.00 | 12.32 | 4.60 | 0.32 | 0.03 | 14.00 | 0.38 | 0.04 | 0.16 |
| **Finland** | 9.30 | 10.18 | 4.60 | 0.88 | 0.09 | 12.66 | 0.49 | 0.04 | 0.26 |
| **France** | 9.80 | 10.95 | 4.60 | 1.15 | 0.12 | 13.34 | 0.47 | 0.05 | 0.33 |
| **Georgia** | 11.70 | 12.10 | 4.60 | 0.40 | 0.03 | 14.00 | 0.39 | 0.03 | 0.17 |
| **Germany** | 10.50 | 12.93 | 4.60 | 2.43 | 0.23 | 14.00 | 0.44 | 0.04 | 0.70 |
| **Ghana** | 6.10 | 6.85 | 4.60 | 0.75 | 0.12 | 9.28 | 0.75 | 0.06 | 0.24 |
| **Greece** | 8.60 | 10.20 | 4.60 | 1.60 | 0.19 | 11.70 | 0.53 | 0.04 | 0.52 |
| **Guatemala** | 3.70 | 5.08 | 4.60 | 1.38 | 0.37 | 5.03 | 1.24 | 0.12 | 1.04 |
| **Honduras** | 4.30 | 5.35 | 4.60 | 1.05 | 0.24 | 5.85 | 1.07 | 0.08 | 0.68 |
| **Hungary** | 10.20 | 11.50 | 4.60 | 1.30 | 0.13 | 13.88 | 0.45 | 0.04 | 0.35 |
| **Iceland** | 9.40 | 10.50 | 4.60 | 1.10 | 0.12 | 12.79 | 0.49 | 0.03 | 0.32 |
| **India** | 4.40 | 5.30 | 4.60 | 0.90 | 0.20 | 5.99 | 1.05 | 0.06 | 0.57 |
| **Indonesia** | 6.70 | 7.52 | 4.60 | 0.82 | 0.12 | 9.12 | 0.69 | 0.06 | 0.34 |
| **Ireland** | 10.80 | 12.12 | 4.60 | 1.32 | 0.12 | 14.00 | 0.43 | 0.03 | 0.41 |
| **Israel** | 12.00 | 12.45 | 4.60 | 0.45 | 0.04 | 14.00 | 0.38 | 0.03 | 0.22 |
| **Italy** | 8.60 | 9.80 | 4.60 | 1.20 | 0.14 | 11.70 | 0.53 | 0.04 | 0.39 |
| **Jamaica** | 8.60 | 9.60 | 4.60 | 1.00 | 0.12 | 11.70 | 0.53 | 0.06 | 0.32 |
| **Japan** | 10.70 | 11.45 | 4.60 | 0.75 | 0.07 | 14.00 | 0.43 | 0.04 | 0.23 |
| **Jordan** | 9.50 | 9.87 | 4.60 | 0.37 | 0.04 | 12.93 | 0.48 | 0.04 | 0.11 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Kazakhstan** | 10.00 | 11.40 | 4.60 | 1.40 | 0.14 | 13.61 | 0.46 | 0.02 | 0.39 |
| **Kenya** | 5.30 | 6.15 | 4.60 | 0.85 | 0.16 | 8.07 | 0.87 | 0.08 | 0.31 |
| **Korea, Rep.** | 10.60 | 11.78 | 4.60 | 1.18 | 0.11 | 14.00 | 0.43 | 0.03 | 0.35 |
| **Kyrgyz Republic** | 9.90 | 10.53 | 4.60 | 0.63 | 0.06 | 13.47 | 0.46 | 0.04 | 0.18 |
| **Latvia** | 9.50 | 11.75 | 4.60 | 2.25 | 0.24 | 12.93 | 0.48 | 0.05 | 0.66 |
| **Lithuania** | 10.70 | 12.27 | 4.60 | 1.57 | 0.15 | 14.00 | 0.43 | 0.04 | 0.47 |
| **Luxembourg** | 10.30 | 11.63 | 4.60 | 1.33 | 0.13 | 14.00 | 0.45 | 0.06 | 0.36 |
| **Macedonia, FYR** | | | | | | | | | |
| **Malawi** | 3.00 | 4.15 | 4.60 | 1.15 | 0.38 | 4.60 | 1.53 | 0.12 | 0.72 |
| **Malaysia** | 8.60 | 9.60 | 4.60 | 1.00 | 0.12 | 11.70 | 0.53 | 0.04 | 0.32 |
| **Mali** | 1.20 | 1.95 | 4.60 | 0.75 | 0.63 | 4.60 | 3.83 | 0.17 | 0.22 |
| **Mexico** | 6.70 | 8.28 | 4.60 | 1.58 | 0.24 | 9.12 | 0.69 | 0.06 | 0.65 |
| **Moldova** | 9.00 | 11.05 | 4.60 | 2.05 | 0.23 | 12.25 | 0.51 | 0.06 | 0.63 |
| **Mongolia** | 8.20 | 9.18 | 4.60 | 0.98 | 0.12 | 11.16 | 0.56 | 0.06 | 0.33 |
| **Morocco** | 3.40 | 4.28 | 4.60 | 0.88 | 0.26 | 4.63 | 1.35 | 0.14 | 0.72 |
| **Mozambique** | 2.20 | 3.15 | 4.60 | 0.95 | 0.43 | 4.60 | 2.09 | 0.12 | 0.40 |
| **Namibia** | 5.60 | 6.17 | 4.60 | 0.57 | 0.10 | 7.62 | 0.82 | 0.08 | 0.28 |
| **Nepal** | 2.40 | 3.22 | 4.60 | 0.82 | 0.34 | 4.60 | 1.92 | 0.16 | 0.37 |
| **Netherlands** | 10.80 | 11.82 | 4.60 | 1.02 | 0.09 | 14.00 | 0.43 | 0.04 | 0.32 |
| **New Zealand** | 12.00 | 12.45 | 4.60 | 0.45 | 0.04 | 14.00 | 0.38 | 0.03 | 0.22 |
| **Nicaragua** | 5.10 | 5.92 | 4.60 | 0.82 | 0.16 | 6.94 | 0.90 | 0.10 | 0.44 |
| **Norway** | 12.00 | 12.55 | 4.60 | 0.55 | 0.05 | 14.00 | 0.38 | 0.02 | 0.28 |
| **Pakistan** | 3.30 | 4.65 | 4.60 | 1.35 | 0.41 | 5.02 | 1.39 | 0.10 | 0.78 |
| **Panama** | 8.50 | 9.25 | 4.60 | 0.75 | 0.09 | 11.57 | 0.54 | 0.05 | 0.24 |
| **Paraguay** | 5.90 | 7.63 | 4.60 | 1.73 | 0.29 | 8.03 | 0.78 | 0.07 | 0.81 |
| **Peru** | 8.00 | 8.85 | 4.60 | 0.85 | 0.11 | 10.89 | 0.58 | 0.05 | 0.29 |
| **Philippines** | 7.60 | 8.43 | 4.60 | 0.83 | 0.11 | 10.34 | 0.61 | 0.06 | 0.30 |
| **Poland** | 11.10 | 11.70 | 4.60 | 0.60 | 0.05 | 14.00 | 0.41 | 0.03 | 0.21 |
| **Portugal** | 6.60 | 7.92 | 4.60 | 1.32 | 0.20 | 8.98 | 0.70 | 0.06 | 0.55 |
| **Russian Federation** | 11.30 | 11.93 | 4.60 | 0.63 | 0.06 | 14.00 | 0.41 | 0.04 | 0.23 |
| **Senegal** | 1.90 | 2.43 | 4.60 | 0.53 | 0.28 | 4.60 | 2.42 | 0.18 | 0.20 |
| **Singapore** | 8.90 | 10.08 | 4.60 | 1.18 | 0.13 | 12.11 | 0.52 | 0.02 | 0.37 |
| **Slovak Republic** | 10.30 | 11.72 | 4.60 | 1.42 | 0.14 | 14.00 | 0.45 | 0.04 | 0.38 |
| **Slovenia** | 11.60 | 11.80 | 4.60 | 0.20 | 0.02 | 14.00 | 0.40 | 0.04 | 0.08 |
| **South Africa** | 8.80 | 9.65 | 4.60 | 0.85 | 0.10 | 11.98 | 0.52 | 0.04 | 0.27 |
| **Spain** | 8.40 | 9.45 | 4.60 | 1.05 | 0.13 | 11.43 | 0.55 | 0.05 | 0.35 |
| **Sri Lanka** | 10.00 | 10.73 | 4.60 | 0.73 | 0.07 | 13.61 | 0.46 | 0.04 | 0.20 |
| **Sweden** | 11.40 | 12.00 | 4.60 | 0.60 | 0.05 | 14.00 | 0.40 | 0.04 | 0.23 |
| **Switzerland** | 11.40 | 12.67 | 4.60 | 1.27 | 0.11 | 14.00 | 0.40 | 0.04 | 0.49 |
| **Tajikistan** | 10.60 | 10.42 | 4.60 | -0.18 | -0.02 | 14.00 | 0.43 | 0.04 | -0.05 |
| **Thailand** | 6.10 | 7.20 | 4.60 | 1.10 | 0.18 | 8.30 | 0.75 | 0.07 | 0.50 |
| **Togo** | 4.00 | 4.38 | 4.60 | 0.38 | 0.10 | 6.09 | 1.15 | 0.09 | 0.18 |
| **Tunisia** | 4.90 | 6.58 | 4.60 | 1.68 | 0.34 | 6.67 | 0.94 | 0.06 | 0.95 |
| **Turkey** | 5.50 | 7.23 | 4.60 | 1.73 | 0.32 | 7.48 | 0.84 | 0.06 | 0.87 |
| **Uganda** | 3.90 | 5.23 | 4.60 | 1.33 | 0.34 | 5.93 | 1.18 | 0.07 | 0.66 |
| **Ukraine** | 10.70 | 11.28 | 4.60 | 0.58 | 0.05 | 14.00 | 0.43 | 0.04 | 0.18 |
| **United Kingdom** | 11.70 | 12.95 | 4.60 | 1.25 | 0.11 | 14.00 | 0.39 | 0.04 | 0.54 |
| **United States** | 12.70 | 12.88 | 4.60 | 0.18 | 0.01 | 14.00 | 0.36 | 0.03 | 0.14 |
| **Uruguay** | 8.00 | 8.37 | 4.60 | 0.37 | 0.05 | 10.89 | 0.58 | 0.06 | 0.13 |
| **Venezuela, RB** | 6.40 | 8.60 | 4.60 | 2.20 | 0.34 | 8.71 | 0.72 | 0.09 | 0.95 |
| **Vietnam** | 5.40 | 7.32 | 4.60 | 1.92 | 0.35 | 7.35 | 0.85 | 0.06 | 0.98 |
| **Yemen, Rep.** | 1.20 | 2.48 | 4.60 | 1.28 | 1.07 | 4.60 | 3.83 | 0.18 | 0.38 |
| **Zambia** | 5.90 | 6.55 | 4.60 | 0.65 | 0.11 | 8.98 | 0.78 | 0.07 | 0.21 |
| **Zimbabwe** | 6.50 | 7.22 | 4.60 | 0.72 | 0.11 | 9.89 | 0.71 | 0.07 | 0.21 |

*Source: Authors' calculations.*

## Terrestrial protected areas

| Country | *Current greenness* | | | *Progress of greenness* | | | | |
|---|---|---|---|---|---|---|---|---|
| | 2000-2004 average value of terrestrial protected areas = $y^0$ | 2010-2014 average value of terrestrial protected areas = $y^1$ | threshold = t | change = $y^1$-$y^0$ | rate of change = ($y^1$-$y^0$ )/$y^0$ | target = $y^*$ | Weight $\pi$ | progress on terrestrial protected areas |
| **Albania** | 6.19 | 9.48 | 17.00 | 3.28 | 0.53 | 20.77 | 2.75 | 0.23 |
| **Algeria** | 6.23 | 7.38 | 17.00 | 1.14 | 0.18 | 20.92 | 2.73 | 0.08 |
| **Angola** | 12.06 | 12.06 | 17.00 | 0.00 | 0.00 | 39.33 | 1.41 | 0.00 |
| **Argentina** | 5.75 | 6.65 | 17.00 | 0.90 | 0.16 | 19.28 | 2.96 | 0.07 |
| **Armenia** | 7.04 | 8.10 | 17.00 | 1.06 | 0.15 | 23.63 | 2.41 | 0.06 |
| **Australia** | 11.33 | 15.04 | 17.00 | 3.71 | 0.33 | 36.96 | 1.50 | 0.14 |
| **Austria** | 23.52 | 23.59 | 17.00 | 0.06 | 0.00 | 76.72 | 0.72 | 0.00 |
| **Azerbaijan** | 6.75 | 7.36 | 17.00 | 0.60 | 0.09 | 22.66 | 2.52 | 0.04 |
| **Bangladesh** | 4.07 | 4.24 | 17.00 | 0.17 | 0.04 | 17.00 | 4.18 | 0.01 |
| **Belarus** | 7.15 | 8.28 | 17.00 | 1.13 | 0.16 | 23.31 | 2.38 | 0.07 |
| **Belgium** | 15.99 | 24.47 | 17.00 | 8.48 | 0.53 | 52.15 | 1.06 | 0.23 |
| **Benin** | 24.44 | 25.51 | 17.00 | 1.07 | 0.04 | 79.72 | 0.70 | 0.02 |
| **Bolivia** | 18.73 | 20.83 | 17.00 | 2.10 | 0.11 | 61.09 | 0.91 | 0.05 |
| **Botswana** | 37.17 | 37.19 | 17.00 | 0.02 | 0.00 | 100.00 | 0.46 | 0.00 |
| **Brazil** | 14.35 | 25.97 | 17.00 | 11.62 | 0.81 | 46.81 | 1.18 | 0.36 |
| **Bulgaria** | 4.22 | 35.42 | 17.00 | 31.21 | 7.40 | 17.00 | 4.03 | 2.44 |
| **Cambodia** | 20.90 | 23.76 | 17.00 | 2.85 | 0.14 | 68.17 | 0.81 | 0.06 |
| **Cameroon** | 7.52 | 10.91 | 17.00 | 3.39 | 0.45 | 24.53 | 2.26 | 0.20 |
| **Canada** | 5.72 | 6.96 | 17.00 | 1.24 | 0.22 | 19.20 | 2.97 | 0.09 |
| **Chile** | 13.96 | 15.04 | 17.00 | 1.07 | 0.08 | 45.53 | 1.22 | 0.03 |
| **China** | 14.92 | 16.12 | 17.00 | 1.20 | 0.08 | 48.65 | 1.14 | 0.04 |
| **Colombia** | 18.72 | 20.83 | 17.00 | 2.11 | 0.11 | 61.06 | 0.91 | 0.05 |
| **Costa Rica** | 20.52 | 22.60 | 17.00 | 2.08 | 0.10 | 66.93 | 0.83 | 0.04 |
| **Cote d'Ivoire** | 21.90 | 22.17 | 17.00 | 0.27 | 0.01 | 71.43 | 0.78 | 0.01 |
| **Croatia** | 7.26 | 10.32 | 17.00 | 3.05 | 0.42 | 23.69 | 2.34 | 0.19 |
| **Cyprus** | 16.19 | 17.15 | 17.00 | 0.96 | 0.06 | 52.79 | 1.05 | 0.03 |
| **Czech Republic** | 16.32 | 22.37 | 17.00 | 6.05 | 0.37 | 53.21 | 1.04 | 0.16 |
| **Denmark** | 20.42 | 23.56 | 17.00 | 3.14 | 0.15 | 66.59 | 0.83 | 0.07 |
| **Dominican Republic** | 24.04 | 20.82 | 17.00 | -3.22 | -0.13 | 78.41 | 0.71 | -0.06 |
| **Ecuador** | 37.10 | 37.03 | 17.00 | -0.07 | 0.00 | 100.00 | 0.46 | 0.00 |
| **Egypt, Arab Rep.** | 4.45 | 11.34 | 17.00 | 6.89 | 1.55 | 17.00 | 3.82 | 0.55 |
| **El Salvador** | | | | | | | | |
| **Estonia** | 19.94 | 23.16 | 17.00 | 3.22 | 0.16 | 65.01 | 0.85 | 0.07 |
| **Finland** | 13.00 | 15.17 | 17.00 | 2.17 | 0.17 | 42.39 | 1.31 | 0.07 |
| **France** | 17.44 | 28.70 | 17.00 | 11.26 | 0.65 | 56.88 | 0.97 | 0.29 |
| **Georgia** | 3.68 | 3.68 | 17.00 | 0.00 | 0.00 | 17.00 | 4.62 | 0.00 |
| **Germany** | 42.15 | 49.04 | 17.00 | 6.89 | 0.16 | 100.00 | 0.40 | 0.12 |
| **Ghana** | 14.41 | 14.41 | 17.00 | 0.00 | 0.00 | 46.99 | 1.18 | 0.00 |
| **Greece** | 14.13 | 21.48 | 17.00 | 7.35 | 0.52 | 46.07 | 1.20 | 0.23 |
| **Guatemala** | 28.46 | 29.82 | 17.00 | 1.36 | 0.05 | 92.82 | 0.60 | 0.02 |
| **Honduras** | 15.85 | 16.22 | 17.00 | 0.37 | 0.02 | 51.69 | 1.07 | 0.01 |
| **Hungary** | 6.70 | 23.11 | 17.00 | 16.41 | 2.45 | 22.48 | 2.54 | 1.04 |
| **Iceland** | 7.41 | 13.27 | 17.00 | 5.86 | 0.79 | 24.18 | 2.29 | 0.35 |
| **India** | 4.81 | 4.92 | 17.00 | 0.11 | 0.02 | 17.00 | 3.53 | 0.01 |
| **Indonesia** | 5.57 | 8.93 | 17.00 | 3.36 | 0.60 | 18.70 | 3.05 | 0.26 |
| **Ireland** | 6.51 | 12.80 | 17.00 | 6.30 | 0.97 | 21.83 | 2.61 | 0.41 |
| **Israel** | 14.74 | 14.74 | 17.00 | 0.00 | 0.00 | 48.06 | 1.15 | 0.00 |
| **Italy** | 12.44 | 21.03 | 17.00 | 8.58 | 0.69 | 40.58 | 1.37 | 0.31 |
| **Jamaica** | 6.98 | 7.06 | 17.00 | 0.08 | 0.01 | 23.43 | 2.43 | 0.00 |
| **Japan** | 10.37 | 10.96 | 17.00 | 0.60 | 0.06 | 33.81 | 1.64 | 0.03 |
| **Jordan** | | | | | | | | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Kazakhstan** | 2.57 | 3.20 | 17.00 | 0.63 | 0.24 | 17.00 | 6.61 | 0.04 |
| **Kenya** | 11.61 | 11.57 | 17.00 | -0.04 | 0.00 | 37.88 | 1.46 | 0.00 |
| **Korea, Rep.** | 3.94 | 5.24 | 17.00 | 1.30 | 0.33 | 17.00 | 4.32 | 0.10 |
| **Kyrgyz Republic** | 6.94 | 6.30 | 17.00 | -0.64 | -0.09 | 23.29 | 2.45 | -0.04 |
| **Latvia** | 14.29 | 17.58 | 17.00 | 3.30 | 0.23 | 46.59 | 1.19 | 0.10 |
| **Lithuania** | 11.56 | 17.25 | 17.00 | 5.69 | 0.49 | 37.69 | 1.47 | 0.22 |
| **Luxembourg** | 33.31 | 39.65 | 17.00 | 6.34 | 0.19 | 100.00 | 0.51 | 0.10 |
| **Macedonia, FYR** | 6.19 | 7.27 | 17.00 | 1.09 | 0.18 | 20.75 | 2.75 | 0.07 |
| **Malawi** | 16.47 | 17.36 | 17.00 | 0.89 | 0.05 | 53.72 | 1.03 | 0.02 |
| **Malaysia** | 13.72 | 13.93 | 17.00 | 0.21 | 0.01 | 44.75 | 1.24 | 0.01 |
| **Mali** | 2.60 | 6.05 | 17.00 | 3.44 | 1.32 | 17.00 | 6.53 | 0.24 |
| **Mexico** | 8.30 | 13.68 | 17.00 | 5.38 | 0.65 | 27.06 | 2.05 | 0.29 |
| **Moldova** | | | | | | | | |
| **Mongolia** | 13.45 | 13.78 | 17.00 | 0.33 | 0.02 | 43.85 | 1.26 | 0.01 |
| **Morocco** | | | | | | | | |
| **Mozambique** | 13.77 | 15.73 | 17.00 | 1.96 | 0.14 | 44.90 | 1.23 | 0.06 |
| **Namibia** | 19.20 | 40.90 | 17.00 | 21.69 | 1.13 | 62.63 | 0.89 | 0.50 |
| **Nepal** | 17.01 | 16.38 | 17.00 | -0.62 | -0.04 | 55.47 | 1.00 | -0.02 |
| **Netherlands** | 30.15 | 31.48 | 17.00 | 1.33 | 0.04 | 98.32 | 0.56 | 0.02 |
| **New Zealand** | 19.70 | 21.32 | 17.00 | 1.62 | 0.08 | 64.26 | 0.86 | 0.04 |
| **Nicaragua** | 26.98 | 32.47 | 17.00 | 5.49 | 0.20 | 87.97 | 0.63 | 0.09 |
| **Norway** | 6.77 | 12.12 | 17.00 | 5.35 | 0.79 | 22.71 | 2.51 | 0.34 |
| **Pakistan** | 9.85 | 10.56 | 17.00 | 0.71 | 0.07 | 32.12 | 1.73 | 0.03 |
| **Panama** | 11.98 | 14.11 | 17.00 | 2.13 | 0.18 | 39.06 | 1.42 | 0.08 |
| **Paraguay** | 5.05 | 6.40 | 17.00 | 1.35 | 0.27 | 17.00 | 3.37 | 0.11 |
| **Peru** | 7.74 | 17.98 | 17.00 | 10.24 | 1.32 | 25.25 | 2.20 | 0.58 |
| **Philippines** | 4.99 | 5.06 | 17.00 | 0.07 | 0.01 | 17.00 | 3.41 | 0.01 |
| **Poland** | 21.94 | 34.81 | 17.00 | 12.87 | 0.59 | 71.55 | 0.77 | 0.26 |
| **Portugal** | 13.95 | 14.74 | 17.00 | 0.78 | 0.06 | 45.50 | 1.22 | 0.02 |
| **Russian Federation** | 10.81 | 11.32 | 17.00 | 0.51 | 0.05 | 35.26 | 1.57 | 0.02 |
| **Senegal** | 24.27 | 24.20 | 17.00 | -0.07 | 0.00 | 79.15 | 0.70 | 0.00 |
| **Singapore** | 3.28 | 3.39 | 17.00 | 0.12 | 0.04 | 17.00 | 5.19 | 0.01 |
| **Slovak Republic** | 20.52 | 36.09 | 17.00 | 15.57 | 0.76 | 66.92 | 0.83 | 0.34 |
| **Slovenia** | 8.85 | 54.86 | 17.00 | 46.01 | 5.20 | 28.87 | 1.92 | 2.30 |
| **South Africa** | 6.83 | 6.56 | 17.00 | -0.27 | -0.04 | 22.92 | 2.49 | -0.02 |
| **Spain** | 23.15 | 25.32 | 17.00 | 2.17 | 0.09 | 75.48 | 0.73 | 0.04 |
| **Sri Lanka** | 14.99 | 15.40 | 17.00 | 0.41 | 0.03 | 48.88 | 1.13 | 0.01 |
| **Sweden** | 12.06 | 13.87 | 17.00 | 1.81 | 0.15 | 39.33 | 1.41 | 0.07 |
| **Switzerland** | 22.26 | 26.30 | 17.00 | 4.05 | 0.18 | 72.58 | 0.76 | 0.08 |
| **Tajikistan** | 4.14 | 4.77 | 17.00 | 0.64 | 0.15 | 17.00 | 4.11 | 0.05 |
| **Thailand** | 14.67 | 16.41 | 17.00 | 1.74 | 0.12 | 47.85 | 1.16 | 0.05 |
| **Togo** | 11.32 | 24.21 | 17.00 | 12.89 | 1.14 | 36.93 | 1.50 | 0.50 |
| **Tunisia** | | | | | | | | |
| **Turkey** | 2.08 | 2.11 | 17.00 | 0.03 | 0.02 | 41.05 | 8.17 | 0.00 |
| **Uganda** | 8.53 | 11.45 | 17.00 | 2.92 | 0.34 | 27.82 | 1.99 | 0.15 |
| **Ukraine** | 4.44 | 4.49 | 17.00 | 0.06 | 0.01 | 17.00 | 3.83 | 0.00 |
| **United Kingdom** | 19.95 | 23.37 | 17.00 | 3.42 | 0.17 | 65.06 | 0.85 | 0.08 |
| **United States** | 14.94 | 15.14 | 17.00 | 0.20 | 0.01 | 48.72 | 1.14 | 0.01 |
| **Uruguay** | | | | | | | | |
| **Venezuela, RB** | 49.48 | 49.54 | 17.00 | 0.07 | 0.00 | 100.00 | 0.34 | 0.00 |
| **Vietnam** | 4.03 | 4.71 | 17.00 | 0.68 | 0.17 | 17.00 | 4.21 | 0.05 |
| **Yemen, Rep.** | | | | | | | | |
| **Zambia** | 36.05 | 37.78 | 17.00 | 1.73 | 0.05 | 100.00 | 0.47 | 0.03 |
| **Zimbabwe** | 18.05 | 27.17 | 17.00 | 9.12 | 0.51 | 58.86 | 0.94 | 0.22 |

