



# *SDG 13: Climate action*

Take urgent action to combat climate change and its impacts



*With 193 governments coming together to agree a common framework to tackle 17 major world issues by 2030, business engagement to achieve them is seen as critical. So how do you understand the implications of the SDGs and prioritise them? How do you quantify and minimise the potential risks, and explore the opportunities?*

*This is an extract from PwC's Navigating the SDGs: a business guide to engaging with the UN Global Goals 2016 on SDG 13 Climate action. For more on the other 16 SDGs, go to [www.pwc.com/globalgoals](http://www.pwc.com/globalgoals)*



### ***What's the global challenge?***

- Climate change and weather extremes already affect millions of people around the world. Studies predict more frequent and severe events (**drought, heat waves, wildfires, sea level rise and floods**) causing damage to coastlines and crops, jeopardising **global food and water resources** and threatening **power supplies**. The costs of extreme weather events can be huge: Super Storm Sandy was estimated to have cost the US economy \$65 billion in damages.<sup>1,2</sup> Further issues identified by the most comprehensive review on the science of climate change (by the Intergovernmental Panel on Climate Change - IPCC) include threats to unique systems such as coral reefs, and large-scale singular events like the disintegration of the western Antarctic ice sheet which would raise sea level by 5 metres.<sup>3</sup>
- The IPCC's review predicted that everyone on the **planet is going to be affected in some way** by the impacts of climate change<sup>4</sup>, and that further warming will cause long-lasting changes, increasing the likelihood of severe, pervasive and irreversible impacts for people and ecosystems.<sup>5</sup>
- 195 nations adopted the **Paris Agreement** in December 2015: an international treaty aimed at stabilising atmospheric CO2 concentrations to limit warming to well below **2 degrees Celsius** and pursue efforts towards a 1.5 degree limit. The Paris Agreement also makes substantial financial provisions for **adapting** and **building resilience** to climate change, and for providing the **means of implementation** necessary for developing nations.<sup>6</sup>
- Warming of around **1.5 degrees Celsius is already locked in** from past and predicted emissions.<sup>7</sup> **2015 was the warmest year on record**, seeing average temperatures around the world reaching 1 degree Celsius above pre-industrial levels.<sup>8</sup> But if, instead of unchecked warming, the 2 degree warming limit is achieved, the **impacts** of climate change will be **lessened**: global sea-level rise may, for example, be limited to about 70 cm by the end of the century.<sup>9</sup>
- PwC's Low Carbon Economy Index estimates that to limit warming to 2 degrees Celsius, the world **economy** needs to **decarbonise** at a rate of 6.3 % every year,<sup>10</sup> a rate which has never yet been achieved. The need to **act swiftly** and effectively cannot be understated.

## Why does it matter for business? And what can business do?

Climate change is already impacting more than a third of businesses,<sup>11</sup> and if unmitigated, climate impacts will continue to increase the cost of doing business.

- ▶ The increased probability and frequency of extreme events such as flood and drought can have a big impact on the private sector, **disrupting operations, logistics, supply and distribution**. Events may directly **damage facilities**, or indirectly affect business via damage to the systems it relies upon such as **transportation, telecommunications and power supplies**.
- ▶ **Delays in production** might be caused by power outages or a shortage in supplies; while sometimes **facilities** may have to be **shut down** altogether. Such **interruptions or intermittent closures can** be catastrophic for business.
- ▶ To address these challenges, one of the most fundamental actions is for companies to **build climate change awareness** into their businesses. That means engaging employees at all levels; talking to them about their views and increasing their ability to build resilience into the business and manage risks in the longer term.

**?** *How climate aware are your managers and employees? Are you confident of their capacity to address the impacts climate change will have on your business?*

- ▶ It is critical for **climate risk** to be **incorporated** into **risk assessment**, and **business continuity** and **risk management** procedures. Companies need to plan not only for the likely increase in frequency of extreme events but also the size of impact – this enables them to make better decisions about how and where to **build climate resilience** into their operations and across their value chain. **Risk assessments** need to be **reviewed regularly** to ensure risk profiles, addressing both probability and impact, remain consistent with the latest climate science and scenarios.

**?** *Do you have risk assessment and risk management processes in place for potential future climate change impacts? Do they address your supply chain and your customers and markets? Do you consider how climate might impact the needs of your customers? How regularly are you reviewing your risk assessments?*

**?** *Does your company have operations based plans and measures in place to prepare for and manage disasters and build resilience to climatic shocks and disasters? Do you have similar plans and measures in place to prepare for and manage disasters affecting your supply chain, and to build supply chain resilience to shocks and disasters?*

### You could also think about:

**?** *How you could support development of public policy in the transition to a low carbon climate resilient economy.*

For example:

Each signatory country to the treaty **UN Paris Agreement** will be developing **implementation plans** for their submitted plans of action ('Intended Nationally Determined Contributions' (INDCs) in UN parlance). You could seek to **engage with governments** in the countries in which you operate to support them in this process, helping to shape a swift and effective course of action.

There are a number of **business membership organisations, such as WBCSD or IETA**, to which you can sign up and contribute to the overall industry conversation on the role of business in climate action. Most recently, for example, a campaign called 'We mean Business', has brought together a **coalition of organisations** working with thousands of the world's most influential businesses and investors. Their purpose is to "accelerate [the transition to a low carbon economy by forming] a common platform to **amplify the business voice**, catalyse bold climate action by all, and promote smart policy frameworks."<sup>12</sup>

**You could also consider looking into clean finance** – building on actions and pledges made in 2015, some financial institutions are now considering whether the Paris Agreement presents **new investment opportunities in low carbon infrastructure** (for more examples please see **Goal 7 – Affordable and clean energy**). Others are **looking at their energy portfolios and revising their investment policies** – particularly with respect to coal mining and power generation.<sup>13</sup>

Sources:

World Business Council for Sustainable Development (WBCSD) – Energy and Climate Work Stream<sup>14</sup>

UN Framework Convention on Climate Change (UNFCCC) – Adaptation Private Sector Initiative<sup>15</sup>

UN Global Compact (UNGC) – Caring for Climate Initiative<sup>16</sup>

# \$1.9tr

*By 2100, four global warming impacts alone – hurricane damage, real estate losses, energy costs, and water costs – will come with a price tag of almost \$1.9 trillion annually (in today's dollars) or 1.8% of US GDP.*

(Source: The cost of climate change