*Source: Authors' calculations.*

## Marine protected areas

| Country | *Current greenness* | | | *Progress of greenness* | | | | |
|---|---|---|---|---|---|---|---|---|
| | 2000-2004 average value of marine protected areas = $y^0$ | 2010-2014 average value of marine protected areas = $y^1$ | threshold = t | change = $y^1$-$y^0$ | rate of change = ($y^1$-$y^0$ )/$y^0$ | target = $y^*$ | Weight $\pi$ | progress on marine protected areas |
| **Albania** | | | | | | | | |
| **Algeria** | | | | | | | | |
| **Angola** | | | | | | | | |
| **Argentina** | 1.64 | 1.64 | 10.00 | 0.00 | 0.00 | 21.23 | 6.10 | 0.00 |
| **Armenia** | | | | | | | | |
| **Australia** | 29.53 | 33.24 | 10.00 | 3.72 | 0.13 | 100.00 | 0.34 | 0.05 |
| **Austria** | | | | | | | | |
| **Azerbaijan** | | | | | | | | |
| **Bangladesh** | 2.25 | 2.54 | 10.00 | 0.30 | 0.13 | 29.13 | 4.45 | 0.01 |
| **Belarus** | | | | | | | | |
| **Belgium** | 44.13 | 55.72 | 10.00 | 11.60 | 0.26 | 100.00 | 0.23 | 0.21 |
| **Benin** | | | | | | | | |
| **Bolivia** | | | | | | | | |
| **Botswana** | | | | | | | | |
| **Brazil** | 14.39 | 16.34 | 10.00 | 1.95 | 0.14 | 100.00 | 0.69 | 0.02 |
| **Bulgaria** | | | | | | | | |
| **Cambodia** | | | | | | | | |
| **Cameroon** | | | | | | | | |
| **Canada** | | | | | | | | |
| **Chile** | 4.18 | 4.75 | 10.00 | 0.57 | 0.14 | 54.13 | 2.39 | 0.01 |
| **China** | 1.10 | 1.65 | 10.00 | 0.55 | 0.50 | 14.25 | 9.09 | 0.04 |
| **Colombia** | 5.70 | 16.13 | 10.00 | 10.44 | 1.83 | 73.81 | 1.75 | 0.15 |
| **Costa Rica** | 14.98 | 15.46 | 10.00 | 0.48 | 0.03 | 100.00 | 0.67 | 0.01 |
| **Cote d'Ivoire** | | | | | | | | |
| **Croatia** | 1.41 | 3.51 | 10.00 | 2.10 | 1.49 | 18.30 | 7.08 | 0.12 |
| **Cyprus** | 1.27 | 1.32 | 10.00 | 0.05 | 0.04 | 16.44 | 7.88 | 0.00 |
| **Czech Republic** | | | | | | | | |
| **Denmark** | 23.22 | 29.15 | 10.00 | 5.93 | 0.26 | 100.00 | 0.43 | 0.08 |
| **Dominican Republic** | 30.37 | 28.58 | 10.00 | -1.79 | -0.06 | 100.00 | 0.33 | -0.03 |
| **Ecuador** | 74.96 | 75.66 | 10.00 | 0.70 | 0.01 | 100.00 | 0.13 | 0.03 |
| **Egypt, Arab Rep.** | 6.50 | 13.14 | 10.00 | 6.64 | 1.02 | 84.22 | 1.54 | 0.09 |
| **El Salvador** | | | | | | | | |
| **Estonia** | 24.73 | 27.45 | 10.00 | 2.72 | 0.11 | 100.00 | 0.40 | 0.04 |
| **Finland** | 14.79 | 15.65 | 10.00 | 0.86 | 0.06 | 100.00 | 0.68 | 0.01 |
| **France** | 21.60 | 58.55 | 10.00 | 36.95 | 1.71 | 100.00 | 0.46 | 0.47 |
| **Georgia** | | | | | | | | |
| **Germany** | 51.60 | 64.46 | 10.00 | 12.87 | 0.25 | 100.00 | 0.19 | 0.27 |
| **Ghana** | 1.74 | 1.74 | 10.00 | 0.00 | 0.00 | 22.57 | 5.74 | 0.00 |
| **Greece** | 5.08 | 6.31 | 10.00 | 1.22 | 0.24 | 65.85 | 1.97 | 0.02 |
| **Guatemala** | 12.68 | 12.99 | 10.00 | 0.30 | 0.02 | 100.00 | 0.79 | 0.00 |
| **Honduras** | 1.46 | 2.66 | 10.00 | 1.20 | 0.82 | 18.97 | 6.83 | 0.07 |
| **Hungary** | | | | | | | | |
| **Iceland** | 3.79 | 3.90 | 10.00 | 0.11 | 0.03 | 49.08 | 2.64 | 0.00 |
| **India** | 1.75 | 1.61 | 10.00 | -0.14 | -0.08 | 22.70 | 5.70 | -0.01 |
| **Indonesia** | | | | | | | | |
| **Ireland** | 3.45 | 10.18 | 10.00 | 6.73 | 1.95 | 44.64 | 2.90 | 0.16 |
| **Israel** | | | | | | | | |
| **Italy** | 3.18 | 19.90 | 10.00 | 16.72 | 5.25 | 41.23 | 3.14 | 0.44 |
| **Jamaica** | 4.55 | 4.63 | 10.00 | 0.08 | 0.02 | 58.92 | 2.20 | 0.00 |
| **Japan** | 4.98 | 5.59 | 10.00 | 0.61 | 0.12 | 64.50 | 2.01 | 0.01 |
| **Jordan** | 29.97 | 29.97 | 10.00 | 0.00 | 0.00 | 100.00 | 0.33 | 0.00 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Kazakhstan** | | | | | | | | |
| **Kenya** | 10.47 | 10.50 | 10.00 | 0.02 | 0.00 | 100.00 | 0.95 | 0.00 |
| **Korea, Rep.** | 3.51 | 3.92 | 10.00 | 0.41 | 0.12 | 45.44 | 2.85 | 0.01 |
| **Kyrgyz Republic** | | | | | | | | |
| **Latvia** | 6.74 | 11.48 | 10.00 | 4.74 | 0.70 | 87.25 | 1.48 | 0.06 |
| **Lithuania** | 10.86 | 30.71 | 10.00 | 19.85 | 1.83 | 100.00 | 0.92 | 0.22 |
| **Luxembourg** | | | | | | | | |
| **Macedonia, FYR** | | | | | | | | |
| **Malawi** | | | | | | | | |
| **Malaysia** | 2.02 | 2.28 | 10.00 | 0.27 | 0.13 | 26.13 | 4.96 | 0.01 |
| **Mali** | | | | | | | | |
| **Mexico** | 12.22 | 18.84 | 10.00 | 6.62 | 0.54 | 100.00 | 0.82 | 0.08 |
| **Moldova** | | | | | | | | |
| **Mongolia** | | | | | | | | |
| **Morocco** | | | | | | | | |
| **Mozambique** | 1.81 | 2.41 | 10.00 | 0.60 | 0.33 | 23.41 | 5.53 | 0.03 |
| **Namibia** | | | | | | | | |
| **Nepal** | | | | | | | | |
| **Netherlands** | 58.66 | 61.82 | 10.00 | 3.15 | 0.05 | 100.00 | 0.17 | 0.08 |
| **New Zealand** | 8.45 | 12.45 | 10.00 | 4.00 | 0.47 | 100.00 | 1.18 | 0.04 |
| **Nicaragua** | 15.66 | 37.74 | 10.00 | 22.07 | 1.41 | 100.00 | 0.64 | 0.26 |
| **Norway** | 1.41 | 2.83 | 10.00 | 1.42 | 1.01 | 18.25 | 7.10 | 0.08 |
| **Pakistan** | 1.96 | 5.85 | 10.00 | 3.89 | 1.99 | 25.38 | 5.10 | 0.17 |
| **Panama** | 4.70 | 7.41 | 10.00 | 2.71 | 0.58 | 60.87 | 2.13 | 0.05 |
| **Paraguay** | | | | | | | | |
| **Peru** | 2.84 | 3.93 | 10.00 | 1.09 | 0.38 | 36.82 | 3.52 | 0.03 |
| **Philippines** | 2.43 | 2.49 | 10.00 | 0.05 | 0.02 | 31.53 | 4.11 | 0.00 |
| **Poland** | 4.07 | 52.77 | 10.00 | 48.69 | 11.95 | 52.77 | 2.45 | 1.00 |
| **Portugal** | 3.18 | 4.10 | 10.00 | 0.92 | 0.29 | 41.19 | 3.14 | 0.02 |
| **Russian Federation** | 11.15 | 11.63 | 10.00 | 0.48 | 0.04 | 100.00 | 0.90 | 0.01 |
| **Senegal** | 8.10 | 14.44 | 10.00 | 6.35 | 0.78 | 100.00 | 1.23 | 0.07 |
| **Singapore** | 1.43 | 1.44 | 10.00 | 0.02 | 0.01 | 18.49 | 7.01 | 0.00 |
| **Slovak Republic** | | | | | | | | |
| **Slovenia** | | | | | | | | |
| **South Africa** | 3.42 | 12.76 | 10.00 | 9.33 | 2.73 | 44.35 | 2.92 | 0.23 |
| **Spain** | 8.15 | 9.37 | 10.00 | 1.22 | 0.15 | 100.00 | 1.23 | 0.01 |
| **Sri Lanka** | 1.10 | 1.34 | 10.00 | 0.24 | 0.22 | 14.20 | 9.12 | 0.02 |
| **Sweden** | 7.34 | 10.23 | 10.00 | 2.89 | 0.39 | 95.01 | 1.36 | 0.03 |
| **Switzerland** | | | | | | | | |
| **Tajikistan** | | | | | | | | |
| **Thailand** | 4.20 | 5.07 | 10.00 | 0.87 | 0.21 | 54.36 | 2.38 | 0.02 |
| **Togo** | | | | | | | | |
| **Tunisia** | 1.17 | 2.30 | 10.00 | 1.13 | 0.97 | 15.13 | 8.56 | 0.08 |
| **Turkey** | 2.63 | 2.70 | 10.00 | 0.07 | 0.03 | 34.02 | 3.81 | 0.00 |
| **Uganda** | | | | | | | | |
| **Ukraine** | 10.69 | 10.70 | 10.00 | 0.01 | 0.00 | 100.00 | 0.94 | 0.00 |
| **United Kingdom** | 11.74 | 16.61 | 10.00 | 4.86 | 0.41 | 100.00 | 0.85 | 0.06 |
| **United States** | 28.21 | 30.40 | 10.00 | 2.19 | 0.08 | 100.00 | 0.35 | 0.03 |
| **Uruguay** | | | | | | | | |
| **Venezuela, RB** | 16.01 | 16.01 | 10.00 | 0.00 | 0.00 | 100.00 | 0.62 | 0.00 |
| **Vietnam** | | | | | | | | |
| **Yemen, Rep.** | 1.77 | 3.30 | 10.00 | 1.53 | 0.87 | 22.89 | 5.66 | 0.07 |
| **Zambia** | | | | | | | | |
| **Zimbabwe** | | | | | | | | |

*Source: Authors' calculations.*

## Pension coverage

| Country | *Current greenness* | | | *Progress of greenness* | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 2000-2004 average value of pension coverage = $y^0$ | 2010-2014 average value of pension coverage = $y^1$ | threshold = t | change = $y^1$-$y^0$ | rate of change = ($y^1$-$y^0$ )/$y^0$ | target = $y^*$ | Weight $\tilde{\pi}$ | Weight $\pi$ | progress on pension coverage |
| **Albania** | 89.20 | 77.00 | 5.50 | -12.20 | -0.14 | 100.00 | 0.06 | 0.01 | -1.13 |
| **Algeria** | 50.00 | 63.60 | 5.50 | 13.60 | 0.27 | 100.00 | 0.11 | 0.01 | 0.27 |
| **Angola** | 8.00 | 14.50 | 5.50 | 6.50 | 0.81 | 40.90 | 0.69 | 0.07 | 0.20 |
| **Argentina** | 70.00 | 90.70 | 5.50 | 20.70 | 0.30 | 100.00 | 0.08 | 0.01 | 0.69 |
| **Armenia** | 86.60 | 80.00 | 5.50 | -6.60 | -0.08 | 100.00 | 0.06 | 0.01 | -0.49 |
| **Australia** | 80.00 | 83.00 | 5.50 | 3.00 | 0.04 | 100.00 | 0.07 | 0.01 | 0.15 |
| **Austria** | 96.10 | 100.00 | 5.50 | 3.90 | 0.04 | 100.00 | 0.06 | 0.00 | 1.00 |
| **Azerbaijan** | 96.70 | 81.70 | 5.50 | -15.00 | -0.16 | 100.00 | 0.06 | 0.00 | -4.55 |
| **Bangladesh** | 6.20 | 31.70 | 5.50 | 25.50 | 4.11 | 31.70 | 0.89 | 0.06 | 1.00 |
| **Belarus** | 39.20 | 93.60 | 5.50 | 54.40 | 1.39 | 100.00 | 0.14 | 0.02 | 0.89 |
| **Belgium** | | | | | | | | | |
| **Benin** | 3.00 | 9.70 | 5.50 | 6.70 | 2.23 | 24.00 | 1.83 | 0.12 | 0.32 |
| **Bolivia** | 80.70 | 90.50 | 5.50 | 9.80 | 0.12 | 100.00 | 0.07 | 0.01 | 0.51 |
| **Botswana** | 93.00 | 100.00 | 5.50 | 7.00 | 0.08 | 100.00 | 0.06 | 0.01 | 1.00 |
| **Brazil** | 83.70 | 86.30 | 5.50 | 2.60 | 0.03 | 100.00 | 0.07 | 0.01 | 0.16 |
| **Bulgaria** | 95.70 | 96.90 | 5.50 | 1.20 | 0.01 | 100.00 | 0.06 | 0.00 | 0.28 |
| **Cambodia** | 0.80 | 5.00 | 5.50 | 4.20 | 5.25 | 6.40 | 6.88 | 0.40 | 0.75 |
| **Cameroon** | 10.00 | 12.50 | 5.50 | 2.50 | 0.25 | 51.13 | 0.55 | 0.04 | 0.06 |
| **Canada** | 91.00 | 97.70 | 5.50 | 6.70 | 0.07 | 100.00 | 0.06 | 0.00 | 0.74 |
| **Chile** | 63.00 | 74.50 | 5.50 | 11.50 | 0.18 | 100.00 | 0.09 | 0.01 | 0.31 |
| **China** | 24.40 | 74.40 | 5.50 | 50.00 | 2.05 | 100.00 | 0.23 | 0.01 | 0.66 |
| **Colombia** | 13.80 | 23.00 | 5.50 | 9.20 | 0.67 | 70.56 | 0.40 | 0.04 | 0.16 |
| **Costa Rica** | 27.70 | 55.80 | 5.50 | 28.10 | 1.01 | 100.00 | 0.20 | 0.03 | 0.39 |
| **Cote d'Ivoire** | | | | | | | | | |
| **Croatia** | | | | | | | | | |
| **Cyprus** | 74.30 | 85.20 | 5.50 | 10.90 | 0.15 | 100.00 | 0.07 | 0.00 | 0.42 |
| **Czech Republic** | | | | | | | | | |
| **Denmark** | | | | | | | | | |
| **Dominican Republic** | | | | | | | | | |
| **Ecuador** | 14.10 | 53.00 | 5.50 | 38.90 | 2.76 | 72.09 | 0.39 | 0.04 | 0.67 |
| **Egypt, Arab Rep.** | | | | | | | | | |
| **El Salvador** | 15.60 | 18.10 | 5.50 | 2.50 | 0.16 | 79.76 | 0.35 | 0.05 | 0.04 |
| **Estonia** | 92.20 | 98.00 | 5.50 | 5.80 | 0.06 | 100.00 | 0.06 | 0.01 | 0.74 |
| **Finland** | | | | | | | | | |
| **France** | | | | | | | | | |
| **Georgia** | 79.60 | 89.80 | 5.50 | 10.20 | 0.13 | 100.00 | 0.07 | 0.01 | 0.50 |
| **Germany** | | | | | | | | | |
| **Ghana** | 5.20 | 7.60 | 5.50 | 2.40 | 0.46 | 41.60 | 1.06 | 0.08 | 0.07 |
| **Greece** | 91.00 | 77.40 | 5.50 | -13.60 | -0.15 | 100.00 | 0.06 | 0.00 | -1.51 |
| **Guatemala** | 12.00 | 14.10 | 5.50 | 2.10 | 0.18 | 61.35 | 0.46 | 0.04 | 0.04 |
| **Honduras** | 2.50 | 8.40 | 5.50 | 5.90 | 2.36 | 20.00 | 2.20 | 0.16 | 0.34 |
| **Hungary** | 97.40 | 91.40 | 5.50 | -6.00 | -0.06 | 100.00 | 0.06 | 0.01 | -2.31 |
| **Iceland** | 90.80 | 100.00 | 5.50 | 9.20 | 0.10 | 100.00 | 0.06 | 0.00 | 1.00 |
| **India** | 7.00 | 24.10 | 5.50 | 17.10 | 2.44 | 35.79 | 0.79 | 0.05 | 0.59 |
| **Indonesia** | 6.00 | 8.10 | 5.50 | 2.10 | 0.35 | 30.68 | 0.92 | 0.08 | 0.09 |
| **Ireland** | | | | | | | | | |
| **Israel** | 77.80 | 73.60 | 5.50 | -4.20 | -0.05 | 100.00 | 0.07 | 0.01 | -0.19 |
| **Italy** | 65.00 | 81.10 | 5.50 | 16.10 | 0.25 | 100.00 | 0.08 | 0.01 | 0.46 |
| **Jamaica** | | | | | | | | | |
| **Japan** | 73.50 | 80.30 | 5.50 | 6.80 | 0.09 | 100.00 | 0.07 | 0.01 | 0.26 |
| **Jordan** | 40.00 | 42.20 | 5.50 | 2.20 | 0.06 | 100.00 | 0.14 | 0.01 | 0.04 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Kazakhstan** | | | | | | | | | |
| **Kenya** | | | | | | | | | |
| **Korea, Rep.** | | | | | | | | | |
| **Kyrgyz Republic** | 85.90 | 100.00 | 5.50 | 14.10 | 0.16 | 100.00 | 0.06 | 0.01 | 1.00 |
| **Latvia** | | | | | | | | | |
| **Lithuania** | 90.70 | 100.00 | 5.50 | 9.30 | 0.10 | 100.00 | 0.06 | 0.01 | 1.00 |
| **Luxembourg** | | | | | | | | | |
| **Macedonia, FYR** | 52.00 | 52.20 | 5.50 | 0.20 | 0.00 | 100.00 | 0.11 | 0.01 | 0.00 |
| **Malawi** | 4.00 | 4.10 | 5.50 | 0.10 | 0.03 | 32.00 | 1.38 | 0.11 | 0.00 |
| **Malaysia** | 15.00 | 19.80 | 5.50 | 4.80 | 0.32 | 76.69 | 0.37 | 0.03 | 0.08 |
| **Mali** | 4.00 | 5.70 | 5.50 | 1.70 | 0.43 | 32.00 | 1.38 | 0.06 | 0.06 |
| **Mexico** | 10.00 | 25.20 | 5.50 | 15.20 | 1.52 | 51.13 | 0.55 | 0.05 | 0.37 |
| **Moldova** | 83.70 | 72.80 | 5.50 | -10.90 | -0.13 | 100.00 | 0.07 | 0.01 | -0.67 |
| **Mongolia** | 80.00 | 100.00 | 5.50 | 20.00 | 0.25 | 100.00 | 0.07 | 0.01 | 1.00 |
| **Morocco** | 30.00 | 39.80 | 5.50 | 9.80 | 0.33 | 100.00 | 0.18 | 0.02 | 0.14 |
| **Mozambique** | 5.50 | 17.30 | 5.50 | 11.80 | 2.15 | 44.00 | 1.00 | 0.06 | 0.31 |
| **Namibia** | 87.90 | 98.40 | 5.50 | 10.50 | 0.12 | 100.00 | 0.06 | 0.01 | 0.87 |
| **Nepal** | 33.00 | 62.50 | 5.50 | 29.50 | 0.89 | 100.00 | 0.17 | 0.01 | 0.44 |
| **Netherlands** | | | | | | | | | |
| **New Zealand** | | | | | | | | | |
| **Nicaragua** | 4.10 | 23.70 | 5.50 | 19.60 | 4.78 | 32.80 | 1.34 | 0.15 | 0.68 |
| **Norway** | 95.00 | 100.00 | 5.50 | 5.00 | 0.05 | 100.00 | 0.06 | 0.00 | 1.00 |
| **Pakistan** | | | | | | | | | |
| **Panama** | | | | | | | | | |
| **Paraguay** | | | | | | | | | |
| **Peru** | | | | | | | | | |
| **Philippines** | | | | | | | | | |
| **Poland** | 79.60 | 96.50 | 5.50 | 16.90 | 0.21 | 100.00 | 0.07 | 0.01 | 0.83 |
| **Portugal** | 97.00 | 100.00 | 5.50 | 3.00 | 0.03 | 100.00 | 0.06 | 0.00 | 1.00 |
| **Russian Federation** | | | | | | | | | |
| **Senegal** | | | | | | | | | |
| **Singapore** | | | | | | | | | |
| **Slovak Republic** | | | | | | | | | |
| **Slovenia** | | | | | | | | | |
| **South Africa** | | | | | | | | | |
| **Spain** | | | | | | | | | |
| **Sri Lanka** | | | | | | | | | |
| **Sweden** | | | | | | | | | |
| **Switzerland** | | | | | | | | | |
| **Tajikistan** | 88.00 | 80.20 | 5.50 | -7.80 | -0.09 | 100.00 | 0.06 | 0.01 | -0.65 |
| **Thailand** | 5.00 | 81.70 | 5.50 | 76.70 | 15.34 | 40.00 | 1.10 | 0.10 | 2.19 |
| **Togo** | | | | | | | | | |
| **Tunisia** | | | | | | | | | |
| **Turkey** | 55.40 | 88.10 | 5.50 | 32.70 | 0.59 | 100.00 | 0.10 | 0.01 | 0.73 |
| **Uganda** | 0.80 | 5.90 | 5.50 | 5.10 | 6.38 | 6.40 | 6.88 | 0.39 | 0.91 |
| **Ukraine** | 92.30 | 95.00 | 5.50 | 2.70 | 0.03 | 100.00 | 0.06 | 0.01 | 0.35 |
| **United Kingdom** | 98.00 | 99.50 | 5.50 | 1.50 | 0.02 | 100.00 | 0.06 | 0.01 | 0.75 |
| **United States** | 98.10 | 92.50 | 5.50 | -5.60 | -0.06 | 100.00 | 0.06 | 0.00 | -2.95 |
| **Uruguay** | 62.00 | 68.20 | 5.50 | 6.20 | 0.10 | 100.00 | 0.09 | 0.01 | 0.16 |
| **Venezuela, RB** | | | | | | | | | |
| **Vietnam** | | | | | | | | | |
| **Yemen, Rep.** | | | | | | | | | |
| **Zambia** | 3.10 | 7.70 | 5.50 | 4.60 | 1.48 | 24.80 | 1.77 | 0.17 | 0.21 |
| **Zimbabwe** | 3.60 | 6.20 | 5.50 | 2.60 | 0.72 | 28.80 | 1.53 | 0.15 | 0.10 |

*Source: Authors' calculations.*

## Life expectancy

| Country | *Current greenness* | | | *Progress of greenness* | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 2000-2004 average value of life expectancy = $y^0$ | 2010-2014 average value of life expectancy = $y^1$ | threshold = t | change = $y^1$-$y^0$ | rate of change = ($y^1$-$y^0$ )/$y^0$ | target = $y^*$ | Weight $\tilde{\pi}$ | Weight $\pi$ | progress on life expectancy |
| **Albania** | 74.44 | 76.81 | 62.02 | 2.37 | 0.03 | 80.36 | 0.83 | 0.08 | 0.40 |
| **Algeria** | 69.01 | 70.45 | 62.02 | 1.44 | 0.02 | 74.49 | 0.90 | 0.08 | 0.26 |
| **Angola** | 45.56 | 50.24 | 62.02 | 4.67 | 0.10 | 62.02 | 1.36 | 0.14 | 0.28 |
| **Argentina** | 73.84 | 75.48 | 62.02 | 1.64 | 0.02 | 79.71 | 0.84 | 0.06 | 0.28 |
| **Armenia** | 71.44 | 74.02 | 62.02 | 2.58 | 0.04 | 77.12 | 0.87 | 0.08 | 0.45 |
| **Australia** | 79.45 | 81.55 | 62.02 | 2.10 | 0.03 | 84.00 | 0.78 | 0.06 | 0.46 |
| **Austria** | 78.26 | 80.39 | 62.02 | 2.14 | 0.03 | 84.00 | 0.79 | 0.07 | 0.37 |
| **Azerbaijan** | 66.96 | 70.08 | 62.02 | 3.12 | 0.05 | 72.28 | 0.93 | 0.07 | 0.59 |
| **Bangladesh** | 65.50 | 69.09 | 62.02 | 3.58 | 0.05 | 70.71 | 0.95 | 0.06 | 0.69 |
| **Belarus** | 68.47 | 70.52 | 62.02 | 2.05 | 0.03 | 73.91 | 0.91 | 0.10 | 0.38 |
| **Belgium** | 77.91 | 79.93 | 62.02 | 2.03 | 0.03 | 84.00 | 0.80 | 0.08 | 0.33 |
| **Benin** | 55.51 | 58.36 | 62.02 | 2.86 | 0.05 | 63.52 | 1.12 | 0.07 | 0.36 |
| **Bolivia** | 63.13 | 65.99 | 62.02 | 2.86 | 0.05 | 68.14 | 0.98 | 0.12 | 0.57 |
| **Botswana** | 50.35 | 46.61 | 62.02 | -3.74 | -0.07 | 62.02 | 1.23 | 0.12 | -0.32 |
| **Brazil** | 70.38 | 72.80 | 62.02 | 2.42 | 0.03 | 75.97 | 0.88 | 0.09 | 0.43 |
| **Bulgaria** | 71.59 | 73.41 | 62.02 | 1.81 | 0.03 | 77.28 | 0.87 | 0.07 | 0.32 |
| **Cambodia** | 62.49 | 69.82 | 62.02 | 7.33 | 0.12 | 67.46 | 0.99 | 0.06 | 1.48 |
| **Cameroon** | 52.01 | 53.34 | 62.02 | 1.34 | 0.03 | 62.02 | 1.19 | 0.09 | 0.13 |
| **Canada** | 79.29 | 80.80 | 62.02 | 1.51 | 0.02 | 84.00 | 0.78 | 0.06 | 0.32 |
| **Chile** | 76.88 | 78.90 | 62.02 | 2.02 | 0.03 | 82.98 | 0.81 | 0.07 | 0.33 |
| **China** | 72.36 | 74.73 | 62.02 | 2.37 | 0.03 | 78.10 | 0.86 | 0.04 | 0.41 |
| **Colombia** | 71.09 | 73.14 | 62.02 | 2.05 | 0.03 | 76.74 | 0.87 | 0.09 | 0.36 |
| **Costa Rica** | 77.79 | 79.13 | 62.02 | 1.34 | 0.02 | 83.96 | 0.80 | 0.11 | 0.22 |
| **Cote d'Ivoire** | 46.82 | 49.13 | 62.02 | 2.31 | 0.05 | 62.02 | 1.32 | 0.15 | 0.15 |
| **Croatia** | 73.70 | 76.24 | 62.02 | 2.54 | 0.03 | 79.56 | 0.84 | 0.06 | 0.43 |
| **Cyprus** | 78.03 | 79.18 | 62.02 | 1.15 | 0.01 | 84.00 | 0.79 | 0.05 | 0.19 |
| **Czech Republic** | 74.91 | 77.21 | 62.02 | 2.30 | 0.03 | 80.86 | 0.83 | 0.08 | 0.39 |
| **Denmark** | 76.67 | 78.94 | 62.02 | 2.27 | 0.03 | 82.76 | 0.81 | 0.08 | 0.37 |
| **Dominican Republic** | 70.76 | 72.57 | 62.02 | 1.81 | 0.03 | 76.38 | 0.88 | 0.11 | 0.32 |
| **Ecuador** | 73.42 | 75.47 | 62.02 | 2.04 | 0.03 | 79.25 | 0.84 | 0.09 | 0.35 |
| **Egypt, Arab Rep.** | 68.59 | 70.25 | 62.02 | 1.66 | 0.02 | 74.04 | 0.90 | 0.06 | 0.30 |
| **El Salvador** | 69.69 | 71.42 | 62.02 | 1.73 | 0.02 | 75.22 | 0.89 | 0.12 | 0.31 |
| **Estonia** | 70.50 | 74.56 | 62.02 | 4.06 | 0.06 | 76.10 | 0.88 | 0.10 | 0.73 |
| **Finland** | 77.74 | 79.82 | 62.02 | 2.08 | 0.03 | 83.91 | 0.80 | 0.06 | 0.34 |
| **France** | 79.05 | 81.38 | 62.02 | 2.33 | 0.03 | 84.00 | 0.78 | 0.08 | 0.47 |
| **Georgia** | 71.75 | 73.52 | 62.02 | 1.77 | 0.02 | 77.45 | 0.86 | 0.08 | 0.31 |
| **Germany** | 77.98 | 79.98 | 62.02 | 2.00 | 0.03 | 84.00 | 0.80 | 0.08 | 0.33 |
| **Ghana** | 57.34 | 60.15 | 62.02 | 2.81 | 0.05 | 65.62 | 1.08 | 0.08 | 0.34 |
| **Greece** | 78.35 | 80.07 | 62.02 | 1.73 | 0.02 | 84.00 | 0.79 | 0.06 | 0.31 |
| **Guatemala** | 67.87 | 70.74 | 62.02 | 2.87 | 0.04 | 73.26 | 0.91 | 0.09 | 0.53 |
| **Honduras** | 70.53 | 72.58 | 62.02 | 2.05 | 0.03 | 76.13 | 0.88 | 0.06 | 0.37 |
| **Hungary** | 71.59 | 73.99 | 62.02 | 2.40 | 0.03 | 77.28 | 0.87 | 0.08 | 0.42 |
| **Iceland** | | | | | | | | | |
| **India** | 62.35 | 65.35 | 62.02 | 3.00 | 0.05 | 67.31 | 0.99 | 0.06 | 0.61 |
| **Indonesia** | 67.40 | 69.89 | 62.02 | 2.49 | 0.04 | 72.75 | 0.92 | 0.08 | 0.47 |
| **Ireland** | 77.03 | 80.17 | 62.02 | 3.14 | 0.04 | 83.15 | 0.81 | 0.05 | 0.51 |
| **Israel** | 79.05 | 81.18 | 62.02 | 2.12 | 0.03 | 84.00 | 0.78 | 0.06 | 0.43 |
| **Italy** | 79.77 | 81.71 | 62.02 | 1.94 | 0.02 | 84.00 | 0.78 | 0.06 | 0.46 |
| **Jamaica** | 70.63 | 72.54 | 62.02 | 1.91 | 0.03 | 76.23 | 0.88 | 0.09 | 0.34 |
| **Japan** | | | | | | | | | |
| **Jordan** | 71.87 | 73.28 | 62.02 | 1.41 | 0.02 | 77.58 | 0.86 | 0.07 | 0.25 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Kazakhstan** | 65.44 | 67.93 | 62.02 | 2.49 | 0.04 | 70.64 | 0.95 | 0.05 | 0.48 |
| **Kenya** | 53.38 | 58.42 | 62.02 | 5.05 | 0.09 | 62.02 | 1.16 | 0.11 | 0.58 |
| **Korea, Rep.** | 76.05 | 80.12 | 62.02 | 4.07 | 0.05 | 82.09 | 0.82 | 0.05 | 0.67 |
| **Kyrgyz Republic** | 67.84 | 68.91 | 62.02 | 1.07 | 0.02 | 73.23 | 0.91 | 0.09 | 0.20 |
| **Latvia** | 70.43 | 72.62 | 62.02 | 2.19 | 0.03 | 76.02 | 0.88 | 0.10 | 0.39 |
| **Lithuania** | 71.65 | 72.53 | 62.02 | 0.89 | 0.01 | 77.33 | 0.87 | 0.09 | 0.16 |
| **Luxembourg** | 77.77 | 80.45 | 62.02 | 2.68 | 0.03 | 83.95 | 0.80 | 0.10 | 0.43 |
| **Macedonia, FYR** | 73.30 | 74.61 | 62.02 | 1.30 | 0.02 | 79.12 | 0.85 | 0.08 | 0.22 |
| **Malawi** | 46.58 | 52.42 | 62.02 | 5.84 | 0.13 | 62.02 | 1.33 | 0.11 | 0.38 |
| **Malaysia** | 72.92 | 74.34 | 62.02 | 1.41 | 0.02 | 78.71 | 0.85 | 0.06 | 0.24 |
| **Mali** | 49.39 | 53.31 | 62.02 | 3.92 | 0.08 | 62.02 | 1.26 | 0.06 | 0.31 |
| **Mexico** | 74.36 | 76.44 | 62.02 | 2.08 | 0.03 | 80.27 | 0.83 | 0.07 | 0.35 |
| **Moldova** | 67.06 | 68.34 | 62.02 | 1.28 | 0.02 | 72.39 | 0.92 | 0.11 | 0.24 |
| **Mongolia** | 63.22 | 66.55 | 62.02 | 3.33 | 0.05 | 68.24 | 0.98 | 0.11 | 0.66 |
| **Morocco** | 68.21 | 69.95 | 62.02 | 1.74 | 0.03 | 73.63 | 0.91 | 0.09 | 0.32 |
| **Mozambique** | 47.36 | 48.89 | 62.02 | 1.53 | 0.03 | 62.02 | 1.31 | 0.07 | 0.10 |
| **Namibia** | 55.58 | 60.85 | 62.02 | 5.28 | 0.09 | 63.60 | 1.12 | 0.11 | 0.66 |
| **Nepal** | 62.28 | 66.62 | 62.02 | 4.34 | 0.07 | 67.22 | 1.00 | 0.09 | 0.88 |
| **Netherlands** | 78.20 | 80.45 | 62.02 | 2.25 | 0.03 | 84.00 | 0.79 | 0.07 | 0.39 |
| **New Zealand** | 78.52 | 80.59 | 62.02 | 2.06 | 0.03 | 84.00 | 0.79 | 0.07 | 0.38 |
| **Nicaragua** | 69.88 | 73.40 | 62.02 | 3.52 | 0.05 | 75.43 | 0.89 | 0.10 | 0.63 |
| **Norway** | 78.80 | 80.82 | 62.02 | 2.02 | 0.03 | 84.00 | 0.79 | 0.05 | 0.39 |
| **Pakistan** | 64.02 | 65.93 | 62.02 | 1.91 | 0.03 | 69.10 | 0.97 | 0.07 | 0.38 |
| **Panama** | 75.20 | 76.77 | 62.02 | 1.57 | 0.02 | 81.17 | 0.82 | 0.08 | 0.26 |
| **Paraguay** | 70.22 | 71.87 | 62.02 | 1.66 | 0.02 | 75.79 | 0.88 | 0.08 | 0.30 |
| **Peru** | 70.66 | 73.61 | 62.02 | 2.95 | 0.04 | 76.27 | 0.88 | 0.07 | 0.53 |
| **Philippines** | 66.86 | 68.09 | 62.02 | 1.23 | 0.02 | 72.17 | 0.93 | 0.09 | 0.23 |
| **Poland** | 73.82 | 75.92 | 62.02 | 2.10 | 0.03 | 79.68 | 0.84 | 0.07 | 0.36 |
| **Portugal** | 76.52 | 79.15 | 62.02 | 2.62 | 0.03 | 82.60 | 0.81 | 0.07 | 0.43 |
| **Russian Federation** | 65.77 | 68.45 | 62.02 | 2.68 | 0.04 | 70.99 | 0.94 | 0.10 | 0.51 |
| **Senegal** | 58.24 | 62.29 | 62.02 | 4.05 | 0.07 | 66.65 | 1.06 | 0.08 | 0.48 |
| **Singapore** | 78.13 | 81.14 | 62.02 | 3.01 | 0.04 | 84.00 | 0.79 | 0.03 | 0.51 |
| **Slovak Republic** | 73.22 | 75.04 | 62.02 | 1.82 | 0.02 | 79.04 | 0.85 | 0.07 | 0.31 |
| **Slovenia** | 75.72 | 79.09 | 62.02 | 3.37 | 0.04 | 81.73 | 0.82 | 0.07 | 0.56 |
| **South Africa** | 55.43 | 53.75 | 62.02 | -1.68 | -0.03 | 63.43 | 1.12 | 0.09 | -0.21 |
| **Spain** | 79.17 | 81.50 | 62.02 | 2.32 | 0.03 | 84.00 | 0.78 | 0.07 | 0.48 |
| **Sri Lanka** | 71.50 | 73.79 | 62.02 | 2.29 | 0.03 | 77.18 | 0.87 | 0.08 | 0.40 |
| **Sweden** | 79.73 | 81.26 | 62.02 | 1.52 | 0.02 | 84.00 | 0.78 | 0.08 | 0.36 |
| **Switzerland** | 79.98 | 82.10 | 62.02 | 2.12 | 0.03 | 84.00 | 0.78 | 0.07 | 0.53 |
| **Tajikistan** | 64.00 | 66.69 | 62.02 | 2.69 | 0.04 | 69.08 | 0.97 | 0.09 | 0.53 |
| **Thailand** | 71.13 | 73.48 | 62.02 | 2.35 | 0.03 | 76.78 | 0.87 | 0.08 | 0.42 |
| **Togo** | 53.75 | 55.22 | 62.02 | 1.47 | 0.03 | 62.02 | 1.15 | 0.09 | 0.18 |
| **Tunisia** | 72.66 | 74.11 | 62.02 | 1.45 | 0.02 | 78.43 | 0.85 | 0.05 | 0.25 |
| **Turkey** | 70.20 | 73.85 | 62.02 | 3.64 | 0.05 | 75.78 | 0.88 | 0.06 | 0.65 |
| **Uganda** | 48.78 | 56.29 | 62.02 | 7.51 | 0.15 | 62.02 | 1.27 | 0.07 | 0.57 |
| **Ukraine** | 68.04 | 69.43 | 62.02 | 1.39 | 0.02 | 73.44 | 0.91 | 0.08 | 0.26 |
| **United Kingdom** | 77.86 | 80.07 | 62.02 | 2.21 | 0.03 | 84.00 | 0.80 | 0.07 | 0.36 |
| **United States** | 76.77 | 78.17 | 62.02 | 1.41 | 0.02 | 82.86 | 0.81 | 0.06 | 0.23 |
| **Uruguay** | 74.76 | 76.43 | 62.02 | 1.67 | 0.02 | 80.70 | 0.83 | 0.09 | 0.28 |
| **Venezuela, RB** | 72.54 | 73.98 | 62.02 | 1.44 | 0.02 | 78.30 | 0.85 | 0.10 | 0.25 |
| **Vietnam** | 73.70 | 75.18 | 62.02 | 1.48 | 0.02 | 79.55 | 0.84 | 0.06 | 0.25 |
| **Yemen, Rep.** | 60.56 | 62.33 | 62.02 | 1.77 | 0.03 | 69.30 | 1.02 | 0.05 | 0.20 |
| **Zambia** | 42.62 | 52.89 | 62.02 | 10.27 | 0.24 | 62.02 | 1.46 | 0.14 | 0.53 |
| **Zimbabwe** | 44.39 | 51.45 | 62.02 | 7.06 | 0.16 | 62.02 | 1.40 | 0.13 | 0.40 |

*Source: Authors' calculations.*

## B. INDICATORS FOR THE DASHBOARD OF SUSTAINABILITY

### Freshwater withdrawal ($m^3$/capita/year)

| Country | *Current sustainability* | | | *Progress of sustainability* | | | | |
|---|---|---|---|---|---|---|---|---|
| | 2000-2004 average value of freshwater withdrawal = $y^0$ | 2010-2014 average value of freshwater withdrawal = $y^1$ | threshold = t | change = $y^1$-$y^0$ | rate of change = ($y^1$-$y^0$ )/$y^0$ | target = $y^*$ | Weight $\tilde{\pi}$ | progress on freshwater withdrawal |
| **Albania** | 602.34 | 472.67 | 585.00 | -129.67 | -0.22 | 433.33 | 1.03 | 0.77 |
| **Algeria** | 175.70 | 145.96 | 585.00 | -29.73 | -0.17 | 126.40 | 0.30 | 0.60 |
| **Angola** | 43.03 | 32.87 | 585.00 | -10.15 | -0.24 | 30.77 | 0.07 | 0.83 |
| **Argentina** | | | | | | | | |
| **Armenia** | 568.76 | 989.30 | 585.00 | 420.54 | 0.74 | 409.16 | 0.97 | -2.64 |
| **Australia** | 1149.03 | 976.18 | 585.00 | -172.84 | -0.15 | 585.00 | 1.96 | 0.31 |
| **Austria** | 452.49 | 431.57 | 585.00 | -20.92 | -0.05 | 311.41 | 0.77 | 0.15 |
| **Azerbaijan** | 1232.26 | 1279.42 | 585.00 | 47.16 | 0.04 | 585.00 | 2.11 | -0.07 |
| **Bangladesh** | | | | | | | | |
| **Belarus** | 439.74 | 458.27 | 585.00 | 18.54 | 0.04 | 316.35 | 0.75 | -0.15 |
| **Belgium** | 729.62 | 555.24 | 585.00 | -174.38 | -0.24 | 502.14 | 1.25 | 0.77 |
| **Benin** | 17.53 | 12.59 | 585.00 | -4.94 | -0.28 | 12.54 | 0.03 | 0.99 |
| **Bolivia** | | | | | | | | |
| **Botswana** | 107.24 | 95.99 | 585.00 | -11.26 | -0.10 | 77.15 | 0.18 | 0.37 |
| **Brazil** | | | | | | | | |
| **Bulgaria** | 723.14 | 839.89 | 585.00 | 116.75 | 0.16 | 520.23 | 1.24 | -0.58 |
| **Cambodia** | | | | | | | | |
| **Cameroon** | 57.59 | 43.43 | 585.00 | -14.16 | -0.25 | 41.18 | 0.10 | 0.86 |
| **Canada** | | | | | | | | |
| **Chile** | 1558.83 | 2010.82 | 585.00 | 451.98 | 0.29 | 585.00 | 2.66 | -0.46 |
| **China** | | | | | | | | |
| **Colombia** | 187.94 | 245.15 | 585.00 | 57.22 | 0.30 | 135.20 | 0.32 | -1.09 |
| **Costa Rica** | | | | | | | | |
| **Cote d'Ivoire** | 84.50 | 76.25 | 585.00 | -8.25 | -0.10 | 60.42 | 0.14 | 0.34 |
| **Croatia** | | | | | | | | |
| **Cyprus** | 214.82 | 162.11 | 585.00 | -52.72 | -0.25 | 147.85 | 0.37 | 0.79 |
| **Czech Republic** | 171.82 | 161.48 | 585.00 | -10.34 | -0.06 | 118.25 | 0.29 | 0.19 |
| **Denmark** | 127.27 | 117.80 | 585.00 | -9.47 | -0.07 | 87.59 | 0.22 | 0.24 |
| **Dominican Republic** | 390.03 | 526.06 | 585.00 | 136.03 | 0.35 | 280.59 | 0.67 | -1.24 |
| **Ecuador** | 719.03 | 630.20 | 585.00 | -88.83 | -0.12 | 517.27 | 1.23 | 0.44 |
| **Egypt, Arab Rep.** | 999.96 | 832.35 | 585.00 | -167.60 | -0.17 | 585.00 | 1.71 | 0.40 |
| **El Salvador** | 229.02 | 334.05 | 585.00 | 105.03 | 0.46 | 164.75 | 0.39 | -1.63 |
| **Estonia** | 1055.57 | 1355.87 | 585.00 | 300.30 | 0.28 | 585.00 | 1.80 | -0.64 |
| **Finland** | 436.49 | 300.40 | 585.00 | -136.09 | -0.31 | 300.40 | 0.75 | 1.00 |
| **France** | 523.92 | 478.88 | 585.00 | -45.04 | -0.09 | 360.57 | 0.90 | 0.28 |
| **Georgia** | | | | | | | | |
| **Germany** | 474.61 | 400.64 | 585.00 | -73.98 | -0.16 | 326.64 | 0.81 | 0.50 |
| **Ghana** | 49.63 | 37.91 | 585.00 | -11.72 | -0.24 | 35.49 | 0.08 | 0.83 |
| **Greece** | 844.70 | 858.48 | 585.00 | 13.77 | 0.02 | 581.34 | 1.44 | -0.05 |
| **Guatemala** | | | | | | | | |
| **Honduras** | | | | | | | | |
| **Hungary** | 570.85 | 564.10 | 585.00 | -6.75 | -0.01 | 392.87 | 0.98 | 0.04 |
| **Iceland** | 566.91 | 510.83 | 585.00 | -56.08 | -0.10 | 390.16 | 0.97 | 0.32 |
| **India** | 566.91 | 611.56 | 585.00 | 44.64 | 0.08 | 407.84 | 0.97 | -0.28 |
| **Indonesia** | 526.88 | 453.44 | 585.00 | -73.44 | -0.14 | 379.04 | 0.90 | 0.50 |
| **Ireland** | | | | | | | | |
| **Israel** | 278.69 | 242.45 | 585.00 | -36.24 | -0.13 | 191.80 | 0.48 | 0.42 |
| **Italy** | 795.84 | 758.97 | 585.00 | -36.87 | -0.05 | 547.72 | 1.36 | 0.15 |
| **Jamaica** | | | | | | | | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Japan** | 706.50 | 707.09 | 585.00 | 0.59 | 0.00 | 486.23 | 1.21 | 0.00 |
| **Jordan** | | | | | | | | |
| **Kazakhstan** | 1325.80 | 1249.88 | 585.00 | -75.92 | -0.06 | 585.00 | 2.27 | 0.10 |
| **Kenya** | | | | | | | | |
| **Korea, Rep.** | 534.83 | 507.17 | 585.00 | -27.66 | -0.05 | 368.08 | 0.91 | 0.17 |
| **Kyrgyz Republic** | 2019.76 | 1399.95 | 585.00 | -619.81 | -0.31 | 585.00 | 3.45 | 0.43 |
| **Latvia** | 180.94 | 207.61 | 585.00 | 26.67 | 0.15 | 130.17 | 0.31 | -0.53 |
| **Lithuania** | 812.65 | 804.43 | 585.00 | -8.21 | -0.01 | 559.28 | 1.39 | 0.03 |
| **Luxembourg** | 134.92 | 110.82 | 585.00 | -24.10 | -0.18 | 92.86 | 0.23 | 0.57 |
| **Macedonia, FYR** | 285.38 | 487.86 | 585.00 | 202.48 | 0.71 | 205.30 | 0.49 | -2.53 |
| **Malawi** | 111.09 | 82.93 | 585.00 | -28.16 | -0.25 | 79.44 | 0.19 | 0.89 |
| **Malaysia** | 381.14 | 376.89 | 585.00 | -4.25 | -0.01 | 274.19 | 0.65 | 0.04 |
| **Mali** | | | | | | | | |
| **Mexico** | 680.26 | 660.44 | 585.00 | -19.82 | -0.03 | 489.38 | 1.16 | 0.10 |
| **Moldova** | | | | | | | | |
| **Mongolia** | | | | | | | | |
| **Morocco** | 430.21 | 382.03 | 585.00 | -48.18 | -0.11 | 309.49 | 0.74 | 0.40 |
| **Mozambique** | 45.77 | 34.23 | 585.00 | -11.54 | -0.25 | 32.73 | 0.08 | 0.89 |
| **Namibia** | 147.07 | 125.04 | 585.00 | -22.03 | -0.15 | 105.80 | 0.25 | 0.53 |
| **Nepal** | 396.72 | 341.65 | 585.00 | -55.07 | -0.14 | 283.69 | 0.68 | 0.49 |
| **Netherlands** | 552.61 | 632.32 | 585.00 | 79.71 | 0.14 | 380.32 | 0.94 | -0.46 |
| **New Zealand** | 1203.75 | 1063.12 | 585.00 | -140.63 | -0.12 | 585.00 | 2.06 | 0.23 |
| **Nicaragua** | 264.45 | 255.97 | 585.00 | -8.48 | -0.03 | 190.25 | 0.45 | 0.11 |
| **Norway** | 527.31 | 578.07 | 585.00 | 50.76 | 0.10 | 362.90 | 0.90 | -0.31 |
| **Pakistan** | 1153.02 | 1015.84 | 585.00 | -137.18 | -0.12 | 585.00 | 1.97 | 0.24 |
| **Panama** | | | | | | | | |
| **Paraguay** | 87.95 | 357.78 | 585.00 | 269.83 | 3.07 | 63.27 | 0.15 | -10.93 |
| **Peru** | | | | | | | | |
| **Philippines** | | | | | | | | |
| **Poland** | 336.91 | 310.38 | 585.00 | -26.52 | -0.08 | 231.87 | 0.58 | 0.25 |
| **Portugal** | 812.22 | 809.10 | 585.00 | -3.12 | 0.00 | 558.98 | 1.39 | 0.01 |
| **Russian Federation** | 455.27 | 461.32 | 585.00 | 6.05 | 0.01 | 327.52 | 0.78 | -0.05 |
| **Senegal** | 213.76 | 157.15 | 585.00 | -56.62 | -0.26 | 152.86 | 0.37 | 0.93 |
| **Singapore** | | | | | | | | |
| **Slovak Republic** | 211.46 | 127.08 | 585.00 | -84.38 | -0.40 | 145.53 | 0.36 | 1.28 |
| **Slovenia** | 156.43 | 457.54 | 585.00 | 301.12 | 1.92 | 107.66 | 0.27 | -6.17 |
| **South Africa** | 272.87 | 235.93 | 585.00 | -36.94 | -0.14 | 196.31 | 0.47 | 0.48 |
| **Spain** | 869.87 | 695.01 | 585.00 | -174.86 | -0.20 | 585.00 | 1.49 | 0.61 |
| **Sri Lanka** | 687.60 | 632.23 | 585.00 | -55.36 | -0.08 | 494.66 | 1.18 | 0.29 |
| **Sweden** | 299.50 | 272.71 | 585.00 | -26.79 | -0.09 | 206.12 | 0.51 | 0.29 |
| **Switzerland** | 358.83 | 323.46 | 585.00 | -35.38 | -0.10 | 246.96 | 0.61 | 0.32 |
| **Tajikistan** | 1867.55 | 1399.88 | 585.00 | -467.67 | -0.25 | 585.00 | 3.19 | 0.36 |
| **Thailand** | | | | | | | | |
| **Togo** | 32.98 | 24.79 | 585.00 | -8.19 | -0.25 | 23.59 | 0.06 | 0.87 |
| **Tunisia** | 291.35 | 261.79 | 585.00 | -29.56 | -0.10 | 209.60 | 0.50 | 0.36 |
| **Turkey** | 645.93 | 535.15 | 585.00 | -110.79 | -0.17 | 464.68 | 1.10 | 0.61 |
| **Uganda** | 12.23 | 8.45 | 585.00 | -3.79 | -0.31 | 8.75 | 0.02 | 1.09 |
| **Ukraine** | | | | | | | | |
| **United Kingdom** | 262.59 | 203.29 | 585.00 | -59.30 | -0.23 | 180.72 | 0.45 | 0.72 |
| **United States** | 1645.89 | 1513.31 | 585.00 | -132.59 | -0.08 | 585.00 | 2.81 | 0.12 |
| **Uruguay** | 1099.93 | 1074.24 | 585.00 | -25.69 | -0.02 | 585.00 | 1.88 | 0.05 |
| **Venezuela, RB** | 357.79 | 744.28 | 585.00 | 386.50 | 1.08 | 257.39 | 0.61 | -3.85 |
| **Vietnam** | | | | | | | | |
| **Yemen, Rep.** | 183.28 | 146.06 | 585.00 | -37.22 | -0.20 | 131.06 | 0.31 | 0.71 |
| **Zambia** | 147.95 | 108.13 | 585.00 | -39.82 | -0.27 | 105.80 | 0.25 | 0.94 |
| **Zimbabwe** | 332.65 | 297.18 | 585.00 | -35.47 | -0.11 | 237.88 | 0.57 | 0.37 |

*Source: Authors' calculations.*

## Greenhouse gas emissions ($CO_2$e/capita/year)

| Country | *Current sustainability* | | | *Progress of sustainability* | | | | |
|---|---|---|---|---|---|---|---|---|
| | 2000-2004 average value of greenhouse gas emissions = $y^0$ | 2010-2014 average value of greenhouse gas emissions = $y^1$ | threshold = t | change = $y^1$-$y^0$ | rate of change = ($y^1$-$y^0$ )/$y^0$ | target = $y^*$ | Weight $\pi$ | progress on greenhouse gas emissions |
| **Albania** | 2.48 | 2.77 | 2.00 | 0.30 | 0.12 | 2.00 | 1.24 | -0.62 |
| **Algeria** | 3.80 | 4.67 | 2.00 | 0.87 | 0.23 | 2.00 | 1.90 | -0.48 |
| **Angola** | 5.47 | 7.41 | 2.00 | 1.95 | 0.36 | 2.00 | 2.73 | -0.56 |
| **Argentina** | 7.50 | 8.10 | 2.00 | 0.60 | 0.08 | 2.00 | 3.75 | -0.11 |
| **Armenia** | 1.92 | 2.66 | 2.00 | 0.74 | 0.39 | 1.63 | 0.96 | -2.56 |
| **Australia** | 29.55 | 27.65 | 2.00 | -1.89 | -0.06 | 2.00 | 14.77 | 0.07 |
| **Austria** | 10.32 | 9.69 | 2.00 | -0.63 | -0.06 | 2.00 | 5.16 | 0.08 |
| **Azerbaijan** | 6.81 | 7.08 | 2.00 | 0.27 | 0.04 | 2.00 | 3.40 | -0.06 |
| **Bangladesh** | 0.85 | 1.01 | 2.00 | 0.16 | 0.19 | 0.73 | 0.43 | -1.24 |
| **Belarus** | 8.70 | 10.46 | 2.00 | 1.76 | 0.20 | 2.00 | 4.35 | -0.26 |
| **Belgium** | 13.48 | 11.73 | 2.00 | -1.75 | -0.13 | 2.00 | 6.74 | 0.15 |
| **Benin** | 1.03 | 1.13 | 2.00 | 0.11 | 0.11 | 0.87 | 0.51 | -0.70 |
| **Bolivia** | 3.47 | 4.39 | 2.00 | 0.92 | 0.27 | 2.00 | 1.73 | -0.63 |
| **Botswana** | 6.81 | 9.46 | 2.00 | 2.65 | 0.39 | 2.00 | 3.40 | -0.55 |
| **Brazil** | 4.33 | 4.97 | 2.00 | 0.64 | 0.15 | 2.00 | 2.16 | -0.28 |
| **Bulgaria** | 7.53 | 8.33 | 2.00 | 0.80 | 0.11 | 2.00 | 3.76 | -0.15 |
| **Cambodia** | 1.53 | 1.78 | 2.00 | 0.25 | 0.16 | 1.30 | 0.76 | -1.08 |
| **Cameroon** | 4.88 | 3.87 | 2.00 | -1.02 | -0.21 | 2.00 | 2.44 | 0.35 |
| **Canada** | 22.32 | 20.69 | 2.00 | -1.64 | -0.07 | 2.00 | 11.16 | 0.08 |
| **Chile** | 4.62 | 5.62 | 2.00 | 0.99 | 0.22 | 2.00 | 2.31 | -0.38 |
| **China** | 4.27 | 7.77 | 2.00 | 3.50 | 0.82 | 2.00 | 2.13 | -1.55 |
| **Colombia** | 3.33 | 3.29 | 2.00 | -0.04 | -0.01 | 2.00 | 1.67 | 0.03 |
| **Costa Rica** | 2.53 | 2.72 | 2.00 | 0.20 | 0.08 | 2.00 | 1.26 | -0.38 |
| **Cote d'Ivoire** | 1.48 | 1.48 | 2.00 | 0.01 | 0.01 | 1.25 | 0.74 | -0.04 |
| **Croatia** | 6.07 | 5.89 | 2.00 | -0.18 | -0.03 | 2.00 | 3.04 | 0.04 |
| **Cyprus** | 8.17 | 7.33 | 2.00 | -0.84 | -0.10 | 2.00 | 4.08 | 0.14 |
| **Czech Republic** | 13.86 | 12.48 | 2.00 | -1.38 | -0.10 | 2.00 | 6.93 | 0.12 |
| **Denmark** | 12.64 | 10.10 | 2.00 | -2.54 | -0.20 | 2.00 | 6.32 | 0.24 |
| **Dominican Republic** | 2.95 | 3.11 | 2.00 | 0.16 | 0.06 | 2.00 | 1.47 | -0.17 |
| **Ecuador** | 3.10 | 3.56 | 2.00 | 0.46 | 0.15 | 2.00 | 1.55 | -0.42 |
| **Egypt, Arab Rep.** | 2.78 | 3.55 | 2.00 | 0.76 | 0.27 | 2.00 | 1.39 | -0.98 |
| **El Salvador** | 1.87 | 1.91 | 2.00 | 0.04 | 0.02 | 1.59 | 0.93 | -0.13 |
| **Estonia** | 14.38 | 16.32 | 2.00 | 1.94 | 0.13 | 2.00 | 7.19 | -0.16 |
| **Finland** | 15.34 | 12.99 | 2.00 | -2.35 | -0.15 | 2.00 | 7.67 | 0.18 |
| **France** | 8.33 | 7.07 | 2.00 | -1.25 | -0.15 | 2.00 | 4.16 | 0.20 |
| **Georgia** | 2.73 | 3.03 | 2.00 | 0.29 | 0.11 | 2.00 | 1.37 | -0.40 |
| **Germany** | 11.88 | 10.92 | 2.00 | -0.95 | -0.08 | 2.00 | 5.94 | 0.10 |
| **Ghana** | 0.98 | 1.08 | 2.00 | 0.10 | 0.10 | 0.83 | 0.49 | -0.66 |
| **Greece** | 10.82 | 9.35 | 2.00 | -1.46 | -0.14 | 2.00 | 5.41 | 0.17 |
| **Guatemala** | 1.71 | 1.60 | 2.00 | -0.11 | -0.07 | 1.45 | 0.86 | 0.43 |
| **Honduras** | 2.41 | 2.53 | 2.00 | 0.13 | 0.05 | 2.00 | 1.20 | -0.32 |
| **Hungary** | 7.33 | 6.33 | 2.00 | -1.01 | -0.14 | 2.00 | 3.67 | 0.19 |
| **Iceland** | 10.65 | 8.63 | 2.00 | -2.02 | -0.19 | 2.00 | 5.33 | 0.23 |
| **India** | 1.72 | 2.37 | 2.00 | 0.64 | 0.37 | 1.46 | 0.86 | -2.48 |
| **Indonesia** | 2.74 | 3.00 | 2.00 | 0.25 | 0.09 | 2.00 | 1.37 | -0.34 |
| **Ireland** | 17.36 | 13.11 | 2.00 | -4.25 | -0.24 | 2.00 | 8.68 | 0.28 |
| **Israel** | 11.33 | 11.49 | 2.00 | 0.16 | 0.01 | 2.00 | 5.66 | -0.02 |
| **Italy** | 9.53 | 8.04 | 2.00 | -1.49 | -0.16 | 2.00 | 4.77 | 0.20 |
| **Jamaica** | 4.58 | 3.34 | 2.00 | -1.24 | -0.27 | 2.00 | 2.29 | 0.48 |
| **Japan** | 10.36 | 10.18 | 2.00 | -0.18 | -0.02 | 2.00 | 5.18 | 0.02 |
| **Jordan** | 4.12 | 4.37 | 2.00 | 0.24 | 0.06 | 2.00 | 2.06 | -0.11 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Kazakhstan** | 11.61 | 17.52 | 2.00 | 5.91 | 0.51 | 2.00 | 5.80 | -0.61 |
| **Kenya** | 1.12 | 1.41 | 2.00 | 0.29 | 0.26 | 0.95 | 0.56 | -1.74 |
| **Korea, Rep.** | | | | | | | | |
| **Kyrgyz Republic** | 1.87 | 2.39 | 2.00 | 0.51 | 0.27 | 1.59 | 0.94 | -1.82 |
| **Latvia** | 4.99 | 6.16 | 2.00 | 1.17 | 0.23 | 2.00 | 2.50 | -0.39 |
| **Lithuania** | 6.02 | 7.05 | 2.00 | 1.03 | 0.17 | 2.00 | 3.01 | -0.26 |
| **Luxembourg** | 23.65 | 22.54 | 2.00 | -1.11 | -0.05 | 2.00 | 11.83 | 0.05 |
| **Macedonia, FYR** | 5.61 | 5.97 | 2.00 | 0.35 | 0.06 | 2.00 | 2.81 | -0.10 |
| **Malawi** | 0.56 | 0.61 | 2.00 | 0.05 | 0.10 | 0.47 | 0.28 | -0.64 |
| **Malaysia** | 8.42 | 9.87 | 2.00 | 1.44 | 0.17 | 2.00 | 4.21 | -0.22 |
| **Mali** | 1.90 | 1.95 | 2.00 | 0.05 | 0.03 | 1.61 | 0.95 | -0.19 |
| **Mexico** | 5.61 | 6.00 | 2.00 | 0.40 | 0.07 | 2.00 | 2.80 | -0.11 |
| **Moldova** | 3.16 | 3.43 | 2.00 | 0.27 | 0.08 | 2.00 | 1.58 | -0.23 |
| **Mongolia** | 9.97 | 11.00 | 2.00 | 1.03 | 0.10 | 2.00 | 4.98 | -0.13 |
| **Morocco** | 1.89 | 2.28 | 2.00 | 0.39 | 0.21 | 1.60 | 0.94 | -1.39 |
| **Mozambique** | 1.05 | 1.03 | 2.00 | -0.02 | -0.02 | 0.89 | 0.53 | 0.11 |
| **Namibia** | 4.82 | 5.98 | 2.00 | 1.16 | 0.24 | 2.00 | 2.41 | -0.41 |
| **Nepal** | 1.15 | 1.22 | 2.00 | 0.07 | 0.06 | 0.98 | 0.58 | -0.40 |
| **Netherlands** | 13.62 | 12.58 | 2.00 | -1.04 | -0.08 | 2.00 | 6.81 | 0.09 |
| **New Zealand** | 19.16 | 17.03 | 2.00 | -2.12 | -0.11 | 2.00 | 9.58 | 0.12 |
| **Nicaragua** | 2.35 | 2.38 | 2.00 | 0.03 | 0.01 | 2.00 | 1.18 | -0.07 |
| **Norway** | 11.00 | 10.05 | 2.00 | -0.95 | -0.09 | 2.00 | 5.50 | 0.11 |
| **Pakistan** | 1.59 | 1.80 | 2.00 | 0.21 | 0.14 | 1.35 | 0.79 | -0.90 |
| **Panama** | 3.45 | 4.23 | 2.00 | 0.78 | 0.23 | 2.00 | 1.73 | -0.54 |
| **Paraguay** | 5.00 | 5.42 | 2.00 | 0.42 | 0.08 | 2.00 | 2.50 | -0.14 |
| **Peru** | 2.31 | 2.93 | 2.00 | 0.62 | 0.27 | 1.96 | 1.15 | -1.79 |
| **Philippines** | 1.69 | 1.64 | 2.00 | -0.04 | -0.03 | 1.43 | 0.84 | 0.17 |
| **Poland** | 9.41 | 9.67 | 2.00 | 0.26 | 0.03 | 2.00 | 4.70 | -0.04 |
| **Portugal** | 7.76 | 6.41 | 2.00 | -1.35 | -0.17 | 2.00 | 3.88 | 0.23 |
| **Russian Federation** | 14.40 | 16.01 | 2.00 | 1.61 | 0.11 | 2.00 | 7.20 | -0.13 |
| **Senegal** | 1.83 | 1.77 | 2.00 | -0.06 | -0.03 | 1.56 | 0.92 | 0.22 |
| **Singapore** | 11.76 | 10.73 | 2.00 | -1.03 | -0.09 | 2.00 | 5.88 | 0.11 |
| **Slovak Republic** | 8.78 | 7.77 | 2.00 | -1.00 | -0.11 | 2.00 | 4.39 | 0.15 |
| **Slovenia** | 9.37 | 9.01 | 2.00 | -0.35 | -0.04 | 2.00 | 4.68 | 0.05 |
| **South Africa** | 8.32 | 8.84 | 2.00 | 0.52 | 0.06 | 2.00 | 4.16 | -0.08 |
| **Spain** | 9.44 | 7.36 | 2.00 | -2.08 | -0.22 | 2.00 | 4.72 | 0.28 |
| **Sri Lanka** | 1.66 | 1.82 | 2.00 | 0.16 | 0.10 | 1.41 | 0.83 | -0.64 |
| **Sweden** | 7.62 | 6.03 | 2.00 | -1.59 | -0.21 | 2.00 | 3.81 | 0.28 |
| **Switzerland** | 7.22 | 6.47 | 2.00 | -0.75 | -0.10 | 2.00 | 3.61 | 0.14 |
| **Tajikistan** | 0.98 | 1.11 | 2.00 | 0.13 | 0.14 | 0.83 | 0.49 | -0.90 |
| **Thailand** | 4.29 | 5.46 | 2.00 | 1.17 | 0.27 | 2.00 | 2.14 | -0.51 |
| **Togo** | 0.93 | 0.99 | 2.00 | 0.07 | 0.07 | 0.79 | 0.46 | -0.47 |
| **Tunisia** | 3.00 | 3.17 | 2.00 | 0.17 | 0.06 | 2.00 | 1.50 | -0.17 |
| **Turkey** | 4.58 | 5.47 | 2.00 | 0.89 | 0.19 | 2.00 | 2.29 | -0.35 |
| **Uganda** | 0.74 | 0.88 | 2.00 | 0.14 | 0.19 | 0.62 | 0.37 | -1.29 |
| **Ukraine** | 8.58 | 8.49 | 2.00 | -0.09 | -0.01 | 2.00 | 4.29 | 0.01 |
| **United Kingdom** | 10.90 | 8.72 | 2.00 | -2.18 | -0.20 | 2.00 | 5.45 | 0.24 |
| **United States** | 23.54 | 20.57 | 2.00 | -2.96 | -0.13 | 2.00 | 11.77 | 0.14 |
| **Uruguay** | 9.05 | 10.07 | 2.00 | 1.02 | 0.11 | 2.00 | 4.53 | -0.14 |
| **Venezuela, RB** | 8.79 | 9.25 | 2.00 | 0.47 | 0.05 | 2.00 | 4.39 | -0.07 |
| **Vietnam** | 1.87 | 2.92 | 2.00 | 1.05 | 0.56 | 1.59 | 0.94 | -3.74 |
| **Yemen, Rep.** | 1.24 | 1.38 | 2.00 | 0.14 | 0.11 | 1.06 | 0.62 | -0.73 |
| **Zambia** | 3.59 | 3.39 | 2.00 | -0.20 | -0.06 | 2.00 | 1.80 | 0.13 |
| **Zimbabwe** | 2.17 | 1.90 | 2.00 | -0.27 | -0.13 | 1.84 | 1.09 | 0.84 |

*Source: Authors' calculations.*

## Emissions of nitrogen (kg/capita/year)

| Country | *Current sustainability* | | | *Progress of sustainability* | | | | |
|---|---|---|---|---|---|---|---|---|
| | 2000-2004 average value of emissions of nitrogen = $y^0$ | 2010-2014 average value of emissions of nitrogen = $y^1$ | threshold = t | change = $y^1$-$y^0$ | rate of change = ($y^1$-$y^0$ )/$y^0$ | target = $y^*$ | Weight $\tilde{\pi}$ | progress on emissions of nitrogen |
| **Albania** | 12.19 | 11.82 | 5.00 | -0.37 | -0.03 | 4.26 | 2.44 | 0.05 |
| **Algeria** | 1.50 | 1.45 | 5.00 | -0.05 | -0.03 | 0.66 | 0.30 | 0.06 |
| **Angola** | 0.25 | 0.42 | 5.00 | 0.17 | 0.67 | 0.06 | 0.05 | -0.90 |
| **Argentina** | 18.17 | 23.60 | 5.00 | 5.43 | 0.30 | 5.00 | 3.63 | -0.41 |
| **Armenia** | | | | | | | | |
| **Australia** | 49.75 | 46.88 | 5.00 | -2.87 | -0.06 | 5.00 | 9.95 | 0.06 |
| **Austria** | 23.24 | 10.26 | 5.00 | -12.98 | -0.56 | 5.00 | 4.65 | 0.71 |
| **Azerbaijan** | 1.94 | 1.93 | 5.00 | -0.01 | 0.00 | 0.68 | 0.39 | 0.00 |
| **Bangladesh** | 7.16 | 8.21 | 5.00 | 1.05 | 0.15 | 1.84 | 1.43 | -0.20 |
| **Belarus** | 30.76 | 59.65 | 5.00 | 28.88 | 0.94 | 5.00 | 6.15 | -1.12 |
| **Belgium** | | | | | | | | |
| **Benin** | 1.12 | 0.29 | 5.00 | -0.84 | -0.75 | 0.29 | 0.22 | 1.00 |
| **Bolivia** | 0.68 | 1.96 | 5.00 | 1.28 | 1.87 | 0.30 | 0.14 | -3.35 |
| **Botswana** | | | | | | | | |
| **Brazil** | 11.96 | 16.16 | 5.00 | 4.20 | 0.35 | 4.18 | 2.39 | -0.54 |
| **Bulgaria** | 35.77 | 43.51 | 5.00 | 7.74 | 0.22 | 5.00 | 7.15 | -0.25 |
| **Cambodia** | 0.53 | 1.87 | 5.00 | 1.35 | 2.56 | 0.23 | 0.11 | -4.58 |
| **Cameroon** | 1.41 | 1.17 | 5.00 | -0.24 | -0.17 | 0.36 | 0.28 | 0.23 |
| **Canada** | 50.86 | 64.05 | 5.00 | 13.18 | 0.26 | 5.00 | 10.17 | -0.29 |
| **Chile** | 15.83 | 24.67 | 5.00 | 8.84 | 0.56 | 5.00 | 3.17 | -0.82 |
| **China** | 21.78 | 29.59 | 5.00 | 7.81 | 0.36 | 5.00 | 4.36 | -0.47 |
| **Colombia** | 8.59 | 12.14 | 5.00 | 3.55 | 0.41 | 3.00 | 1.72 | -0.64 |
| **Costa Rica** | 13.06 | 15.16 | 5.00 | 2.10 | 0.16 | 4.56 | 2.61 | -0.25 |
| **Cote d'Ivoire** | 1.78 | 1.37 | 5.00 | -0.41 | -0.23 | 0.46 | 0.36 | 0.31 |
| **Croatia** | 29.95 | 14.42 | 5.00 | -15.53 | -0.52 | 5.00 | 5.99 | 0.62 |
| **Cyprus** | 8.83 | 7.16 | 5.00 | -1.67 | -0.19 | 3.90 | 1.77 | 0.34 |
| **Czech Republic** | 20.16 | 24.87 | 5.00 | 4.71 | 0.23 | 5.00 | 4.03 | -0.31 |
| **Denmark** | 34.54 | 32.96 | 5.00 | -1.58 | -0.05 | 5.00 | 6.91 | 0.05 |
| **Dominican Republic** | 4.93 | 5.58 | 5.00 | 0.65 | 0.13 | 2.18 | 0.99 | -0.24 |
| **Ecuador** | 9.74 | 11.13 | 5.00 | 1.40 | 0.14 | 3.40 | 1.95 | -0.22 |
| **Egypt, Arab Rep.** | 19.41 | 17.60 | 5.00 | -1.81 | -0.09 | 5.00 | 3.88 | 0.13 |
| **El Salvador** | 6.52 | 12.53 | 5.00 | 6.01 | 0.92 | 2.88 | 1.30 | -1.65 |
| **Estonia** | 15.77 | 21.98 | 5.00 | 6.21 | 0.39 | 5.00 | 3.15 | -0.58 |
| **Finland** | 33.04 | 34.10 | 5.00 | 1.06 | 0.03 | 5.00 | 6.61 | -0.04 |
| **France** | 36.96 | 30.59 | 5.00 | -6.37 | -0.17 | 5.00 | 7.39 | 0.20 |
| **Georgia** | 3.58 | 1.45 | 5.00 | -2.13 | -0.60 | 1.25 | 0.72 | 0.91 |
| **Germany** | 21.79 | 20.95 | 5.00 | -0.84 | -0.04 | 5.00 | 4.36 | 0.05 |
| **Ghana** | 0.30 | 1.45 | 5.00 | 1.15 | 3.77 | 0.08 | 0.06 | -5.07 |
| **Greece** | 23.65 | 15.45 | 5.00 | -8.20 | -0.35 | 5.00 | 4.73 | 0.44 |
| **Guatemala** | 9.43 | 11.09 | 5.00 | 1.66 | 0.18 | 4.16 | 1.89 | -0.32 |
| **Honduras** | 7.75 | 5.87 | 5.00 | -1.89 | -0.24 | 3.42 | 1.55 | 0.44 |
| **Hungary** | 29.12 | 28.08 | 5.00 | -1.04 | -0.04 | 5.00 | 5.82 | 0.04 |
| **Iceland** | 36.05 | 33.59 | 5.00 | -2.46 | -0.07 | 5.00 | 7.21 | 0.08 |
| **India** | 10.13 | 13.96 | 5.00 | 3.82 | 0.38 | 4.47 | 2.03 | -0.68 |
| **Indonesia** | 9.78 | 11.78 | 5.00 | 2.00 | 0.20 | 4.32 | 1.96 | -0.37 |
| **Ireland** | 101.17 | 63.89 | 5.00 | -37.29 | -0.37 | 5.00 | 20.23 | 0.39 |
| **Israel** | 7.33 | 4.40 | 5.00 | -2.94 | -0.40 | 3.24 | 1.47 | 0.72 |
| **Italy** | 14.87 | 8.56 | 5.00 | -6.31 | -0.42 | 5.00 | 2.97 | 0.64 |
| **Jamaica** | 3.53 | 1.93 | 5.00 | -1.60 | -0.45 | 1.23 | 0.71 | 0.70 |
| **Japan** | 4.27 | 3.51 | 5.00 | -0.76 | -0.18 | 1.89 | 0.85 | 0.32 |
| **Jordan** | 10.87 | 3.96 | 5.00 | -6.91 | -0.64 | 3.79 | 2.17 | 0.98 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Kazakhstan** | 1.28 | 1.41 | 5.00 | 0.14 | 0.11 | 0.45 | 0.26 | -0.16 |
| **Kenya** | 1.92 | 1.76 | 5.00 | -0.16 | -0.08 | 0.49 | 0.38 | 0.11 |
| **Korea, Rep.** | 7.56 | 4.37 | 5.00 | -3.19 | -0.42 | 3.34 | 1.51 | 0.76 |
| **Kyrgyz Republic** | 4.47 | 4.40 | 5.00 | -0.07 | -0.02 | 1.97 | 0.89 | 0.03 |
| **Latvia** | 14.51 | 29.00 | 5.00 | 14.49 | 1.00 | 5.00 | 2.90 | -1.52 |
| **Lithuania** | 10.08 | 25.88 | 5.00 | 15.80 | 1.57 | 4.45 | 2.02 | -2.81 |
| **Luxembourg** | 40.89 | 34.12 | 5.00 | -6.77 | -0.17 | 5.00 | 8.18 | 0.19 |
| **Macedonia, FYR** | 5.77 | 8.94 | 5.00 | 3.17 | 0.55 | 2.01 | 1.15 | -0.84 |
| **Malawi** | 5.24 | 5.63 | 5.00 | 0.39 | 0.08 | 1.35 | 1.05 | -0.10 |
| **Malaysia** | 19.34 | 35.48 | 5.00 | 16.14 | 0.83 | 5.00 | 3.87 | -1.13 |
| **Mali** | 13.20 | 6.72 | 5.00 | -6.48 | -0.49 | 3.40 | 2.64 | 0.66 |
| **Mexico** | 8.45 | 11.08 | 5.00 | 2.63 | 0.31 | 2.95 | 1.69 | -0.48 |
| **Moldova** | 3.89 | 5.00 | 5.00 | 1.11 | 0.28 | 1.72 | 0.78 | -0.51 |
| **Mongolia** | 1.93 | 4.06 | 5.00 | 2.13 | 1.11 | 0.85 | 0.39 | -1.98 |
| **Morocco** | 7.74 | 6.00 | 5.00 | -1.74 | -0.22 | 3.42 | 1.55 | 0.40 |
| **Mozambique** | 0.39 | 1.57 | 5.00 | 1.18 | 3.00 | 0.10 | 0.08 | -4.04 |
| **Namibia** | 0.96 | 1.75 | 5.00 | 0.79 | 0.82 | 0.42 | 0.19 | -1.47 |
| **Nepal** | 0.48 | 1.79 | 5.00 | 1.30 | 2.69 | 0.12 | 0.10 | -3.62 |
| **Netherlands** | 18.15 | 12.92 | 5.00 | -5.23 | -0.29 | 5.00 | 3.63 | 0.40 |
| **New Zealand** | 79.16 | 56.98 | 5.00 | -22.18 | -0.28 | 5.00 | 15.83 | 0.30 |
| **Nicaragua** | 6.60 | 8.08 | 5.00 | 1.48 | 0.22 | 2.91 | 1.32 | -0.40 |
| **Norway** | 22.28 | 18.30 | 5.00 | -3.98 | -0.18 | 5.00 | 4.46 | 0.23 |
| **Pakistan** | 16.20 | 19.59 | 5.00 | 3.38 | 0.21 | 4.17 | 3.24 | -0.28 |
| **Panama** | 4.94 | 6.17 | 5.00 | 1.22 | 0.25 | 1.73 | 0.99 | -0.38 |
| **Paraguay** | 7.45 | 13.97 | 5.00 | 6.52 | 0.87 | 3.29 | 1.49 | -1.57 |
| **Peru** | 7.70 | 8.06 | 5.00 | 0.36 | 0.05 | 2.69 | 1.54 | -0.07 |
| **Philippines** | 6.64 | 5.63 | 5.00 | -1.01 | -0.15 | 2.93 | 1.33 | 0.27 |
| **Poland** | 22.88 | 33.15 | 5.00 | 10.27 | 0.45 | 5.00 | 4.58 | -0.57 |
| **Portugal** | 12.75 | 10.53 | 5.00 | -2.22 | -0.17 | 5.00 | 2.55 | 0.29 |
| **Russian Federation** | 5.39 | 8.61 | 5.00 | 3.21 | 0.60 | 1.88 | 1.08 | -0.92 |
| **Senegal** | 1.63 | 1.60 | 5.00 | -0.03 | -0.02 | 0.42 | 0.33 | 0.02 |
| **Singapore** | 1.43 | 0.25 | 5.00 | -1.18 | -0.83 | 0.63 | 0.29 | 1.48 |
| **Slovak Republic** | 15.04 | 16.90 | 5.00 | 1.86 | 0.12 | 5.00 | 3.01 | -0.18 |
| **Slovenia** | 16.20 | 13.11 | 5.00 | -3.09 | -0.19 | 5.00 | 3.24 | 0.28 |
| **South Africa** | 9.53 | 7.69 | 5.00 | -1.83 | -0.19 | 4.21 | 1.91 | 0.34 |
| **Spain** | 26.06 | 19.16 | 5.00 | -6.90 | -0.26 | 5.00 | 5.21 | 0.33 |
| **Sri Lanka** | 8.74 | 9.04 | 5.00 | 0.30 | 0.03 | 3.05 | 1.75 | -0.05 |
| **Sweden** | 20.16 | 17.94 | 5.00 | -2.21 | -0.11 | 5.00 | 4.03 | 0.15 |
| **Switzerland** | 5.89 | 6.21 | 5.00 | 0.32 | 0.05 | 2.60 | 1.18 | -0.10 |
| **Tajikistan** | 3.96 | 6.21 | 5.00 | 2.25 | 0.57 | 1.75 | 0.79 | -1.02 |
| **Thailand** | 17.67 | 23.59 | 5.00 | 5.92 | 0.33 | 5.00 | 3.53 | -0.47 |
| **Togo** | 0.97 | 0.18 | 5.00 | -0.79 | -0.81 | 0.25 | 0.19 | 1.09 |
| **Tunisia** | 4.69 | 6.03 | 5.00 | 1.35 | 0.29 | 1.64 | 0.94 | -0.44 |
| **Turkey** | 19.74 | 17.93 | 5.00 | -1.80 | -0.09 | 5.00 | 3.95 | 0.12 |
| **Uganda** | 0.15 | 0.20 | 5.00 | 0.05 | 0.36 | 0.04 | 0.03 | -0.49 |
| **Ukraine** | 8.00 | 18.28 | 5.00 | 10.28 | 1.28 | 2.79 | 1.60 | -1.97 |
| **United Kingdom** | 18.82 | 16.10 | 5.00 | -2.72 | -0.14 | 5.00 | 3.76 | 0.20 |
| **United States** | 38.92 | 37.18 | 5.00 | -1.74 | -0.04 | 5.00 | 7.78 | 0.05 |
| **Uruguay** | 17.68 | 30.37 | 5.00 | 12.69 | 0.72 | 5.00 | 3.54 | -1.00 |
| **Venezuela, RB** | 10.95 | 9.74 | 5.00 | -1.20 | -0.11 | 3.82 | 2.19 | 0.17 |
| **Vietnam** | 16.19 | 11.64 | 5.00 | -4.56 | -0.28 | 5.00 | 3.24 | 0.41 |
| **Yemen, Rep.** | 0.58 | 0.82 | 5.00 | 0.24 | 0.42 | 0.15 | 0.12 | -0.57 |
| **Zambia** | 4.37 | 7.21 | 5.00 | 2.84 | 0.65 | 1.13 | 0.87 | -0.87 |
| **Zimbabwe** | 5.26 | 4.50 | 5.00 | -0.76 | -0.14 | 1.35 | 1.05 | 0.19 |

*Source: Authors' calculations.*

## Land use (share of land used for permanent crops)

| Country | *Current sustainability* | | | *Progress of sustainability* | | | | |
|---|---|---|---|---|---|---|---|---|
| | 2000-2004 average value of land use = $y^0$ | 2010-2014 average value of land use = $y^1$ | threshold = t | change = $y^1$-$y^0$ | rate of change = ($y^1$-$y^0$ )/$y^0$ | target = $y^*$ | Weight $\pi$ | progress on land use |
| **Albania** | 4.42 | 2.63 | 15.00 | -1.79 | -0.40 | 2.80 | 0.29 | 1.11 |
| **Algeria** | 0.28 | 0.38 | 15.00 | 0.10 | 0.37 | 0.20 | 0.02 | -1.39 |
| **Angola** | 0.24 | 0.23 | 15.00 | 0.00 | -0.01 | 0.17 | 0.02 | 0.05 |
| **Argentina** | 0.37 | 0.37 | 15.00 | 0.00 | 0.00 | 0.22 | 0.02 | 0.00 |
| **Armenia** | 1.41 | 1.90 | 15.00 | 0.49 | 0.35 | 0.89 | 0.09 | -0.95 |
| **Australia** | 0.04 | 0.05 | 15.00 | 0.01 | 0.24 | 0.03 | 0.00 | -0.62 |
| **Austria** | 0.85 | 0.79 | 15.00 | -0.05 | -0.06 | 0.52 | 0.06 | 0.16 |
| **Azerbaijan** | 2.76 | 2.75 | 15.00 | -0.01 | 0.00 | 1.75 | 0.18 | 0.01 |
| **Bangladesh** | 3.89 | 6.91 | 15.00 | 3.03 | 0.78 | 2.85 | 0.26 | -2.92 |
| **Belarus** | 0.60 | 0.60 | 15.00 | 0.00 | 0.00 | 0.38 | 0.04 | -0.01 |
| **Belgium** | 0.75 | 0.73 | 15.00 | -0.02 | -0.03 | 0.46 | 0.05 | 0.07 |
| **Benin** | 2.36 | 2.66 | 15.00 | 0.30 | 0.13 | 1.73 | 0.16 | -0.48 |
| **Bolivia** | 0.17 | 0.20 | 15.00 | 0.03 | 0.20 | 0.12 | 0.01 | -0.75 |
| **Botswana** | 0.00 | 0.00 | 15.00 | 0.00 | 1.00 | 0.00 | 0.00 | -3.75 |
| **Brazil** | 0.87 | 0.84 | 15.00 | -0.03 | -0.04 | 0.55 | 0.06 | 0.10 |
| **Bulgaria** | 2.11 | 1.51 | 15.00 | -0.60 | -0.29 | 1.34 | 0.14 | 0.78 |
| **Cambodia** | 0.83 | 0.88 | 15.00 | 0.05 | 0.06 | 0.61 | 0.06 | -0.23 |
| **Cameroon** | 2.54 | 2.96 | 15.00 | 0.42 | 0.17 | 1.86 | 0.17 | -0.62 |
| **Canada** | 0.71 | 0.55 | 15.00 | -0.16 | -0.23 | 0.43 | 0.05 | 0.59 |
| **Chile** | 0.55 | 0.61 | 15.00 | 0.07 | 0.12 | 0.33 | 0.04 | -0.32 |
| **China** | 1.24 | 1.57 | 15.00 | 0.33 | 0.27 | 0.79 | 0.08 | -0.72 |
| **Colombia** | 1.43 | 1.57 | 15.00 | 0.15 | 0.10 | 0.90 | 0.10 | -0.28 |
| **Costa Rica** | 5.60 | 6.46 | 15.00 | 0.86 | 0.15 | 3.55 | 0.37 | -0.42 |
| **Cote d'Ivoire** | 12.01 | 13.84 | 15.00 | 1.82 | 0.15 | 8.81 | 0.80 | -0.57 |
| **Croatia** | 1.25 | 1.49 | 15.00 | 0.24 | 0.19 | 0.77 | 0.08 | -0.49 |
| **Cyprus** | 4.44 | 3.39 | 15.00 | -1.05 | -0.24 | 2.71 | 0.30 | 0.61 |
| **Czech Republic** | 0.98 | 0.99 | 15.00 | 0.01 | 0.01 | 0.60 | 0.07 | -0.02 |
| **Denmark** | 0.18 | 0.11 | 15.00 | -0.07 | -0.41 | 0.11 | 0.01 | 1.05 |
| **Dominican Republic** | 9.31 | 9.31 | 15.00 | 0.00 | 0.00 | 6.83 | 0.62 | 0.00 |
| **Ecuador** | 5.10 | 5.58 | 15.00 | 0.48 | 0.09 | 3.23 | 0.34 | -0.25 |
| **Egypt, Arab Rep.** | 0.50 | 0.80 | 15.00 | 0.30 | 0.61 | 0.36 | 0.03 | -2.29 |
| **El Salvador** | 12.26 | 11.10 | 15.00 | -1.16 | -0.09 | 8.99 | 0.82 | 0.35 |
| **Estonia** | 0.38 | 0.15 | 15.00 | -0.23 | -0.60 | 0.23 | 0.03 | 1.54 |
| **Finland** | 0.03 | 0.02 | 15.00 | -0.01 | -0.39 | 0.02 | 0.00 | 1.00 |
| **France** | 2.07 | 1.87 | 15.00 | -0.20 | -0.10 | 1.26 | 0.14 | 0.24 |
| **Georgia** | 3.36 | 1.65 | 15.00 | -1.70 | -0.51 | 2.13 | 0.22 | 1.38 |
| **Germany** | 0.60 | 0.57 | 15.00 | -0.02 | -0.04 | 0.36 | 0.04 | 0.10 |
| **Ghana** | 10.20 | 12.31 | 15.00 | 2.11 | 0.21 | 7.48 | 0.68 | -0.78 |
| **Greece** | 8.70 | 8.94 | 15.00 | 0.24 | 0.03 | 5.32 | 0.58 | -0.07 |
| **Guatemala** | 5.76 | 8.82 | 15.00 | 3.06 | 0.53 | 4.22 | 0.38 | -1.99 |
| **Honduras** | 3.29 | 3.93 | 15.00 | 0.65 | 0.20 | 2.41 | 0.22 | -0.74 |
| **Hungary** | 2.21 | 2.05 | 15.00 | -0.16 | -0.07 | 1.35 | 0.15 | 0.19 |
| **Iceland** | | | | | | | | |
| **India** | 3.26 | 4.10 | 15.00 | 0.84 | 0.26 | 2.39 | 0.22 | -0.97 |
| **Indonesia** | 8.48 | 11.04 | 15.00 | 2.56 | 0.30 | 6.22 | 0.57 | -1.13 |
| **Ireland** | 0.03 | 0.02 | 15.00 | -0.01 | -0.25 | 0.02 | 0.00 | 0.64 |
| **Israel** | 3.78 | 3.76 | 15.00 | -0.02 | -0.01 | 2.31 | 0.25 | 0.02 |
| **Italy** | 9.07 | 8.68 | 15.00 | -0.39 | -0.04 | 5.54 | 0.60 | 0.11 |
| **Jamaica** | 10.16 | 9.23 | 15.00 | -0.92 | -0.09 | 6.44 | 0.68 | 0.25 |
| **Japan** | 0.95 | 0.85 | 15.00 | -0.10 | -0.10 | 0.58 | 0.06 | 0.27 |
| **Jordan** | 0.99 | 0.94 | 15.00 | -0.04 | -0.04 | 0.63 | 0.07 | 0.12 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Kazakhstan** | 0.05 | 0.03 | 15.00 | -0.02 | -0.37 | 0.03 | 0.00 | 1.00 |
| **Kenya** | 0.77 | 1.14 | 15.00 | 0.38 | 0.49 | 0.56 | 0.05 | -1.84 |
| **Korea, Rep.** | 1.97 | 2.13 | 15.00 | 0.16 | 0.08 | 1.21 | 0.13 | -0.21 |
| **Kyrgyz Republic** | 0.35 | 0.39 | 15.00 | 0.04 | 0.10 | 0.26 | 0.02 | -0.38 |
| **Latvia** | 0.19 | 0.11 | 15.00 | -0.08 | -0.42 | 0.12 | 0.01 | 1.14 |
| **Lithuania** | 0.65 | 0.49 | 15.00 | -0.16 | -0.25 | 0.40 | 0.04 | 0.64 |
| **Luxembourg** | 0.39 | 0.58 | 15.00 | 0.19 | 0.50 | 0.24 | 0.03 | -1.29 |
| **Macedonia, FYR** | 1.76 | 1.39 | 15.00 | -0.37 | -0.21 | 1.12 | 0.12 | 0.58 |
| **Malawi** | 1.27 | 1.38 | 15.00 | 0.11 | 0.08 | 0.93 | 0.08 | -0.31 |
| **Malaysia** | 17.61 | 17.61 | 15.00 | 0.00 | 0.00 | 11.16 | 1.17 | 0.00 |
| **Mali** | 0.07 | 0.10 | 15.00 | 0.02 | 0.33 | 0.05 | 0.00 | -1.25 |
| **Mexico** | 1.26 | 1.38 | 15.00 | 0.12 | 0.10 | 0.80 | 0.08 | -0.26 |
| **Moldova** | 9.35 | 9.07 | 15.00 | -0.28 | -0.03 | 6.86 | 0.62 | 0.11 |
| **Mongolia** | 0.00 | 0.00 | 15.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Morocco** | 1.93 | 2.60 | 15.00 | 0.67 | 0.35 | 1.41 | 0.13 | -1.31 |
| **Mozambique** | 0.32 | 0.25 | 15.00 | -0.06 | -0.20 | 0.23 | 0.02 | 0.75 |
| **Namibia** | 0.01 | 0.01 | 15.00 | 0.01 | 1.05 | 0.00 | 0.00 | -3.92 |
| **Nepal** | 0.81 | 0.82 | 15.00 | 0.02 | 0.02 | 0.59 | 0.05 | -0.08 |
| **Netherlands** | 0.97 | 1.08 | 15.00 | 0.11 | 0.12 | 0.59 | 0.06 | -0.30 |
| **New Zealand** | 0.21 | 0.27 | 15.00 | 0.06 | 0.26 | 0.13 | 0.01 | -0.68 |
| **Nicaragua** | 1.94 | 1.91 | 15.00 | -0.03 | -0.02 | 1.43 | 0.13 | 0.06 |
| **Norway** | 0.02 | 0.01 | 15.00 | 0.00 | -0.20 | 0.01 | 0.00 | 0.51 |
| **Pakistan** | 0.88 | 1.09 | 15.00 | 0.22 | 0.25 | 0.64 | 0.06 | -0.93 |
| **Panama** | 2.12 | 2.52 | 15.00 | 0.40 | 0.19 | 1.34 | 0.14 | -0.51 |
| **Paraguay** | 0.24 | 0.23 | 15.00 | -0.02 | -0.07 | 0.18 | 0.02 | 0.26 |
| **Peru** | 0.49 | 0.65 | 15.00 | 0.16 | 0.33 | 0.31 | 0.03 | -0.89 |
| **Philippines** | 15.84 | 17.27 | 15.00 | 1.43 | 0.09 | 11.62 | 1.06 | -0.34 |
| **Poland** | 1.09 | 1.30 | 15.00 | 0.20 | 0.18 | 0.67 | 0.07 | -0.47 |
| **Portugal** | 8.40 | 7.75 | 15.00 | -0.65 | -0.08 | 5.14 | 0.56 | 0.20 |
| **Russian Federation** | 0.11 | 0.11 | 15.00 | 0.00 | -0.03 | 0.07 | 0.01 | 0.09 |
| **Senegal** | 0.26 | 0.29 | 15.00 | 0.02 | 0.08 | 0.19 | 0.02 | -0.29 |
| **Singapore** | 0.27 | 0.14 | 15.00 | -0.12 | -0.46 | 0.16 | 0.02 | 1.19 |
| **Slovak Republic** | 0.66 | 0.48 | 15.00 | -0.19 | -0.28 | 0.40 | 0.04 | 0.72 |
| **Slovenia** | 1.48 | 1.34 | 15.00 | -0.14 | -0.09 | 0.90 | 0.10 | 0.24 |
| **South Africa** | 0.32 | 0.35 | 15.00 | 0.02 | 0.07 | 0.24 | 0.02 | -0.27 |
| **Spain** | 9.92 | 9.41 | 15.00 | -0.51 | -0.05 | 6.06 | 0.66 | 0.13 |
| **Sri Lanka** | 15.69 | 15.63 | 15.00 | -0.06 | 0.00 | 9.95 | 1.05 | 0.01 |
| **Sweden** | 0.01 | 0.02 | 15.00 | 0.01 | 1.65 | 0.01 | 0.00 | -4.24 |
| **Switzerland** | 0.59 | 0.59 | 15.00 | 0.00 | 0.00 | 0.36 | 0.04 | -0.01 |
| **Tajikistan** | 0.71 | 0.93 | 15.00 | 0.22 | 0.30 | 0.52 | 0.05 | -1.13 |
| **Thailand** | 6.83 | 8.81 | 15.00 | 1.98 | 0.29 | 4.33 | 0.46 | -0.79 |
| **Togo** | 2.39 | 3.86 | 15.00 | 1.47 | 0.62 | 1.75 | 0.16 | -2.31 |
| **Tunisia** | 13.76 | 15.31 | 15.00 | 1.55 | 0.11 | 8.73 | 0.92 | -0.31 |
| **Turkey** | 3.40 | 3.96 | 15.00 | 0.57 | 0.17 | 2.15 | 0.23 | -0.46 |
| **Uganda** | 10.66 | 11.01 | 15.00 | 0.35 | 0.03 | 7.82 | 0.71 | -0.12 |
| **Ukraine** | 1.58 | 1.55 | 15.00 | -0.03 | -0.02 | 1.00 | 0.11 | 0.06 |
| **United Kingdom** | 0.21 | 0.19 | 15.00 | -0.02 | -0.09 | 0.13 | 0.01 | 0.24 |
| **United States** | 0.30 | 0.28 | 15.00 | -0.01 | -0.04 | 0.18 | 0.02 | 0.10 |
| **Uruguay** | 0.24 | 0.22 | 15.00 | -0.02 | -0.07 | 0.15 | 0.02 | 0.20 |
| **Venezuela, RB** | 0.86 | 0.74 | 15.00 | -0.12 | -0.14 | 0.55 | 0.06 | 0.40 |
| **Vietnam** | 7.30 | 11.92 | 15.00 | 4.61 | 0.63 | 5.36 | 0.49 | -2.37 |
| **Yemen, Rep.** | 0.37 | 0.55 | 15.00 | 0.18 | 0.49 | 0.27 | 0.02 | -1.85 |
| **Zambia** | 0.05 | 0.05 | 15.00 | 0.00 | 0.04 | 0.03 | 0.00 | -0.13 |
| **Zimbabwe** | 0.31 | 0.31 | 15.00 | 0.00 | 0.00 | 0.23 | 0.02 | 0.00 |

*Source: Authors' calculations.*

## Ecological footprint (global hectares/capita)

| Country | *Current sustainability* | | | *Progress of sustainability* | | | | |
|---|---|---|---|---|---|---|---|---|
| | 2000-2004 average value of ecological footprint = $y^0$ | 2010-2014 average value of ecological footprint = $y^1$ | threshold = t | change = $y^1$-$y^0$ | rate of change = ($y^1$-$y^0$ )/$y^0$ | target = $y^*$ | Weight $\tilde{\pi}$ | progress on ecological footprint |
| **Albania** | 1.30 | 2.10 | 1.72 | 0.79 | 0.61 | 1.14 | 0.76 | -4.95 |
| **Algeria** | 1.46 | 1.72 | 1.72 | 0.26 | 0.18 | 1.23 | 0.85 | -1.17 |
| **Angola** | 0.89 | 0.94 | 1.72 | 0.05 | 0.06 | 0.76 | 0.52 | -0.40 |
| **Argentina** | 3.10 | 2.69 | 1.72 | -0.41 | -0.13 | 1.72 | 1.80 | 0.30 |
| **Armenia** | 1.11 | 1.64 | 1.72 | 0.53 | 0.48 | 0.97 | 0.64 | -3.92 |
| **Australia** | 7.40 | 7.11 | 1.72 | -0.29 | -0.04 | 1.72 | 4.30 | 0.05 |
| **Austria** | 5.05 | 5.12 | 1.72 | 0.07 | 0.01 | 1.72 | 2.94 | -0.02 |
| **Azerbaijan** | 1.83 | 2.07 | 1.72 | 0.25 | 0.14 | 1.60 | 1.06 | -1.10 |
| **Bangladesh** | 0.60 | 0.62 | 1.72 | 0.01 | 0.02 | 0.52 | 0.35 | -0.17 |
| **Belarus** | 3.70 | 3.96 | 1.72 | 0.27 | 0.07 | 1.72 | 2.15 | -0.14 |
| **Belgium** | 5.26 | 6.48 | 1.72 | 1.23 | 0.23 | 1.72 | 3.06 | -0.35 |
| **Benin** | 1.03 | 1.15 | 1.72 | 0.12 | 0.12 | 0.89 | 0.60 | -0.82 |
| **Bolivia** | 2.17 | 2.43 | 1.72 | 0.26 | 0.12 | 1.72 | 1.26 | -0.57 |
| **Botswana** | 2.59 | 3.13 | 1.72 | 0.54 | 0.21 | 1.72 | 1.51 | -0.61 |
| **Brazil** | 2.65 | 2.73 | 1.72 | 0.08 | 0.03 | 1.72 | 1.54 | -0.09 |
| **Bulgaria** | 2.92 | 3.40 | 1.72 | 0.48 | 0.17 | 1.72 | 1.70 | -0.40 |
| **Cambodia** | 0.90 | 1.02 | 1.72 | 0.12 | 0.13 | 0.76 | 0.52 | -0.86 |
| **Cameroon** | 1.30 | 1.13 | 1.72 | -0.17 | -0.13 | 1.11 | 0.75 | 0.93 |
| **Canada** | 4.55 | 6.40 | 1.72 | 1.85 | 0.41 | 1.72 | 2.65 | -0.65 |
| **Chile** | 3.19 | 3.14 | 1.72 | -0.05 | -0.02 | 1.72 | 1.86 | 0.03 |
| **China** | 1.68 | 2.08 | 1.72 | 0.40 | 0.24 | 1.47 | 0.97 | -1.94 |
| **Colombia** | 1.85 | 1.83 | 1.72 | -0.02 | -0.01 | 1.62 | 1.08 | 0.09 |
| **Costa Rica** | 2.60 | 2.54 | 1.72 | -0.06 | -0.02 | 1.72 | 1.51 | 0.07 |
| **Cote d'Ivoire** | | | | | | | | |
| **Croatia** | 3.23 | 3.55 | 1.72 | 0.32 | 0.10 | 1.72 | 1.88 | -0.21 |
| **Cyprus** | 6.13 | 6.35 | 1.72 | 0.22 | 0.04 | 1.72 | 3.56 | -0.05 |
| **Czech Republic** | 4.95 | 5.42 | 1.72 | 0.48 | 0.10 | 1.72 | 2.88 | -0.15 |
| **Denmark** | 7.48 | 7.94 | 1.72 | 0.46 | 0.06 | 1.72 | 4.35 | -0.08 |
| **Dominican Republic** | 1.55 | 1.44 | 1.72 | -0.11 | -0.07 | 1.31 | 0.90 | 0.48 |
| **Ecuador** | 2.19 | 2.09 | 1.72 | -0.10 | -0.04 | 1.72 | 1.27 | 0.21 |
| **Egypt, Arab Rep.** | 1.56 | 1.61 | 1.72 | 0.05 | 0.03 | 1.32 | 0.91 | -0.20 |
| **El Salvador** | 1.66 | 1.88 | 1.72 | 0.22 | 0.13 | 1.41 | 0.97 | -0.87 |
| **Estonia** | 5.71 | 6.36 | 1.72 | 0.65 | 0.11 | 1.72 | 3.32 | -0.16 |
| **Finland** | 5.60 | 5.78 | 1.72 | 0.19 | 0.03 | 1.72 | 3.25 | -0.05 |
| **France** | 5.11 | 4.86 | 1.72 | -0.25 | -0.05 | 1.72 | 2.97 | 0.07 |
| **Georgia** | 5.62 | 1.63 | 1.72 | -4.00 | -0.71 | 1.72 | 3.27 | 1.02 |
| **Germany** | 4.70 | 4.48 | 1.72 | -0.22 | -0.05 | 1.72 | 2.73 | 0.07 |
| **Ghana** | 1.60 | 1.70 | 1.72 | 0.10 | 0.06 | 1.38 | 0.93 | -0.43 |
| **Greece** | 5.67 | 5.48 | 1.72 | -0.19 | -0.03 | 1.72 | 3.30 | 0.05 |
| **Guatemala** | 1.63 | 1.69 | 1.72 | 0.07 | 0.04 | 1.38 | 0.94 | -0.28 |
| **Honduras** | 1.81 | 1.91 | 1.72 | 0.11 | 0.06 | 1.53 | 1.05 | -0.38 |
| **Hungary** | 3.53 | 3.34 | 1.72 | -0.19 | -0.05 | 1.72 | 2.05 | 0.11 |
| **Iceland** | | | | | | | | |
| **India** | 0.90 | 0.86 | 1.72 | -0.04 | -0.04 | 0.76 | 0.52 | 0.26 |
| **Indonesia** | 1.00 | 1.10 | 1.72 | 0.09 | 0.09 | 0.85 | 0.58 | -0.61 |
| **Ireland** | 6.09 | 6.74 | 1.72 | 0.65 | 0.11 | 1.72 | 3.54 | -0.15 |
| **Israel** | 4.08 | 4.75 | 1.72 | 0.67 | 0.16 | 1.72 | 2.37 | -0.28 |
| **Italy** | 4.73 | 4.80 | 1.72 | 0.07 | 0.02 | 1.72 | 2.75 | -0.02 |
| **Jamaica** | | | | | | | | |
| **Japan** | 4.52 | 4.48 | 1.72 | -0.04 | -0.01 | 1.72 | 2.63 | 0.02 |
| **Jordan** | 2.13 | 1.98 | 1.72 | -0.14 | -0.07 | 1.72 | 1.24 | 0.35 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Kazakhstan** | | | | | | | | |
| **Kenya** | 1.16 | 1.04 | 1.72 | -0.12 | -0.10 | 1.00 | 0.68 | 0.74 |
| **Korea, Rep.** | 3.33 | 3.74 | 1.72 | 0.41 | 0.12 | 1.72 | 1.94 | -0.25 |
| **Kyrgyz Republic** | | | | | | | | |
| **Latvia** | 3.06 | 4.42 | 1.72 | 1.37 | 0.45 | 1.72 | 1.78 | -1.02 |
| **Lithuania** | 3.16 | 3.89 | 1.72 | 0.74 | 0.23 | 1.72 | 1.83 | -0.51 |
| **Luxembourg** | 11.87 | 12.03 | 1.72 | 0.16 | 0.01 | 1.72 | 6.90 | -0.02 |
| **Macedonia, FYR** | | | | | | | | |
| **Malawi** | 0.64 | 0.66 | 1.72 | 0.02 | 0.03 | 0.55 | 0.37 | -0.22 |
| **Malaysia** | | | | | | | | |
| **Mali** | 1.68 | 1.82 | 1.72 | 0.13 | 0.08 | 1.45 | 0.98 | -0.56 |
| **Mexico** | | | | | | | | |
| **Moldova** | | | | | | | | |
| **Mongolia** | 3.96 | 4.85 | 1.72 | 0.89 | 0.23 | 1.72 | 2.30 | -0.40 |
| **Morocco** | 1.11 | 1.25 | 1.72 | 0.14 | 0.13 | 0.94 | 0.65 | -0.83 |
| **Mozambique** | 0.78 | 0.83 | 1.72 | 0.05 | 0.06 | 0.67 | 0.45 | -0.43 |
| **Namibia** | 3.27 | 2.72 | 1.72 | -0.55 | -0.17 | 1.72 | 1.90 | 0.35 |
| **Nepal** | | | | | | | | |
| **Netherlands** | 4.41 | 5.30 | 1.72 | 0.89 | 0.20 | 1.72 | 2.56 | -0.33 |
| **New Zealand** | 7.95 | 6.12 | 1.72 | -1.83 | -0.23 | 1.72 | 4.62 | 0.29 |
| **Nicaragua** | 2.07 | 1.86 | 1.72 | -0.21 | -0.10 | 1.72 | 1.20 | 0.61 |
| **Norway** | | | | | | | | |
| **Pakistan** | 0.81 | 0.77 | 1.72 | -0.04 | -0.05 | 0.70 | 0.47 | 0.34 |
| **Panama** | 2.95 | 3.06 | 1.72 | 0.11 | 0.04 | 1.72 | 1.71 | -0.09 |
| **Paraguay** | 3.77 | 3.19 | 1.72 | -0.58 | -0.15 | 1.72 | 2.19 | 0.28 |
| **Peru** | 1.62 | 1.73 | 1.72 | 0.12 | 0.07 | 1.42 | 0.94 | -0.59 |
| **Philippines** | 1.06 | 1.14 | 1.72 | 0.08 | 0.08 | 0.90 | 0.62 | -0.50 |
| **Poland** | 4.08 | 4.03 | 1.72 | -0.05 | -0.01 | 1.72 | 2.37 | 0.02 |
| **Portugal** | 4.79 | 4.35 | 1.72 | -0.44 | -0.09 | 1.72 | 2.78 | 0.14 |
| **Russian Federation** | 3.71 | 4.25 | 1.72 | 0.54 | 0.15 | 1.72 | 2.16 | -0.27 |
| **Senegal** | 1.42 | 1.31 | 1.72 | -0.11 | -0.08 | 1.22 | 0.82 | 0.53 |
| **Singapore** | 5.31 | 5.03 | 1.72 | -0.28 | -0.05 | 1.72 | 3.09 | 0.08 |
| **Slovak Republic** | 2.97 | 4.24 | 1.72 | 1.27 | 0.43 | 1.72 | 1.73 | -1.01 |
| **Slovenia** | 4.06 | 4.72 | 1.72 | 0.66 | 0.16 | 1.72 | 2.36 | -0.28 |
| **South Africa** | 2.49 | 2.43 | 1.72 | -0.06 | -0.02 | 1.72 | 1.45 | 0.07 |
| **Spain** | 5.66 | 5.38 | 1.72 | -0.28 | -0.05 | 1.72 | 3.29 | 0.07 |
| **Sri Lanka** | 1.00 | 1.09 | 1.72 | 0.09 | 0.09 | 0.88 | 0.58 | -0.74 |
| **Sweden** | 3.78 | 5.56 | 1.72 | 1.79 | 0.47 | 1.72 | 2.20 | -0.87 |
| **Switzerland** | 5.00 | 5.15 | 1.72 | 0.15 | 0.03 | 1.72 | 2.91 | -0.05 |
| **Tajikistan** | 0.73 | 0.87 | 1.72 | 0.14 | 0.19 | 0.62 | 0.42 | -1.24 |
| **Thailand** | 1.84 | 2.16 | 1.72 | 0.32 | 0.17 | 1.61 | 1.07 | -1.41 |
| **Togo** | | | | | | | | |
| **Tunisia** | 1.70 | 1.83 | 1.72 | 0.13 | 0.08 | 1.49 | 0.99 | -0.61 |
| **Turkey** | 2.56 | 2.70 | 1.72 | 0.14 | 0.05 | 1.72 | 1.49 | -0.16 |
| **Uganda** | 1.50 | 1.49 | 1.72 | -0.01 | -0.01 | 1.29 | 0.87 | 0.07 |
| **Ukraine** | 2.28 | 2.86 | 1.72 | 0.58 | 0.26 | 1.72 | 1.33 | -1.04 |
| **United Kingdom** | 5.22 | 5.26 | 1.72 | 0.04 | 0.01 | 1.72 | 3.03 | -0.01 |
| **United States** | 8.89 | 8.41 | 1.72 | -0.49 | -0.05 | 1.72 | 5.17 | 0.07 |
| **Uruguay** | | | | | | | | |
| **Venezuela, RB** | 2.88 | 2.77 | 1.72 | -0.11 | -0.04 | 1.72 | 1.67 | 0.10 |
| **Vietnam** | 0.99 | 1.27 | 1.72 | 0.28 | 0.28 | 0.84 | 0.58 | -1.82 |
| **Yemen, Rep.** | 0.89 | 0.93 | 1.72 | 0.03 | 0.04 | 0.77 | 0.52 | -0.27 |
| **Zambia** | 0.76 | 0.92 | 1.72 | 0.16 | 0.22 | 0.65 | 0.44 | -1.54 |
| **Zimbabwe** | 1.18 | 1.14 | 1.72 | -0.03 | -0.03 | 1.01 | 0.68 | 0.19 |

*Source: Authors' calculations.*

## Inclusive Wealth Index (millions of constant 2005 US$/capita)

| Country | *Current sustainability* | | | *Progress of sustainability* | | | | |
|---|---|---|---|---|---|---|---|---|
| | 2000-2004 average value of Inclusive Wealth Index = $y^0$ | 2010-2014 average value of Inclusive Wealth Index = $y^1$ | threshold = t | change = $y^1$-$y^0$ | rate of change = ($y^1$-$y^0$ )/$y^0$ | target = $y^*$ | Weight $\tilde{\pi}$ | progress on Inclusive Wealth Index |
| **Albania** | 35152 | 40462 | 16208 | 5310 | 0.15 | 41152 | 0.46 | 0.89 |
| **Algeria** | 41526 | 39731 | 16208 | -1795 | -0.04 | 49718 | 0.39 | -0.22 |
| **Angola** | | | | | | | | |
| **Argentina** | 72220 | 77449 | 16208 | 5229 | 0.07 | 86010 | 0.22 | 0.38 |
| **Armenia** | 20595 | 23714 | 16208 | 3119 | 0.15 | 24110 | 0.79 | 0.89 |
| **Australia** | 484778 | 515734 | 16208 | 30956 | 0.06 | 577343 | 0.03 | 0.33 |
| **Austria** | 401707 | 444269 | 16208 | 42562 | 0.11 | 478410 | 0.04 | 0.55 |
| **Azerbaijan** | | | | | | | | |
| **Bangladesh** | 4737 | 5596 | 16208 | 859 | 0.18 | 16208 | 3.42 | 0.07 |
| **Belarus** | | | | | | | | |
| **Belgium** | 388116 | 423145 | 16208 | 35029 | 0.09 | 462224 | 0.04 | 0.47 |
| **Benin** | 13053 | 12097 | 16208 | -956 | -0.07 | 16208 | 1.24 | -0.30 |
| **Bolivia** | 121229 | 100680 | 16208 | -20549 | -0.17 | 145145 | 0.13 | -0.86 |
| **Botswana** | 69860 | 73093 | 16208 | 3233 | 0.05 | 83642 | 0.23 | 0.23 |
| **Brazil** | 83761 | 84330 | 16208 | 569 | 0.01 | 98058 | 0.19 | 0.04 |
| **Bulgaria** | 44157 | 51614 | 16208 | 7457 | 0.17 | 51694 | 0.37 | 0.99 |
| **Cambodia** | 10192 | 9832 | 16208 | -360 | -0.04 | 16208 | 1.59 | -0.06 |
| **Cameroon** | 25459 | 21956 | 16208 | -3503 | -0.14 | 29805 | 0.64 | -0.81 |
| **Canada** | 471177 | 502972 | 16208 | 31795 | 0.07 | 561145 | 0.03 | 0.35 |
| **Chile** | 81403 | 96534 | 16208 | 15131 | 0.19 | 96946 | 0.20 | 0.97 |
| **China** | 18143 | 23834 | 16208 | 5691 | 0.31 | 21240 | 0.89 | 1.84 |
| **Colombia** | 71637 | 71622 | 16208 | -15 | 0.00 | 83865 | 0.23 | 0.00 |
| **Costa Rica** | 66231 | 74003 | 16208 | 7772 | 0.12 | 77536 | 0.24 | 0.69 |
| **Cote d'Ivoire** | 16565 | 15999 | 16208 | -566 | -0.03 | 19392 | 0.98 | -0.20 |
| **Croatia** | 145783 | 165767 | 16208 | 19984 | 0.14 | 173619 | 0.11 | 0.72 |
| **Cyprus** | 221860 | 247078 | 16208 | 25218 | 0.11 | 264223 | 0.07 | 0.60 |
| **Czech Republic** | 138370 | 155861 | 16208 | 17491 | 0.13 | 164791 | 0.12 | 0.66 |
| **Denmark** | 459731 | 504354 | 16208 | 44623 | 0.10 | 547513 | 0.04 | 0.51 |
| **Dominican Republic** | 39481 | 44690 | 16208 | 5209 | 0.13 | 47270 | 0.41 | 0.67 |
| **Ecuador** | 36802 | 34626 | 16208 | -2176 | -0.06 | 43084 | 0.44 | -0.35 |
| **Egypt, Arab Rep.** | 13250 | 14531 | 16208 | 1281 | 0.10 | 16208 | 1.22 | 0.43 |
| **El Salvador** | 26668 | 31929 | 16208 | 5261 | 0.20 | 31929 | 0.61 | 1.00 |
| **Estonia** | 115684 | 139546 | 16208 | 23862 | 0.21 | 137773 | 0.14 | 1.08 |
| **Finland** | 397201 | 451725 | 16208 | 54524 | 0.14 | 473044 | 0.04 | 0.72 |
| **France** | 385197 | 425022 | 16208 | 39825 | 0.10 | 458748 | 0.04 | 0.54 |
| **Georgia** | | | | | | | | |
| **Germany** | 376366 | 435655 | 16208 | 59289 | 0.16 | 448231 | 0.04 | 0.83 |
| **Ghana** | 9566 | 9310 | 16208 | -256 | -0.03 | 16208 | 1.69 | -0.04 |
| **Greece** | 187027 | 216142 | 16208 | 29115 | 0.16 | 222739 | 0.09 | 0.82 |
| **Guatemala** | 31674 | 32799 | 16208 | 1125 | 0.04 | 37923 | 0.51 | 0.18 |
| **Honduras** | 31231 | 30993 | 16208 | -238 | -0.01 | 37392 | 0.52 | -0.04 |
| **Hungary** | 126543 | 142741 | 16208 | 16198 | 0.13 | 150706 | 0.13 | 0.67 |
| **Iceland** | 760700 | 758631 | 16208 | -2069 | 0.00 | 905950 | 0.02 | -0.01 |
| **India** | 10914 | 12321 | 16208 | 1407 | 0.13 | 16208 | 1.49 | 0.27 |
| **Indonesia** | 22382 | 22680 | 16208 | 298 | 0.01 | 26797 | 0.72 | 0.07 |
| **Ireland** | 377775 | 430751 | 16208 | 52976 | 0.14 | 449909 | 0.04 | 0.73 |
| **Israel** | 231677 | 244871 | 16208 | 13194 | 0.06 | 275914 | 0.07 | 0.30 |
| **Italy** | 300806 | 324712 | 16208 | 23906 | 0.08 | 358243 | 0.05 | 0.42 |
| **Jamaica** | 65002 | 68149 | 16208 | 3147 | 0.05 | 76097 | 0.25 | 0.28 |
| **Japan** | 412783 | 432236 | 16208 | 19453 | 0.05 | 491601 | 0.04 | 0.25 |
| **Jordan** | 32813 | 34310 | 16208 | 1497 | 0.05 | 38414 | 0.49 | 0.27 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Kazakhstan** | 98485 | 96288 | 16208 | -2197 | -0.02 | 115295 | 0.16 | -0.13 |
| **Kenya** | 9122 | 9562 | 16208 | 440 | 0.05 | 16208 | 1.78 | 0.06 |
| **Korea, Rep.** | 161766 | 195033 | 16208 | 33267 | 0.21 | 192654 | 0.10 | 1.08 |
| **Kyrgyz Republic** | 7500 | 8037 | 16208 | 537 | 0.07 | 16208 | 2.16 | 0.06 |
| **Latvia** | 71199 | 91727 | 16208 | 20528 | 0.29 | 83352 | 0.23 | 1.69 |
| **Lithuania** | 77745 | 93788 | 16208 | 16043 | 0.21 | 92590 | 0.21 | 1.08 |
| **Luxembourg** | 522489 | 628634 | 16208 | 106145 | 0.20 | 622255 | 0.03 | 1.06 |
| **Macedonia, FYR** | | | | | | | | |
| **Malawi** | 4235 | 3778 | 16208 | -457 | -0.11 | 16208 | 3.83 | -0.04 |
| **Malaysia** | 75870 | 76949 | 16208 | 1079 | 0.01 | 88820 | 0.21 | 0.08 |
| **Mali** | 12017 | 10173 | 16208 | -1844 | -0.15 | 16208 | 1.35 | -0.44 |
| **Mexico** | 70672 | 80296 | 16208 | 9624 | 0.14 | 82735 | 0.23 | 0.80 |
| **Moldova** | 15114 | 15012 | 16208 | -102 | -0.01 | 18096 | 1.07 | -0.03 |
| **Mongolia** | 96860 | 83183 | 16208 | -13677 | -0.14 | 115968 | 0.17 | -0.72 |
| **Morocco** | 28235 | 31915 | 16208 | 3680 | 0.13 | 33805 | 0.57 | 0.66 |
| **Mozambique** | 14931 | 12141 | 16208 | -2790 | -0.19 | 17480 | 1.09 | -1.09 |
| **Namibia** | 89248 | 89611 | 16208 | 363 | 0.00 | 106855 | 0.18 | 0.02 |
| **Nepal** | 6275 | 5847 | 16208 | -428 | -0.07 | 16208 | 2.58 | -0.04 |
| **Netherlands** | 371625 | 411715 | 16208 | 40090 | 0.11 | 442584 | 0.04 | 0.56 |
| **New Zealand** | 262041 | 280407 | 16208 | 18366 | 0.07 | 312076 | 0.06 | 0.37 |
| **Nicaragua** | 18033 | 17482 | 16208 | -551 | -0.03 | 21591 | 0.90 | -0.15 |
| **Norway** | 616885 | 651018 | 16208 | 34133 | 0.06 | 734675 | 0.03 | 0.29 |
| **Pakistan** | 9748 | 10679 | 16208 | 931 | 0.10 | 16208 | 1.66 | 0.14 |
| **Panama** | 57048 | 61880 | 16208 | 4832 | 0.08 | 66785 | 0.28 | 0.50 |
| **Paraguay** | 41683 | 38083 | 16208 | -3600 | -0.09 | 49906 | 0.39 | -0.44 |
| **Peru** | 73015 | 71347 | 16208 | -1668 | -0.02 | 85478 | 0.22 | -0.13 |
| **Philippines** | 13551 | 14265 | 16208 | 714 | 0.05 | 16224 | 1.20 | 0.27 |
| **Poland** | 97015 | 108293 | 16208 | 11278 | 0.12 | 115539 | 0.17 | 0.61 |
| **Portugal** | 253573 | 272793 | 16208 | 19220 | 0.08 | 301991 | 0.06 | 0.40 |
| **Russian Federation** | 133116 | 136156 | 16208 | 3040 | 0.02 | 155837 | 0.12 | 0.13 |
| **Senegal** | 13601 | 12719 | 16208 | -882 | -0.06 | 16208 | 1.19 | -0.34 |
| **Singapore** | 225926 | 269065 | 16208 | 43139 | 0.19 | 269065 | 0.07 | 1.00 |
| **Slovak Republic** | 107098 | 121985 | 16208 | 14887 | 0.14 | 127548 | 0.15 | 0.73 |
| **Slovenia** | 217225 | 243936 | 16208 | 26711 | 0.12 | 258703 | 0.07 | 0.64 |
| **South Africa** | 69879 | 72379 | 16208 | 2500 | 0.04 | 83665 | 0.23 | 0.18 |
| **Spain** | 304230 | 348852 | 16208 | 44622 | 0.15 | 362321 | 0.05 | 0.77 |
| **Sri Lanka** | 19699 | 21232 | 16208 | 1533 | 0.08 | 23061 | 0.82 | 0.46 |
| **Sweden** | 422092 | 462462 | 16208 | 40370 | 0.10 | 502688 | 0.04 | 0.50 |
| **Switzerland** | 560840 | 606921 | 16208 | 46081 | 0.08 | 667929 | 0.03 | 0.43 |
| **Tajikistan** | 4928 | 4627 | 16208 | -301 | -0.06 | 16208 | 3.29 | -0.03 |
| **Thailand** | 29303 | 32190 | 16208 | 2887 | 0.10 | 34305 | 0.55 | 0.58 |
| **Togo** | 9667 | 9493 | 16208 | -174 | -0.02 | 16208 | 1.68 | -0.03 |
| **Tunisia** | 39533 | 44559 | 16208 | 5026 | 0.13 | 46281 | 0.41 | 0.74 |
| **Turkey** | 68709 | 75600 | 16208 | 6891 | 0.10 | 80437 | 0.24 | 0.59 |
| **Uganda** | 3359 | 3475 | 16208 | 116 | 0.03 | 16208 | 4.83 | 0.01 |
| **Ukraine** | 40063 | 42085 | 16208 | 2022 | 0.05 | 46901 | 0.40 | 0.30 |
| **United Kingdom** | 365287 | 409074 | 16208 | 43787 | 0.12 | 435036 | 0.04 | 0.63 |
| **United States** | 429142 | 463375 | 16208 | 34233 | 0.08 | 511084 | 0.04 | 0.42 |
| **Uruguay** | 78394 | 84557 | 16208 | 6163 | 0.08 | 91775 | 0.21 | 0.46 |
| **Venezuela, RB** | 150749 | 139499 | 16208 | -11250 | -0.07 | 176480 | 0.11 | -0.44 |
| **Vietnam** | 7792 | 9809 | 16208 | 2017 | 0.26 | 16208 | 2.08 | 0.24 |
| **Yemen, Rep.** | 15850 | 15599 | 16208 | -251 | -0.02 | 18555 | 1.02 | -0.09 |
| **Zambia** | 39446 | 31944 | 16208 | -7502 | -0.19 | 46179 | 0.41 | -1.11 |
| **Zimbabwe** | 12612 | 11965 | 16208 | -647 | -0.05 | 16208 | 1.29 | -0.18 |

*Source: Authors' calculations.*

## Inclusive Wealth Index – Natural Capital (millions of constant 2005 US$/capita)

| Country | *Current sustainability* | | | *Progress of sustainability* | | | | |
|---|---|---|---|---|---|---|---|---|
| | 2000-2004 average value of IWI natural capital = $y^0$ | 2010-2014 average value of IWI natural capital = $y^1$ | threshold = t | change = $y^1$-$y^0$ | rate of change = ($y^1$-$y^0$ )/$y^0$ | target = $y^*$ | Weight $\tilde{\pi}$ | progress on IWI natural capital |
| **Albania** | 9906 | 9523 | 2277 | -383 | -0.04 | 10175 | 0.23 | -1.42 |
| **Algeria** | 15352 | 11672 | 2277 | -3681 | -0.24 | 15527 | 0.15 | -21.05 |
| **Angola** | | | | | | | | |
| **Argentina** | 17612 | 16170 | 2277 | -1443 | -0.08 | 18477 | 0.13 | -1.67 |
| **Armenia** | 800 | 702 | 2277 | -99 | -0.12 | 2277 | 2.85 | -0.07 |
| **Australia** | 152745 | 131113 | 2277 | -21633 | -0.14 | 160243 | 0.01 | -2.88 |
| **Austria** | 7797 | 7433 | 2277 | -364 | -0.05 | 8180 | 0.29 | -0.95 |
| **Azerbaijan** | | | | | | | | |
| **Bangladesh** | 294 | 257 | 2277 | -38 | -0.13 | 2277 | 7.74 | -0.02 |
| **Belarus** | | | | | | | | |
| **Belgium** | 437 | 469 | 2277 | 32 | 0.07 | 2277 | 5.21 | 0.02 |
| **Benin** | 4945 | 3645 | 2277 | -1301 | -0.26 | 5001 | 0.46 | -23.09 |
| **Bolivia** | 108645 | 91497 | 2277 | -17148 | -0.16 | 109882 | 0.02 | -13.86 |
| **Botswana** | 35606 | 30204 | 2277 | -5403 | -0.15 | 36011 | 0.06 | -13.32 |
| **Brazil** | 27686 | 24367 | 2277 | -3320 | -0.12 | 28438 | 0.08 | -4.42 |
| **Bulgaria** | 8505 | 8955 | 2277 | 450 | 0.05 | 8736 | 0.27 | 1.95 |
| **Cambodia** | 7272 | 6267 | 2277 | -1006 | -0.14 | 7355 | 0.31 | -12.14 |
| **Cameroon** | 14228 | 11144 | 2277 | -3084 | -0.22 | 14390 | 0.16 | -19.03 |
| **Canada** | 148679 | 132787 | 2277 | -15892 | -0.11 | 155978 | 0.02 | -2.18 |
| **Chile** | 16803 | 15267 | 2277 | -1536 | -0.09 | 17628 | 0.14 | -1.86 |
| **China** | 5882 | 5245 | 2277 | -637 | -0.11 | 6042 | 0.39 | -3.99 |
| **Colombia** | 28393 | 24207 | 2277 | -4186 | -0.15 | 29164 | 0.08 | -5.43 |
| **Costa Rica** | 8066 | 7233 | 2277 | -833 | -0.10 | 8285 | 0.28 | -3.80 |
| **Cote d'Ivoire** | 4370 | 3837 | 2277 | -534 | -0.12 | 4420 | 0.52 | -10.72 |
| **Croatia** | 4766 | 5023 | 2277 | 257 | 0.05 | 5000 | 0.48 | 1.10 |
| **Cyprus** | 1413 | 1270 | 2277 | -143 | -0.10 | 2277 | 1.61 | -0.17 |
| **Czech Republic** | 2270 | 1598 | 2277 | -673 | -0.30 | 2381 | 1.00 | -6.03 |
| **Denmark** | 6425 | 4228 | 2277 | -2197 | -0.34 | 6740 | 0.35 | -6.97 |
| **Dominican Republic** | 3474 | 3062 | 2277 | -412 | -0.12 | 3514 | 0.66 | -10.41 |
| **Ecuador** | 15751 | 12090 | 2277 | -3662 | -0.23 | 16179 | 0.14 | -8.56 |
| **Egypt, Arab Rep.** | 1642 | 1121 | 2277 | -521 | -0.32 | 2277 | 1.39 | -0.82 |
| **El Salvador** | 1315 | 1269 | 2277 | -46 | -0.03 | 2277 | 1.73 | -0.05 |
| **Estonia** | 13600 | 13755 | 2277 | 155 | 0.01 | 14268 | 0.17 | 0.23 |
| **Finland** | 32583 | 30732 | 2277 | -1851 | -0.06 | 34183 | 0.07 | -1.16 |
| **France** | 4579 | 4477 | 2277 | -102 | -0.02 | 4804 | 0.50 | -0.45 |
| **Georgia** | | | | | | | | |
| **Germany** | 18226 | 17496 | 2277 | -731 | -0.04 | 19121 | 0.12 | -0.82 |
| **Ghana** | 3051 | 2356 | 2277 | -696 | -0.23 | 3086 | 0.75 | -20.02 |
| **Greece** | 19256 | 14855 | 2277 | -4402 | -0.23 | 20201 | 0.12 | -4.66 |
| **Guatemala** | 2814 | 2071 | 2277 | -744 | -0.26 | 2846 | 0.81 | -23.20 |
| **Honduras** | 11095 | 8489 | 2277 | -2607 | -0.23 | 11221 | 0.21 | -20.63 |
| **Hungary** | 4354 | 4152 | 2277 | -203 | -0.05 | 4568 | 0.52 | -0.95 |
| **Iceland** | 270754 | 227975 | 2277 | -42780 | -0.16 | 284046 | 0.01 | -3.22 |
| **India** | 2284 | 1959 | 2277 | -326 | -0.14 | 2310 | 1.00 | -12.51 |
| **Indonesia** | 8784 | 7538 | 2277 | -1246 | -0.14 | 8884 | 0.26 | -12.46 |
| **Ireland** | 8111 | 7092 | 2277 | -1019 | -0.13 | 8509 | 0.28 | -2.56 |
| **Israel** | 1073 | 838 | 2277 | -236 | -0.22 | 2277 | 2.12 | -0.20 |
| **Italy** | 5829 | 5635 | 2277 | -195 | -0.03 | 6115 | 0.39 | -0.68 |
| **Jamaica** | 11606 | 10590 | 2277 | -1017 | -0.09 | 11921 | 0.20 | -3.23 |
| **Japan** | 3171 | 3027 | 2277 | -145 | -0.05 | 3327 | 0.72 | -0.93 |
| **Jordan** | 1571 | 1263 | 2277 | -309 | -0.20 | 2277 | 1.45 | -0.44 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Kazakhstan** | 57481 | 52727 | 2277 | -4754 | -0.08 | 59042 | 0.04 | -3.05 |
| **Kenya** | 1288 | 1047 | 2277 | -241 | -0.19 | 2277 | 1.77 | -0.24 |
| **Korea, Rep.** | 7977 | 8321 | 2277 | 344 | 0.04 | 8369 | 0.29 | 0.88 |
| **Kyrgyz Republic** | 2843 | 2932 | 2277 | 89 | 0.03 | 2875 | 0.80 | 2.75 |
| **Latvia** | 8476 | 9674 | 2277 | 1198 | 0.14 | 8706 | 0.27 | 5.21 |
| **Lithuania** | 4258 | 4552 | 2277 | 294 | 0.07 | 4467 | 0.53 | 1.41 |
| **Luxembourg** | 2837 | 2569 | 2277 | -269 | -0.09 | 2976 | 0.80 | -1.93 |
| **Macedonia, FYR** | | | | | | | | |
| **Malawi** | 1983 | 1552 | 2277 | -431 | -0.22 | 2277 | 1.15 | -1.47 |
| **Malaysia** | 17018 | 12847 | 2277 | -4171 | -0.25 | 17480 | 0.13 | -9.03 |
| **Mali** | 6926 | 5299 | 2277 | -1627 | -0.23 | 7005 | 0.33 | -20.63 |
| **Mexico** | 9248 | 7711 | 2277 | -1538 | -0.17 | 9499 | 0.25 | -6.12 |
| **Moldova** | 972 | 1203 | 2277 | 231 | 0.24 | 2277 | 2.34 | 0.18 |
| **Mongolia** | 85207 | 71263 | 2277 | -13944 | -0.16 | 86177 | 0.03 | -14.37 |
| **Morocco** | 1893 | 1734 | 2277 | -159 | -0.08 | 2277 | 1.20 | -0.41 |
| **Mozambique** | 12352 | 9932 | 2277 | -2420 | -0.20 | 12493 | 0.18 | -17.20 |
| **Namibia** | 31823 | 26640 | 2277 | -5183 | -0.16 | 32185 | 0.07 | -14.30 |
| **Nepal** | 3618 | 2906 | 2277 | -712 | -0.20 | 3659 | 0.63 | -17.28 |
| **Netherlands** | 5958 | 4502 | 2277 | -1456 | -0.24 | 6250 | 0.38 | -4.98 |
| **New Zealand** | 41964 | 31387 | 2277 | -10577 | -0.25 | 44024 | 0.05 | -5.13 |
| **Nicaragua** | 6740 | 5558 | 2277 | -1183 | -0.18 | 6817 | 0.34 | -15.41 |
| **Norway** | 72513 | 48785 | 2277 | -23728 | -0.33 | 76073 | 0.03 | -6.67 |
| **Pakistan** | 1298 | 1032 | 2277 | -267 | -0.21 | 2277 | 1.75 | -0.27 |
| **Panama** | 12378 | 10606 | 2277 | -1772 | -0.14 | 12714 | 0.18 | -5.27 |
| **Paraguay** | 24108 | 19845 | 2277 | -4264 | -0.18 | 24383 | 0.09 | -15.53 |
| **Peru** | 44342 | 39782 | 2277 | -4560 | -0.10 | 45546 | 0.05 | -3.79 |
| **Philippines** | 1413 | 1264 | 2277 | -150 | -0.11 | 2277 | 1.61 | -0.17 |
| **Poland** | 4611 | 3880 | 2277 | -731 | -0.16 | 4837 | 0.49 | -3.23 |
| **Portugal** | 3011 | 2860 | 2277 | -152 | -0.05 | 3159 | 0.76 | -1.02 |
| **Russian Federation** | 69466 | 68345 | 2277 | -1122 | -0.02 | 71352 | 0.03 | -0.59 |
| **Senegal** | 6188 | 4846 | 2277 | -1342 | -0.22 | 6258 | 0.37 | -19.04 |
| **Singapore** | 9 | 8 | 2277 | -2 | -0.17 | 2277 | 253.00 | 0.00 |
| **Slovak Republic** | 2897 | 2881 | 2277 | -17 | -0.01 | 3039 | 0.79 | -0.12 |
| **Slovenia** | 10137 | 10668 | 2277 | 531 | 0.05 | 10635 | 0.22 | 1.07 |
| **South Africa** | 14586 | 12614 | 2277 | -1973 | -0.14 | 14752 | 0.16 | -11.88 |
| **Spain** | 5634 | 4949 | 2277 | -686 | -0.12 | 5911 | 0.40 | -2.48 |
| **Sri Lanka** | 1065 | 993 | 2277 | -72 | -0.07 | 2277 | 2.14 | -0.06 |
| **Sweden** | 23157 | 23421 | 2277 | 264 | 0.01 | 24294 | 0.10 | 0.23 |
| **Switzerland** | 11354 | 10808 | 2277 | -547 | -0.05 | 11911 | 0.20 | -0.98 |
| **Tajikistan** | 983 | 908 | 2277 | -75 | -0.08 | 2277 | 2.32 | -0.06 |
| **Thailand** | 1392 | 890 | 2277 | -503 | -0.36 | 2277 | 1.64 | -0.57 |
| **Togo** | 35913 | 25513 | 2277 | -10401 | -0.29 | 36322 | 0.06 | -25.43 |
| **Tunisia** | 5156 | 4408 | 2277 | -749 | -0.15 | 5296 | 0.44 | -5.35 |
| **Turkey** | 666 | 438 | 2277 | -229 | -0.34 | 2277 | 3.42 | -0.14 |
| **Uganda** | 13738 | 14265 | 2277 | 527 | 0.04 | 13894 | 0.17 | 3.37 |
| **Ukraine** | 321240 | 173220 | 2277 | -148020 | -0.46 | 329962 | 0.01 | -16.97 |
| **United Kingdom** | 5047 | 3800 | 2277 | -1248 | -0.25 | 5295 | 0.45 | -5.04 |
| **United States** | 31570 | 28699 | 2277 | -2872 | -0.09 | 33120 | 0.07 | -1.85 |
| **Uruguay** | 11143 | 10808 | 2277 | -335 | -0.03 | 11446 | 0.20 | -1.11 |
| **Venezuela, RB** | 75291 | 62454 | 2277 | -12837 | -0.17 | 77335 | 0.03 | -6.28 |
| **Vietnam** | 1652 | 1510 | 2277 | -142 | -0.09 | 2277 | 1.38 | -0.23 |
| **Yemen, Rep.** | 3516 | 2459 | 2277 | -1058 | -0.30 | 3556 | 0.65 | -26.41 |
| **Zambia** | 34271 | 27976 | 2277 | -6296 | -0.18 | 34661 | 0.07 | -16.13 |
| **Zimbabwe** | 6938 | 6058 | 2277 | -881 | -0.13 | 7017 | 0.33 | -11.14 |

*Source: Authors' calculations.*

## C. GEP INDEX

| Country | material footprint | air pollution | protected areas | energy use | green trade | environmental patents | renewable energy | Palma ratio | gender inequality | access to basic services | mean years of schooling | pension coverage | life expectancy | GEP Index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Albania** | **-6.43** | **0.33** | **0.22** | **0.86** | **-0.08** | **-** | **0.10** | **0.26** | **0.91** | **0.24** | **0.22** | **-1.13** | **0.40** | **-0.28** |
| | *0.09* | *0.16* | *0.26* | *0.06* | *0.11* | *-* | *0.02* | *0.05* | *0.06* | *0.06* | *0.05* | *0.01* | *0.08* | |
| **Algeria** | **-3.12** | **0.03** | **0.07** | **-0.15** | **0.01** | **-0.66** | **-** | **-** | **0.63** | **-0.05** | **0.74** | **0.27** | **0.26** | **0.01** |
| | *0.04* | *0.19* | *0.23* | *0.04* | *0.19* | *0.04* | *-* | *-* | *0.08* | *0.05* | *0.07* | *0.01* | *0.07* | |
| **Angola** | **-4.78** | **-0.61** | **0.00** | **1.00** | **-** | **-** | **-0.44** | **1.74** | **-** | **0.39** | **0.11** | **0.20** | **0.28** | **0.19** |
| | *0.04* | *0.11* | *0.15* | *0.09* | *-* | *-* | *0.01* | *0.14* | *-* | *0.15* | *0.11* | *0.07* | *0.14* | |
| **Argentina** | **-0.26** | **0.26** | **0.03** | **0.55** | **-0.08** | **-0.38** | **-0.25** | **1.05** | **0.11** | **0.32** | **0.18** | **0.69** | **0.28** | **0.10** |
| | *0.16* | *0.04* | *0.34* | *0.05* | *0.02* | *0.06* | *0.03* | *0.08* | *0.05* | *0.05* | *0.04* | *0.01* | *0.06* | |
| **Armenia** | **-3.94** | **0.12** | **0.07** | **0.83** | **0.03** | **-** | **-0.03** | **0.94** | **0.67** | **0.38** | **0.03** | **-0.49** | **0.45** | **0.06** |
| | *0.06* | *0.19* | *0.24* | *0.10* | *0.07* | *-* | *0.02* | *0.06* | *0.07* | *0.06* | *0.04* | *0.01* | *0.08* | |
| **Australia** | **-0.12** | **-0.80** | **0.10** | **0.37** | **-0.11** | **0.13** | **-0.20** | **-0.57** | **0.37** | **-** | **0.44** | **0.15** | **0.46** | **-0.05** |
| | *0.52* | *0.04* | *0.07* | *0.06* | *0.02* | *0.06* | *0.07* | *0.06* | *0.02* | *-* | *0.03* | *0.01* | *0.06* | |
| **Austria** | **-0.06** | **0.36** | **0.00** | **0.19** | **0.05** | **-0.06** | **0.37** | **0.07** | **0.84** | **-** | **0.51** | **1.00** | **0.37** | **0.11** |
| | *0.50* | *0.13* | *0.06* | *0.05* | *0.01* | *0.04* | *0.02* | *0.05* | *0.02* | *-* | *0.05* | *0.00* | *0.07* | |
| **Azerbaijan** | **-4.08** | **0.17** | **0.04** | **2.03** | **-0.28** | **-** | **0.36** | **-0.50** | **-** | **0.60** | **0.14** | **-4.55** | **0.59** | **0.20** |
| | *0.04* | *0.14* | *0.18* | *0.11* | *0.09* | *-* | *0.25* | *0.03* | *-* | *0.05* | *0.03* | *0.00* | *0.07* | |
| **Bangladesh** | **0.00** | **-0.06** | **0.01** | **0.22** | **-0.05** | **-** | **-0.38** | **0.11** | **0.27** | **0.86** | **0.41** | **1.00** | **0.69** | **0.21** |
| | *0.02* | *0.20* | *0.28* | *0.03* | *0.07* | *-* | *0.01* | *0.04* | *0.07* | *0.07* | *0.07* | *0.06* | *0.06* | |
| **Belarus** | **-0.98** | **-0.24** | **0.07** | **0.94** | **-0.08** | **-** | **0.66** | **0.11** | **-** | **-** | **0.83** | **0.89** | **0.38** | **0.38** |
| | *0.00* | *0.12* | *0.27* | *0.20* | *0.02* | *-* | *0.15* | *0.05* | *-* | *-* | *0.06* | *0.02* | *0.10* | |
| **Belgium** | **0.02** | **0.27** | **0.22** | **0.36** | **0.03** | **-0.71** | **0.21** | **0.62** | **0.63** | **-** | **0.28** | **-** | **0.33** | **0.18** |
| | *0.38* | *0.21* | *0.06* | *0.08* | *0.02* | *0.03* | *0.02* | *0.06* | *0.02* | *-* | *0.05* | *-* | *0.08* | |
| **Benin** | **-5.78** | **0.02** | **0.02** | **-0.59** | **0.06** | **-** | **-0.40** | **-0.73** | **0.18** | **0.18** | **0.32** | **0.32** | **0.36** | **-0.09** |
| | *0.03* | *0.15* | *0.05* | *0.07* | *0.16* | *-* | *0.01* | *0.05* | *0.07* | *0.11* | *0.12* | *0.12* | *0.07* | |
| **Bolivia** | **-0.58** | **-0.24** | **0.05** | **-1.43** | **-0.21** | **-** | **0.06** | **0.81** | **0.46** | **0.47** | **0.17** | **0.51** | **0.57** | **0.16** |
| | *0.10* | *0.07* | *0.11* | *0.06* | *0.04* | *-* | *0.03* | *0.17* | *0.11* | *0.11* | *0.08* | *0.01* | *0.12* | |
| **Botswana** | **-0.36** | **-0.23** | **0.00** | **0.44** | **-** | **-** | **-0.31** | **0.30** | **0.23** | **0.41** | **0.44** | **1.00** | **-0.32** | **0.02** |
| | *0.28* | *0.05* | *0.05* | *0.05* | *-* | *-* | *0.02* | *0.18* | *0.09* | *0.09* | *0.06* | *0.01* | *0.12* | |
| **Brazil** | **-1.30** | **0.23** | **0.19** | **0.05** | **-0.03** | **-0.46** | **0.12** | **0.45** | **0.31** | **0.28** | **0.72** | **0.16** | **0.43** | **-0.01** |
| | *0.18* | *0.06* | *0.10* | *0.06* | *0.02* | *0.07* | *0.01* | *0.15* | *0.09* | *0.07* | *0.09* | *0.01* | *0.09* | |
| **Bulgaria** | **-4.70** | **0.28** | **2.44** | **0.90** | **0.15** | **0.21** | **0.01** | **-0.55** | **0.05** | **-** | **0.30** | **0.28** | **0.32** | **0.55** |
| | *0.10* | *0.17* | *0.34* | *0.11* | *0.02* | *0.05* | *0.02* | *0.04* | *0.03* | *-* | *0.04* | *0.00* | *0.07* | |
| **Cambodia** | **-12.53** | **0.02** | **0.06** | **0.75** | **-** | **-** | **-0.36** | **-0.04** | **0.40** | **0.49** | **0.75** | **0.75** | **1.48** | **0.38** |
| | *0.02* | *0.11* | *0.05* | *0.06* | *-* | *-* | *0.00* | *0.04* | *0.06* | *0.14* | *0.05* | *0.42* | *0.06* | |
| **Cameroon** | **-0.95** | **-0.01** | **0.20** | **0.54** | **0.42** | **-** | **-0.78** | **0.37** | **0.17** | **0.30** | **0.31** | **0.06** | **0.13** | **0.21** |
| | *0.02* | *0.16* | *0.16* | *0.06* | *0.18* | *-* | *0.00* | *0.06* | *0.08* | *0.08* | *0.07* | *0.04* | *0.08* | |
| **Canada** | **-0.09** | **0.08** | **0.09** | **0.52** | **0.01** | **0.07** | **0.13** | **-0.16** | **0.05** | **-** | **0.61** | **0.74** | **0.32** | **0.07** |
| | *0.39* | *0.08* | *0.22* | *0.09* | *0.01* | *0.04* | *0.02* | *0.05* | *0.02* | *-* | *0.03* | *0.00* | *0.06* | |
| **Chile** | **-0.02** | **-0.01** | **0.02** | **0.40** | **-0.24** | **-** | **-0.09** | **0.47** | **0.30** | **0.62** | **0.30** | **0.31** | **0.33** | **0.16** |
| | *0.31* | *0.07* | *0.16* | *0.05* | *0.02* | *-* | *0.02* | *0.12* | *0.06* | *0.05* | *0.05* | *0.01* | *0.07* | |
| **China** | **-3.87** | **-0.16** | **0.04** | **0.52** | **0.23** | **0.42** | **-0.51** | **-0.19** | **1.46** | **0.64** | **0.36** | **0.66** | **0.41** | **-0.17** |
| | *0.07* | *0.33* | *0.26* | *0.07* | *0.01* | *0.04* | *0.02* | *0.04* | *0.03* | *0.04* | *0.04* | *0.01* | *0.04* | |
| **Colombia** | **-1.62** | **-0.19** | **0.10** | **0.46** | **-0.15** | **0.41** | **-0.12** | **0.23** | **0.30** | **0.20** | **0.29** | **0.16** | **0.36** | **-0.02** |
| | *0.12* | *0.05* | *0.13* | *0.04* | *0.05* | *0.08* | *0.02* | *0.14* | *0.09* | *0.07* | *0.07* | *0.04* | *0.09* | |
| **Costa Rica** | **0.35** | **-4.37** | **0.03** | **0.03** | **0.03** | **-** | **0.22** | **-0.29** | **0.52** | **0.35** | **0.09** | **0.39** | **0.22** | **-0.15** |
| | *0.17* | *0.07* | *0.10* | *0.06* | *0.04* | *-* | *0.02* | *0.13* | *0.10* | *0.09* | *0.08* | *0.03* | *0.11* | |
| **Cote d'Ivoire** | **1.43** | **0.04** | **0.01** | **-0.86** | **-0.01** | **-** | **0.29** | **-0.24** | **0.10** | **0.29** | **-** | **-** | **0.15** | **0.02** |
| | *0.02* | *0.15* | *0.07* | *0.08* | *0.11* | *-* | *0.01* | *0.07* | *0.11* | *0.11* | *-* | *-* | *0.13* | |
| **Croatia** | **-0.01** | **0.37** | **0.16** | **0.39** | **0.15** | **1.00** | **0.16** | **-1.49** | **0.25** | **-** | **0.40** | **-** | **0.43** | **0.17** |
| | *0.20* | *0.13* | *0.36* | *0.05* | *0.01* | *0.04* | *0.04* | *0.04* | *0.03* | *-* | *0.04* | *-* | *0.06* | |
| **Cyprus** | **0.04** | **0.08** | **0.01** | **0.37** | **0.51** | **5.98** | **0.82** | **-** | **0.19** | **-** | **0.38** | **0.42** | **0.19** | **0.38** |
| | *0.30* | *0.12* | *0.27* | *0.04* | *0.01* | *0.03* | *0.14* | *-* | *0.02* | *-* | *0.03* | *0.00* | *0.05* | |
| **Czech Republic** | **-0.19** | **0.40** | **0.16** | **0.72** | **0.07** | **0.24** | **0.57** | **0.16** | **0.82** | **-** | **-0.42** | **-** | **0.39** | **0.17** |
| | *0.35* | *0.18* | *0.10* | *0.10* | *0.01* | *0.04* | *0.03* | *0.06* | *0.03* | *-* | *0.04* | *-* | *0.08* | |
| **Denmark** | **-0.06** | **-0.09** | **0.07** | **0.36** | **0.01** | **0.17** | **0.86** | **-0.49** | **0.34** | **-** | **0.61** | **-** | **0.37** | **0.07** |
| | *0.46* | *0.12* | *0.06* | *0.05* | *0.01* | *0.08* | *0.04* | *0.05* | *0.01* | *-* | *0.04* | *-* | *0.08* | |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Dominican Republic** | **0.79** | **0.50** | **-0.04** | **1.00** | **0.29** | **-** | **-0.16** | **0.47** | **0.08** | **0.13** | **0.43** | **-** | **0.32** | **0.38** |
| | *0.12* | *0.12* | *0.06* | *0.07* | *0.05* | *-* | *0.06* | *0.13* | *0.11* | *0.08* | *0.09* | *-* | *0.11* | |
| **Ecuador** | **-0.86** | **0.26** | **0.01** | **0.07** | **0.03** | **-0.54** | **-0.26** | **0.78** | **0.36** | **0.41** | **0.21** | **0.67** | **0.35** | **0.08** |
| | *0.15* | *0.06* | *0.03* | *0.05* | *0.09* | *0.08* | *0.04* | *0.13* | *0.09* | *0.07* | *0.07* | *0.04* | *0.09* | |
| **Egypt, Arab Rep.** | **-2.47** | **0.04** | **0.32** | **-0.16** | **1.61** | **-0.11** | **-0.45** | **0.34** | **0.25** | **0.64** | **0.89** | **-** | **0.30** | **0.11** |
| | *0.06* | *0.23* | *0.18* | *0.03* | *0.07* | *0.06* | *0.07* | *0.04* | *0.07* | *0.04* | *0.07* | *-* | *0.06* | |
| **El Salvador** | **0.02** | **-0.28** | **-** | **0.39** | **0.36** | **-** | **-0.05** | **1.00** | **0.37** | **0.38** | **0.61** | **0.04** | **0.31** | **0.37** |
| | *0.14* | *0.07* | *-* | *0.08* | *0.06* | *-* | *0.01* | *0.14* | *0.12* | *0.10* | *0.12* | *0.05* | *0.12* | |
| **Estonia** | **-0.37** | **-2.66** | **0.05** | **0.43** | **0.06** | **1.74** | **0.33** | **0.72** | **0.91** | **-** | **0.16** | **0.74** | **0.73** | **0.09** |
| | *0.33* | *0.06* | *0.07* | *0.13* | *0.02* | *0.04* | *0.05* | *0.10* | *0.05* | *-* | *0.04* | *0.01* | *0.10* | |
| **Finland** | **0.09** | **-0.27** | **0.04** | **0.39** | **0.11** | **-0.01** | **0.11** | **-0.29** | **0.31** | **-** | **0.26** | **-** | **0.34** | **0.10** |
| | *0.59* | *0.04* | *0.08* | *0.08* | *0.01* | *0.03* | *0.01* | *0.04* | *0.01* | *-* | *0.05* | *-* | *0.06* | |
| **France** | **0.08** | **0.23** | **0.38** | **0.38** | **0.02** | **0.19** | **0.06** | **-0.35** | **0.86** | **-** | **0.33** | **-** | **0.47** | **0.18** |
| | *0.42* | *0.16* | *0.07* | *0.07* | *0.01* | *0.04* | *0.01* | *0.07* | *0.03* | *-* | *0.05* | *-* | *0.08* | |
| **Georgia** | **-3.99** | **-0.13** | **0.00** | **0.82** | **-0.01** | **-0.44** | **-0.36** | **-0.18** | **-** | **0.34** | **0.17** | **0.50** | **0.31** | **-0.22** |
| | *0.07* | *0.11* | *0.42* | *0.08* | *0.04* | *0.07* | *0.01* | *0.06* | *-* | *0.05* | *0.03* | *0.01* | *0.08* | |
| **Germany** | **0.03** | **0.35** | **0.19** | **0.50** | **0.06** | **0.14** | **0.25** | **-0.45** | **0.92** | **-** | **0.70** | **-** | **0.33** | **0.18** |
| | *0.43* | *0.19* | *0.03* | *0.06* | *0.01* | *0.06* | *0.03* | *0.06* | *0.02* | *-* | *0.04* | *-* | *0.08* | |
| **Ghana** | **-2.85** | **0.04** | **0.00** | **0.71** | **0.01** | **-** | **-0.34** | **-0.58** | **0.12** | **0.63** | **0.24** | **0.07** | **0.34** | **0.04** |
| | *0.04* | *0.14* | *0.26* | *0.07* | *0.05* | *-* | *0.01* | *0.05* | *0.07* | *0.10* | *0.06* | *0.08* | *0.08* | |
| **Greece** | **0.09** | **0.23** | **0.13** | **0.21** | **-0.09** | **-0.21** | **0.58** | **0.32** | **0.32** | **-** | **0.52** | **-1.51** | **0.31** | **0.19** |
| | *0.43* | *0.13* | *0.11* | *0.04* | *0.01* | *0.02* | *0.07* | *0.06* | *0.02* | *-* | *0.04* | *0.00* | *0.06* | |
| **Guatemala** | **0.11** | **-0.83** | **0.01** | **-0.11** | **0.19** | **-0.37** | **0.24** | **0.06** | **0.22** | **0.33** | **1.04** | **0.04** | **0.53** | **0.11** |
| | *0.07* | *0.10* | *0.07* | *0.05* | *0.04* | *0.12* | *0.01* | *0.12* | *0.10* | *0.07* | *0.12* | *0.04* | *0.09* | |
| **Honduras** | **-1.45** | **-0.02** | **0.04** | **0.11** | **0.02** | **-** | **0.08** | **0.03** | **0.14** | **0.51** | **0.68** | **0.34** | **0.37** | **0.11** |
| | *0.05* | *0.05* | *0.28* | *0.06* | *0.05* | *-* | *0.01* | *0.09* | *0.06* | *0.06* | *0.08* | *0.16* | *0.06* | |
| **Hungary** | **0.00** | **0.37** | **1.00** | **0.48** | **0.31** | **0.78** | **0.47** | **-0.12** | **-0.28** | **-** | **0.35** | **-2.31** | **0.42** | **0.42** |
| | *0.23* | *0.18* | *0.23* | *0.06* | *0.01* | *0.06* | *0.03* | *0.04* | *0.04* | *-* | *0.04* | *0.01* | *0.08* | |
| **Iceland** | **0.19** | **-0.16** | **0.18** | **-0.89** | **0.44** | **-** | **0.35** | **-0.42** | **0.64** | **-** | **0.32** | **1.00** | **-** | **0.06** |
| | *0.45* | *0.04* | *0.17* | *0.13* | *0.11* | *-* | *0.01* | *0.04* | *0.02* | *-* | *0.03* | *0.00* | *-* | |
| **India** | **-3.15** | **-0.03** | **0.00** | **0.57** | **0.08** | **-0.64** | **-0.29** | **-** | **0.22** | **0.89** | **0.57** | **0.59** | **0.61** | **0.01** |
| | *0.03* | *0.18* | *0.27* | *0.05* | *0.02* | *0.14* | *0.01* | *-* | *0.06* | *0.06* | *0.08* | *0.05* | *0.06* | |
| **Indonesia** | **-3.89** | **0.03** | **0.25** | **0.53** | **0.00** | **-** | **-0.14** | **-0.97** | **0.26** | **0.50** | **0.34** | **0.09** | **0.47** | **-0.05** |
| | *0.06* | *0.12* | *0.27* | *0.07* | *0.03* | *-* | *0.01* | *0.05* | *0.08* | *0.07* | *0.06* | *0.08* | *0.08* | |
| **Ireland** | **0.26** | **-1.37** | **0.28** | **0.60** | **0.10** | **0.52** | **1.11** | **0.49** | **0.63** | **-** | **0.41** | **-** | **0.51** | **0.40** |
| | *0.39* | *0.04* | *0.16* | *0.03* | *0.02* | *0.04* | *0.18* | *0.05* | *0.02* | *-* | *0.02* | *-* | *0.05* | |
| **Israel** | **0.17** | **0.04** | **0.00** | **0.45** | **-0.02** | **-0.55** | **0.39** | **-1.25** | **0.71** | **-** | **0.22** | **-0.19** | **0.43** | **0.06** |
| | *0.31* | *0.20* | *0.09* | *0.05* | *0.01* | *0.06* | *0.11* | *0.06* | *0.02* | *-* | *0.03* | *0.01* | *0.06* | |
| **Italy** | **0.09** | **0.23** | **0.37** | **0.21** | **0.02** | **-0.68** | **1.00** | **0.29** | **1.02** | **-** | **0.39** | **0.46** | **0.46** | **0.23** |
| | *0.31* | *0.16* | *0.17* | *0.03* | *0.00* | *0.08* | *0.06* | *0.06* | *0.02* | *-* | *0.04* | *0.01* | *0.06* | |
| **Jamaica** | **0.42** | **-1.22** | **0.00** | **0.87** | **0.17** | **-** | **0.61** | **-** | **0.01** | **0.14** | **0.32** | **-** | **0.34** | **0.13** |
| | *0.19* | *0.11* | *0.24* | *0.11* | *0.01* | *-* | *0.05* | *-* | *0.08* | *0.07* | *0.06* | *-* | *0.09* | |
| **Japan** | **0.16** | **0.08** | **0.02** | **0.44** | **0.06** | **-0.13** | **-0.37** | **-0.05** | **0.19** | **-** | **0.23** | **0.26** | **-** | **0.10** |
| | *0.39* | *0.19* | *0.15* | *0.06* | *0.00* | *0.04* | *0.03* | *0.07* | *0.02* | *-* | *0.04* | *0.01* | *-* | |
| **Jordan** | **-0.50** | **0.04** | **0.00** | **0.58** | **-0.11** | **-** | **0.13** | **0.82** | **0.56** | **-** | **0.11** | **0.04** | **0.25** | **0.13** |
| | *0.11* | *0.23* | *0.03* | *0.06* | *0.02* | *-* | *0.30* | *0.05* | *0.08* | *-* | *0.04* | *0.01* | *0.07* | |
| **Kazakhstan** | **-0.38** | **-0.07** | **0.04** | **-0.05** | **-0.20** | **-** | **-0.24** | **0.34** | **0.45** | **0.24** | **0.39** | **-** | **0.48** | **-0.03** |
| | *0.15* | *0.07* | *0.34* | *0.07* | *0.06* | *-* | *0.15* | *0.03* | *0.03* | *0.03* | *0.02* | *-* | *0.05* | |
| **Kenya** | **-0.85** | **-1.08** | **0.00** | **0.22** | **0.08** | **-** | **-0.28** | **-0.13** | **0.39** | **0.21** | **0.31** | **-** | **0.58** | **0.09** |
| | *0.05* | *0.05* | *0.12* | *0.11* | *0.09* | *-* | *0.01* | *0.09* | *0.11* | *0.18* | *0.08* | *-* | *0.11* | |
| **Korea, Rep.** | **0.01** | **0.09** | **0.05** | **0.30** | **0.26** | **0.07** | **0.02** | **-** | **-** | **0.42** | **0.35** | **-** | **0.67** | **0.12** |
| | *0.28* | *0.25* | *0.22* | *0.06* | *0.01* | *0.03* | *0.02* | *-* | *-* | *0.04* | *0.03* | *-* | *0.05* | |
| **Kyrgyz Republic** | **-0.68** | **0.27** | **-0.04** | **0.38** | **-** | **-** | **-0.22** | **-0.89** | **1.22** | **0.26** | **0.18** | **1.00** | **0.20** | **0.12** |
| | *0.12* | *0.17* | *0.23* | *0.12* | *-* | *-* | *0.01* | *0.05* | *0.09* | *0.06* | *0.05* | *0.01* | *0.09* | |
| **Latvia** | **-0.62** | **-5.70** | **0.08** | **0.45** | **0.06** | **-** | **0.13** | **-0.22** | **0.24** | **0.00** | **0.66** | **-** | **0.39** | **-0.40** |
| | *0.33* | *0.06* | *0.15* | *0.08* | *0.02* | *-* | *0.02* | *0.06* | *0.05* | *0.07* | *0.06* | *-* | *0.10* | |
| **Lithuania** | **-0.66** | **-1.71** | **0.22** | **1.22** | **0.16** | **-0.31** | **-0.70** | **-0.32** | **0.58** | **0.35** | **0.47** | **1.00** | **0.16** | **-0.16** |
| | *0.35* | *0.08* | *0.12* | *0.10* | *0.02* | *0.01* | *0.01* | *0.06* | *0.03* | *0.06* | *0.04* | *0.01* | *0.09* | |
| **Luxembourg** | **-** | **0.42** | **0.10** | **0.35** | **0.17** | **-0.64** | **0.54** | **-0.54** | **0.08** | **-** | **0.36** | **-** | **0.43** | **0.33** |
| | *-* | *0.20* | *0.07* | *0.07* | *0.02* | *0.02* | *0.35* | *0.07* | *0.04* | *-* | *0.06* | *-* | *0.10* | |
| **Macedonia, FYR** | **-1.50** | **0.25** | **0.07** | **0.45** | **1.58** | **-** | **0.30** | **-1.51** | **-** | **0.29** | **-** | **0.00** | **0.22** | **-0.05** |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | *0.14* | *0.19* | *0.27* | *0.08* | *0.06* | *-* | *0.05* | *0.06* | *-* | *0.06* | *-* | *0.01* | *0.08* | |
| **Malawi** | **-1.77** | **0.18** | **0.02** | **-** | **0.27** | **-** | **-** | **0.05** | **0.27** | **0.20** | **0.72** | **0.00** | **0.38** | **0.22** |
| | *0.02* | *0.04* | *0.08* | *-* | *0.18* | *-* | *-* | *0.08* | *0.09* | *0.18* | *0.13* | *0.11* | *0.11* | |
| **Malaysia** | **-0.34** | **0.05** | **0.01** | **0.14** | **0.24** | **-0.07** | **-0.29** | **-0.22** | **0.61** | **0.61** | **0.32** | **0.08** | **0.24** | **-0.01** |
| | *0.20* | *0.09* | *0.22* | *0.05* | *0.01* | *0.12* | *0.06* | *0.06* | *0.04* | *0.04* | *0.04* | *0.03* | *0.06* | |
| **Mali** | **-2.98** | **0.02** | **0.24** | **-** | **0.00** | **-** | **-** | **0.42** | **0.12** | **0.18** | **0.22** | **0.06** | **0.31** | **0.08** |
| | *0.03* | *0.15* | *0.29* | *-* | *0.07* | *-* | *-* | *0.03* | *0.05* | *0.09* | *0.17* | *0.06* | *0.06* | |
| **Mexico** | **0.12** | **0.03** | **0.18** | **0.00** | **0.02** | **0.88** | **-0.23** | **-0.03** | **0.46** | **0.33** | **0.65** | **0.37** | **0.35** | **0.25** |
| | *0.15* | *0.14* | *0.12* | *0.05* | *0.01* | *0.10* | *0.04* | *0.09* | *0.07* | *0.06* | *0.06* | *0.05* | *0.07* | |
| **Moldova** | **-52.53** | **0.45** | **-** | **0.62** | **0.08** | **1.00** | **0.10** | **0.82** | **-** | **0.34** | **0.63** | **-0.67** | **0.24** | **0.34** |
| | *0.00* | *0.21* | *-* | *0.23* | *0.03* | *0.03* | *0.21* | *0.08* | *-* | *0.08* | *0.06* | *0.01* | *0.12* | |
| **Mongolia** | **-13.60** | **0.09** | **0.01** | **0.66** | **-** | **-** | **-0.51** | **-1.48** | **0.29** | **0.53** | **0.33** | **1.00** | **0.66** | **-0.99** |
| | *0.08* | *0.11* | *0.14* | *0.15* | *-* | *-* | *0.10* | *0.06* | *0.08* | *0.10* | *0.06* | *0.01* | *0.11* | |
| **Morocco** | **-1.33** | **0.02** | **-** | **-0.05** | **-0.06** | **-0.34** | **-0.12** | **-0.43** | **0.60** | **1.00** | **0.72** | **0.14** | **0.32** | **0.13** |
| | *0.06* | *0.20* | *-* | *0.04* | *0.06* | *0.03* | *0.11* | *0.07* | *0.10* | *0.08* | *0.14* | *0.02* | *0.09* | |
| **Mozambique** | **-0.64** | **-0.16** | **0.05** | **0.41** | **0.21** | **-** | **-0.38** | **0.39** | **0.07** | **0.16** | **0.40** | **0.31** | **0.10** | **0.20** |
| | *0.02* | *0.03* | *0.18* | *0.18* | *0.05* | *-* | *0.00* | *0.06* | *0.06* | *0.15* | *0.12* | *0.05* | *0.07* | |
| **Namibia** | **-0.42** | **1.10** | **0.50** | **0.07** | **0.13** | **-** | **-0.41** | **0.24** | **0.30** | **0.63** | **0.28** | **0.87** | **0.66** | **0.31** |
| | *0.12* | *0.05* | *0.09* | *0.05* | *0.07* | *-* | *0.02* | *0.19* | *0.09* | *0.12* | *0.08* | *0.01* | *0.11* | |
| **Nepal** | **-4.52** | **-0.10** | **-0.02** | **0.36** | **-** | **-** | **-0.20** | **1.56** | **0.74** | **0.45** | **0.37** | **0.44** | **0.88** | **0.28** |
| | *0.02* | *0.26* | *0.09* | *0.10* | *-* | *-* | *0.01* | *0.08* | *0.09* | *0.09* | *0.16* | *0.01* | *0.08* | |
| **Netherlands** | **-0.14** | **0.27** | **0.05** | **0.24** | **0.16** | **0.08** | **0.58** | **0.27** | **0.59** | **-** | **0.32** | **-** | **0.39** | **0.15** |
| | *0.38* | *0.19* | *0.03* | *0.06* | *0.01* | *0.03* | *0.12* | *0.06* | *0.01* | *-* | *0.04* | *-* | *0.07* | |
| **New Zealand** | **0.13** | **-0.52** | **0.04** | **0.38** | **-0.20** | **0.22** | **0.32** | **0.30** | **0.01** | **-** | **0.22** | **-** | **0.38** | **0.15** |
| | *0.44* | *0.05* | *0.09* | *0.08* | *0.01* | *0.10* | *0.02* | *0.08* | *0.03* | *-* | *0.04* | *-* | *0.07* | |
| **Nicaragua** | **-0.18** | **-0.35** | **0.18** | **0.37** | **-0.26** | **-** | **-0.05** | **0.38** | **0.27** | **0.22** | **0.44** | **0.68** | **0.63** | **0.29** |
| | *0.07* | *0.06* | *0.07* | *0.09* | *0.05* | *-* | *0.01* | *0.09* | *0.10* | *0.10* | *0.11* | *0.15* | *0.10* | |
| **Norway** | **-0.11** | **1.23** | **0.20** | **-0.03** | **0.11** | **0.17** | **-0.05** | **0.80** | **0.55** | **-** | **0.28** | **1.00** | **0.39** | **0.14** |
| | *0.43* | *0.04* | *0.31* | *0.03* | *0.02* | *0.04* | *0.01* | *0.04* | *0.01* | *-* | *0.03* | *0.00* | *0.05* | |
| **Pakistan** | **-1.31** | **-0.03** | **0.10** | **0.32** | **-** | **-** | **-0.07** | **-0.01** | **0.25** | **0.37** | **0.78** | **-** | **0.38** | **0.14** |
| | *0.03* | *0.28* | *0.26* | *0.05* | *-* | *-* | *0.01* | *0.04* | *0.08* | *0.06* | *0.11* | *-* | *0.07* | |
| **Panama** | **-0.04** | **-0.41** | **0.06** | **0.60** | **0.00** | **-0.78** | **-0.38** | **0.58** | **-0.14** | **0.24** | **0.24** | **-** | **0.26** | **0.06** |
| | *0.15* | *0.05* | *0.18* | *0.05* | *0.05* | *0.07* | *0.02* | *0.13* | *0.08* | *0.07* | *0.05* | *-* | *0.08* | |
| **Paraguay** | **-0.18** | **0.76** | **0.11** | **0.36** | **-** | **-** | **-0.11** | **0.60** | **0.35** | **0.87** | **0.81** | **-** | **0.30** | **0.27** |
| | *0.21* | *0.04* | *0.29* | *0.06* | *-* | *-* | *0.01* | *0.11* | *0.08* | *0.07* | *0.07* | *-* | *0.08* | |
| **Peru** | **-0.28** | **0.24** | **0.31** | **0.04** | **0.24** | **0.55** | **-0.33** | **1.02** | **0.39** | **0.61** | **0.29** | **-** | **0.53** | **0.30** |
| | *0.17* | *0.08* | *0.23* | *0.03* | *0.08* | *0.06* | *0.01* | *0.09* | *0.06* | *0.06* | *0.05* | *-* | *0.07* | |
| **Philippines** | **-0.50** | **-0.11** | **0.00** | **0.87** | **1.16** | **-** | **-0.16** | **0.54** | **0.32** | **0.53** | **0.30** | **-** | **0.23** | **0.21** |
| | *0.07* | *0.07* | *0.36* | *0.06* | *0.05* | *-* | *0.01* | *0.08* | *0.08* | *0.07* | *0.06* | *-* | *0.09* | |
| **Poland** | **-0.31** | **0.36** | **0.63** | **0.74** | **0.06** | **0.30** | **0.71** | **1.68** | **0.38** | **-0.01** | **0.21** | **0.83** | **0.36** | **0.39** |
| | *0.23* | *0.16* | *0.13* | *0.07* | *0.01* | *0.03* | *0.09* | *0.09* | *0.03* | *0.05* | *0.04* | *0.01* | *0.07* | |
| **Portugal** | **-0.10** | **-0.38** | **0.02** | **0.39** | **0.10** | **-0.43** | **0.46** | **0.73** | **0.63** | **-** | **0.55** | **1.00** | **0.43** | **0.10** |
| | *0.35* | *0.10* | *0.19* | *0.04* | *0.01* | *0.02* | *0.03* | *0.09* | *0.03* | *-* | *0.06* | *0.00* | *0.07* | |
| **Russian Federation** | **-1.40** | **-0.67** | **0.01** | **0.59** | **-0.15** | **0.20** | **0.02** | **-0.07** | **0.53** | **0.01** | **0.23** | **-** | **0.51** | **-0.04** |
| | *0.13* | *0.09* | *0.13* | *0.17* | *0.03* | *0.05* | *0.06* | *0.07* | *0.07* | *0.07* | *0.04* | *-* | *0.10* | |
| **Senegal** | **-1.96** | **0.01** | **0.03** | **0.10** | **-0.03** | **-** | **0.00** | **0.48** | **0.31** | **0.74** | **0.20** | **-** | **0.48** | **0.13** |
| | *0.04* | *0.38* | *0.09* | *0.07* | *0.04* | *-* | *0.01* | *0.07* | *0.10* | *0.11* | *0.04* | *-* | *0.10* | |
| **Singapore** | **-0.27** | **0.09** | **0.00** | **0.48** | **0.13** | **-0.38** | **0.33** | **-** | **0.71** | **0.11** | **0.37** | **-** | **0.51** | **-0.05** |
| | *0.39* | *0.07* | *0.21* | *0.02* | *0.00* | *0.10* | *0.15* | *-* | *0.01* | *0.02* | *0.02* | *-* | *0.03* | |
| **Slovak Republic** | **-0.64** | **0.39** | **0.34** | **1.19** | **0.02** | **0.88** | **0.07** | **0.21** | **0.42** | **-** | **0.38** | **-** | **0.31** | **0.02** |
| | *0.44* | *0.16* | *0.07* | *0.10* | *0.01* | *0.04* | *0.02* | *0.05* | *0.03* | *-* | *0.04* | *-* | *0.07* | |
| **Slovenia** | **-0.11** | **0.32** | **2.30** | **0.39** | **0.02** | **-0.35** | **0.12** | **0.11** | **1.00** | **-** | **0.08** | **-** | **0.56** | **0.49** |
| | *0.38* | *0.16* | *0.18* | *0.07* | *0.01* | *0.03* | *0.02* | *0.05* | *0.02* | *-* | *0.04* | *-* | *0.08* | |
| **South Africa** | **0.03** | **-0.59** | **0.11** | **0.25** | **-0.05** | **-0.67** | **-0.16** | **-2.04** | **0.27** | **0.71** | **0.27** | **-** | **-0.21** | **-0.19** |
| | *0.15* | *0.06* | *0.22* | *0.12* | *0.01* | *0.07* | *0.03* | *0.11* | *0.07* | *0.07* | *0.04* | *-* | *0.09* | |
| **Spain** | **0.14** | **0.17** | **0.03** | **0.49** | **0.01** | **0.35** | **0.29** | **0.22** | **0.22** | **-** | **0.35** | **-** | **0.48** | **0.20** |
| | *0.48* | *0.14* | *0.09* | *0.05* | *0.01* | *0.04* | *0.03* | *0.07* | *0.02* | *-* | *0.05* | *-* | *0.07* | |
| **Sri Lanka** | **-3.79** | **1.10** | **0.02** | **0.83** | | | **-0.04** | **0.55** | **0.34** | **0.53** | **0.20** | | **0.40** | **0.18** |
| | *0.03* | *0.10* | *0.48* | *0.04* | | | *0.01* | *0.07* | *0.07* | *0.07* | *0.04* | | *0.08* | |
| **Sweden** | **-0.03** | **-0.14** | **0.05** | **0.57** | **0.00** | **0.58** | **0.11** | **-0.87** | **0.21** | **-** | **0.23** | **-** | **0.36** | **0.05** |
| | *0.49* | *0.06* | *0.15* | *0.09* | *0.01* | *0.04* | *0.01* | *0.06* | *0.01* | *-* | *0.04* | *-* | *0.08* | |
| **Switzerland** | **-0.08** | **0.35** | **0.08** | **0.55** | **-0.02** | **0.59** | **0.04** | | **1.03** | | **0.49** | | **0.53** | **0.18** |
| | *0.49* | *0.15* | *0.07* | *0.04* | *0.01* | *0.10* | *0.01* | | *0.02* | | *0.04* | | *0.07* | |
| **Tajikistan** | **-8.64** | **0.22** | **0.05** | **1.17** | **-** | **-** | **-0.06** | **0.16** | **0.27** | **0.25** | **-0.05** | **-0.65** | **0.53** | **0.15** |
| | *0.02* | *0.18* | *0.39* | *0.13* | *-* | *-* | *0.01* | *0.05* | *0.07* | *0.07* | *0.04* | *0.01* | *0.09* | |
| **Thailand** | **-1.12** | **-0.02** | **0.03** | **-0.08** | **0.21** | **-** | **0.06** | **0.36** | **0.42** | **0.44** | **0.50** | **2.19** | **0.42** | **0.21** |
| | *0.14* | *0.20* | *0.17* | *0.07* | *0.02* | *-* | *0.03* | *0.07* | *0.07* | *0.06* | *0.07* | *0.10* | *0.08* | |
| **Togo** | **-0.10** | **0.03** | **0.50** | **0.04** | **0.26** | | **-0.08** | | **0.20** | **0.16** | **0.18** | | **0.18** | **0.17** |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | *0.03* | *0.17* | *0.12* | *0.15* | *0.09* | | *0.01* | | *0.08* | *0.17* | *0.09* | | *0.09* | |
| **Tunisia** | **0.13** | **0.07** | **0.08** | **0.44** | **0.56** | **-** | **0.20** | **0.88** | **0.64** | **0.47** | **0.95** | **-** | **0.25** | **0.23** |
| | *0.08* | *0.12* | *0.54* | *0.04* | *0.02* | *-* | *0.03* | *0.05* | *0.04* | *0.04* | *0.06* | *-* | *0.05* | |
| **Turkey** | **-0.95** | **0.12** | **0.00** | **0.11** | **0.06** | **-** | **-0.32** | **0.52** | **0.75** | **0.41** | **0.87** | **0.73** | **0.65** | **0.08** |
| | *0.13* | *0.13* | *0.43* | *0.04* | *0.01* | *-* | *0.03* | *0.05* | *0.06* | *0.04* | *0.06* | *0.01* | *0.06* | |
| **Uganda** | **-1.69** | **0.56** | **0.15** | | **0.04** | | | **0.16** | **0.43** | **0.27** | **0.66** | **0.91** | **0.57** | **0.52** |
| | *0.03* | *0.06* | *0.11* | | *0.05* | | | *0.05* | *0.06* | *0.10* | *0.07* | *0.39* | *0.07* | |
| **Ukraine** | **-2.99** | **0.51** | **0.00** | **0.47** | **-0.12** | **-0.92** | **0.40** | **0.19** | **0.16** | **0.32** | **0.18** | **0.35** | **0.26** | **-0.04** |
| | *0.08* | *0.14* | *0.21* | *0.25* | *0.01* | *0.05* | *0.03* | *0.04* | *0.05* | *0.05* | *0.04* | *0.01* | *0.08* | |
| **United Kingdom** | **0.12** | **0.25** | **0.07** | **0.72** | **0.00** | **-0.05** | **0.15** | **-0.07** | **0.26** | **-** | **0.54** | **0.75** | **0.36** | **0.18** |
| | *0.40* | *0.14* | *0.08* | *0.06* | *0.01* | *0.08* | *0.04* | *0.08* | *0.04* | *-* | *0.04* | *0.01* | *0.07* | |
| **United States** | **0.17** | **0.09** | **0.02** | **0.53** | **-0.02** | **-0.13** | **0.17** | **-0.86** | **0.11** | **-** | **0.14** | **-2.95** | **0.23** | **0.07** |
| | *0.49* | *0.10* | *0.06* | *0.07* | *0.01* | *0.07* | *0.03* | *0.07* | *0.04* | *-* | *0.03* | *0.00* | *0.06* | |
| **Uruguay** | **-0.73** | **-1.11** | **-** | **-0.20** | **-0.14** | **-** | **0.19** | **-0.07** | **0.26** | **0.50** | **0.13** | **0.16** | **0.28** | **-0.32** |
| | *0.47* | *0.06* | *-* | *0.04* | *0.07* | *-* | *0.02* | *0.09* | *0.08* | *0.07* | *0.06* | *0.01* | *0.09* | |
| **Venezuela, RB** | **-0.45** | **-2.00** | **0.00** | **0.28** | **-0.18** | **-** | **-0.05** | **0.15** | **0.05** | **0.14** | **0.95** | **-** | **0.25** | **-0.07** |
| | *0.17* | *0.08* | *0.06* | *0.12* | *0.07* | *-* | *0.07* | *0.12* | *0.11* | *0.08* | *0.09* | *-* | *0.11* | |
| **Vietnam** | **-6.58** | **-0.05** | **0.05** | **-0.14** | **0.38** | **-** | **-0.61** | **0.17** | **0.19** | **0.80** | **0.98** | **-** | **0.25** | **-0.23** |
| | *0.06* | *0.23* | *0.34* | *0.06* | *0.06* | *-* | *0.01* | *0.05* | *0.05* | *0.06* | *0.06* | *-* | *0.07* | |
| **Yemen** | **-1.93** | **0.03** | **0.07** | **-0.42** | | | **-0.04** | **-0.84** | **0.22** | **0.25** | **0.38** | | **0.20** | **0.07** |
| | *0.01* | *0.15* | *0.27* | *0.02* | | | *0.17* | *0.03* | *0.06* | *0.06* | *0.18* | | *0.05* | |
| **Zambia** | **-1.58** | **-0.78** | **0.03** | **0.91** | **-** | **-** | **0.07** | **-1.33** | **0.09** | **0.15** | **0.21** | **0.21** | **0.53** | **0.04** |
| | *0.05* | *0.05* | *0.05* | *0.15* | *-* | *-* | *0.01* | *0.10* | *0.11* | *0.16* | *0.07* | *0.18* | *0.15* | |
| **Zimbabwe** | **0.82** | **0.32** | **0.22** | **-0.57** | **-0.02** | **-** | **0.20** | **-** | **0.20** | **0.06** | **0.21** | **0.10** | **0.40** | **0.06** |
| | *0.02* | *0.05* | *0.10* | *0.20* | *0.11* | *-* | *0.01* | *-* | *0.10* | *0.11* | *0.07* | *0.16* | *0.14* | |

*Source: Authors' calculations.*

*Note: Progress in bold. Normalized weights in italics. Dashes indicate missing values.*

## D. RANKING OF GEP INDEX-DASHBOARD PROFILES USING THE PROTECTIVE CRITERION (GEP+), 100 COUNTRIES BY HDI GROUP[72]

| Rank | *Country* | *Progress Greenhouse gas emissions* | *Progress Nitrogen emissions* | *Progress Land use* | *GEP Index* | *Protective criterion* | *HDI group* |
|---|---|---|---|---|---|---|---|
| **1** | Cyprus | 0,5566 | 0,5971 | **0,1800** | 0,5862 | 0,1800 | Very High |
| **2** | Portugal | 0,9080 | 0,7315 | 0,1120 | **0,0999** | 0,0999 | Very High |
| **3** | Spain | 1,3180 | 1,7082 | **0,0873** | 0,2118 | 0,0873 | Very High |
| **4** | Italy | 0,9423 | 1,9024 | **0,0664** | 0,2598 | 0,0664 | Very High |
| **5** | France | 0,8247 | 1,4731 | **0,0338** | 0,1664 | 0,0338 | Very High |
| **6** | Hungary | 0,6927 | 0,2506 | **0,0279** | 0,3902 | 0,0279 | Very High |
| **7** | Slovenia | 0,2241 | 0,8939 | **0,0238** | 0,4997 | 0,0238 | Very High |
| **8** | Japan | 0,1101 | 0,2728 | **0,0167** | 0,1120 | 0,0167 | Very High |
| **9** | Denmark | 1,5100 | 0,3706 | **0,0125** | 0,0640 | 0,0125 | Very High |
| **10** | Austria | 0,3920 | 3,3070 | **0,0093** | 0,1031 | 0,0093 | Very High |
| **11** | Germany | 0,5734 | 0,2181 | **0,0039** | 0,1664 | 0,0039 | Very High |
| **12** | United Kingdom | 1,3344 | 0,7411 | **0,0033** | 0,1655 | 0,0033 | Very High |
| **13** | United States | 1,6188 | 0,3984 | **0,0020** | 0,0823 | 0,0020 | Very High |
| **14** | Ireland | 2,3998 | 7,8447 | **0,0012** | 0,6197 | 0,0012 | Very High |
| **15** | Norway | 0,5814 | 1,0264 | **0,0006** | 0,1789 | 0,0006 | Very High |
| **16** | Sweden | 1,0784 | 0,5890 | **-0,0023** | 0,0443 | -0,0023 | Very High |
| **17** | New Zealand | 1,1858 | 4,7342 | **-0,0096** | 0,1482 | -0,0096 | Very High |
| **18** | Netherlands | 0,6090 | 1,4448 | **-0,0194** | 0,1519 | -0,0194 | Very High |
| **19** | Luxembourg | 0,6066 | 1,5436 | **-0,0331** | 0,2536 | -0,0331 | Very High |
| **20** | Greece | 0,8965 | 2,0803 | **-0,0410** | 0,2209 | -0,0410 | Very High |
| **21** | Croatia | 0,1319 | 3,7294 | **-0,0412** | 0,1999 | -0,0412 | Very High |
| **22** | Australia | 1,0147 | 0,6382 | -0,0017 | **-0,0601** | -0,0601 | Very High |
| **23** | Israel | **-0,0968** | 1,0527 | 0,0040 | 0,0676 | -0,0968 | Very High |
| **24** | Switzerland | 0,5174 | **-0,1158** | -0,0002 | 0,1830 | -0,1158 | Very High |
| **25** | Singapore | 0,6208 | 0,4228 | 0,0211 | **-0,1218** | -0,1218 | Very High |
| **26** | Finland | 1,3523 | **-0,2502** | 0,0018 | 0,1193 | -0,2502 | Very High |
| **27** | Slovak Republic | 0,6501 | **-0,5558** | 0,0319 | 0,0251 | -0,5558 | Very High |
| **28** | Czech Republic | 0,8040 | **-1,2523** | -0,0016 | 0,1637 | -1,2523 | Very High |
| **29** | Argentina | -0,4092 | **-1,4991** | 0,0000 | 0,1040 | -1,4991 | Very High |
| **30** | Estonia | -1,1256 | **-1,8189** | 0,0392 | 0,0647 | -1,8189 | Very High |
| **31** | Chile | -0,8764 | **-2,5840** | -0,0115 | 0,1501 | -2,5840 | Very High |
| **32** | Poland | -0,1675 | **-2,6289** | -0,0344 | 0,3607 | -2,6289 | Very High |
| **33** | Canada | 0,8991 | **-2,9238** | 0,0279 | 0,0837 | -2,9238 | Very High |
| **34** | Lithuania | -0,7701 | **-5,6591** | 0,0278 | -0,1224 | -5,6591 | Very High |
| **1** | Jamaica | 1,1022 | 0,4906 | 0,1682 | **0,1256** | 0,1256 | High |
| **2** | Azerbaijan | **-0,1942** | 0,0018 | 0,0010 | 0,2512 | -0,1942 | High |
| **3** | Jordan | **-0,2369** | 2,1228 | 0,0080 | 0,1523 | -0,2369 | High |
| **4** | Venezuela, RB | **-0,3027** | 0,3700 | 0,0227 | -0,0497 | -0,3027 | High |
| **5** | Tunisia | -0,2578 | **-0,4145** | -0,2814 | 0,3572 | -0,4145 | High |
| **6** | Sri Lanka | **-0,5340** | -0,0925 | 0,0116 | 0,1957 | -0,5340 | High |
| **7** | Georgia | **-0,5477** | 0,6552 | 0,3098 | -0,2141 | -0,5477 | High |

[72] Values used for the GEP index and progress on dashboard indicators are calculated as indicated in Section 4.5.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **8** | Costa Rica | -0,4737 | **-0,6461** | -0,1569 | -0,0891 | -0,6461 | High |
| **9** | Ecuador | **-0,6462** | -0,4292 | -0,0866 | 0,0564 | -0,6462 | High |
| **10** | Albania | **-0,7718** | 0,1146 | 0,3257 | -0,2399 | -0,7718 | High |
| **11** | Turkey | **-0,7919** | 0,4832 | -0,1036 | 0,0954 | -0,7919 | High |
| **12** | Mexico | -0,3093 | **-0,8069** | -0,0220 | 0,2270 | -0,8069 | High |
| **13** | Panama | **-0,9274** | -0,3762 | -0,0725 | 0,0533 | -0,9274 | High |
| **14** | Macedonia, FYR | -0,2745 | **-0,9729** | 0,0681 | -0,0505 | -0,9729 | High |
| **15** | Russian Federation | -0,9372 | **-0,9872** | 0,0007 | -0,0337 | -0,9872 | High |
| **16** | Colombia | 0,0524 | **-1,0919** | -0,0267 | -0,0170 | -1,0919 | High |
| **17** | Brazil | -0,5999 | **-1,2901** | 0,0057 | -0,0059 | -1,2901 | High |
| **18** | Thailand | -1,0979 | **-1,6503** | -0,3608 | 0,2018 | -1,6503 | High |
| **19** | Bulgaria | -0,5471 | **-1,7996** | 0,1097 | 0,5328 | -1,7996 | High |
| **20** | Peru | **-2,0653** | -0,1097 | -0,0293 | 0,3050 | -2,0653 | High |
| **21** | Ukraine | 0,0557 | **-3,1581** | 0,0061 | -0,0370 | -3,1581 | High |
| **22** | China | **-3,2993** | -2,0279 | -0,0600 | -0,2524 | -3,2993 | High |
| **23** | Uruguay | -0,6518 | **-3,5380** | 0,0032 | -0,2709 | -3,5380 | High |
| **24** | Kazakhstan | **-3,5675** | -0,0415 | 0,0031 | -0,0615 | -3,5675 | High |
| **25** | Malaysia | -0,9467 | **-4,3537** | 0,0000 | -0,0130 | -4,3537 | High |
| **26** | Latvia | -0,9756 | **-4,4217** | 0,0146 | -0,3275 | -4,4217 | High |
| **27** | Belarus | -1,1406 | **-6,8974** | -0,0003 | 0,3339 | -6,8974 | High |
| **1** | Dominican Republic | **-0,2539** | -0,2341 | 0,0000 | 0,2801 | -0,2539 | Medium |
| **2** | South Africa | **-0,3429** | 0,6564 | -0,0059 | -0,1977 | -0,3429 | Medium |
| **3** | Philippines | 0,1430 | 0,3621 | **-0,3572** | 0,1978 | -0,3572 | Medium |
| **4** | Honduras | **-0,3793** | 0,6753 | -0,1613 | 0,1329 | -0,3793 | Medium |
| **5** | Moldova | -0,3642 | **-0,3964** | 0,0698 | 0,2619 | -0,3964 | Medium |
| **6** | Nicaragua | -0,0863 | **-0,5288** | 0,0083 | 0,2183 | -0,5288 | Medium |
| **7** | Indonesia | -0,4693 | **-0,7168** | -0,6403 | -0,0452 | -0,7168 | Medium |
| **8** | Guatemala | 0,3714 | -0,5955 | **-0,7647** | 0,0849 | -0,7647 | Medium |
| **9** | Mongolia | -0,6466 | -0,7643 | 0,0000 | **-0,7955** | -0,7955 | Medium |
| **10** | Tajikistan | -0,4413 | **-0,8055** | -0,0539 | 0,1505 | -0,8055 | Medium |
| **11** | Cambodia | **-0,8244** | -0,4826 | -0,0127 | 0,5917 | -0,8244 | Medium |
| **12** | Algeria | **-0,9179** | 0,0181 | -0,0259 | 0,0011 | -0,9179 | Medium |
| **13** | Namibia | **-0,9917** | -0,2830 | -0,0014 | 0,2569 | -0,9917 | Medium |
| **14** | Bolivia | **-1,0924** | -0,4577 | -0,0084 | 0,1114 | -1,0924 | Medium |
| **15** | Morocco | **-1,3084** | 0,6232 | -0,1677 | 0,1105 | -1,3084 | Medium |
| **16** | Egypt, Arab Rep. | **-1,3579** | 0,4877 | -0,0759 | 0,1345 | -1,3579 | Medium |
| **17** | Kyrgyz Republic | **-1,7057** | 0,0264 | -0,0089 | 0,1132 | -1,7057 | Medium |
| **18** | India | **-2,1387** | -1,3690 | -0,2100 | 0,0097 | -2,1387 | Medium |
| **19** | El Salvador | -0,1210 | **-2,1525** | 0,2896 | 0,2504 | -2,1525 | Medium |
| **20** | Paraguay | -0,3540 | **-2,3336** | 0,0042 | 0,3182 | -2,3336 | Medium |
| **21** | Vietnam | **-3,4981** | 1,3180 | -1,1527 | -0,2795 | -3,4981 | Medium |
| **1** | Zimbabwe | 0,9104 | 0,2037 | **0,0000** | 0,0530 | 0,0000 | Low |
| **2** | Senegal | 0,2000 | 0,0080 | **-0,0052** | 0,1607 | -0,0052 | Low |
| **3** | Cameroon | 0,8613 | 0,0657 | **-0,1058** | 0,2448 | -0,1058 | Low |
| **4** | Mali | **-0,1776** | 1,7463 | -0,0061 | 0,1931 | -0,1776 | Low |
| **5** | Malawi | **-0,1796** | -0,1059 | -0,0265 | 0,2784 | -0,1796 | Low |
| **6** | Mozambique | 0,0602 | **-0,3168** | 0,0159 | 0,3059 | -0,3168 | Low |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **7** | Nepal | -0,2321 | **-0,3510** | -0,0045 | 0,2931 | -0,3510 | Low |
| **8** | Benin | **-0,3590** | 0,2255 | -0,0758 | -0,1081 | -0,3590 | Low |
| **9** | Togo | -0,2172 | 0,2122 | **-0,3677** | 0,2128 | -0,3677 | Low |
| **10** | Yemen, Rep. | **-0,4538** | -0,0658 | -0,0453 | 0,1525 | -0,4538 | Low |
| **11** | Cote d'Ivoire | -0,0265 | 0,1108 | **-0,4560** | 0,0197 | -0,4560 | Low |
| **12** | Uganda | **-0,4734** | -0,0145 | -0,0876 | 0,9029 | -0,4734 | Low |
| **13** | Ghana | -0,3247 | -0,3092 | **-0,5274** | 0,0497 | -0,5274 | Low |
| **14** | Bangladesh | -0,5303 | -0,2841 | **-0,7567** | 0,2639 | -0,7567 | Low |
| **15** | Zambia | 0,2273 | **-0,7643** | -0,0004 | 0,0406 | -0,7643 | Low |
| **16** | Pakistan | -0,7140 | **-0,9107** | -0,0544 | 0,1872 | -0,9107 | Low |
| **17** | Kenya | **-0,9732** | 0,0426 | -0,0940 | 0,0867 | -0,9732 | Low |
| **18** | Angola | **-1,5338** | -0,0450 | 0,0008 | 0,1811 | -1,5338 | Low |

*Source: Authors' calculations.*
*Note: Observations in bold indicate the minimun among all indicators. The ranking presented in this table is based on the following four categories: (a) the GEP Index; (b) greenhouse gas emissions; (c) nitrogen emissions; and (d) the share of land used as permanent crops. If the categories considered change, the ranking would vary as well. Note that each dashboard indicator is multiplied by its weight, while the GEP Index is multiplied by the average of the weights.*

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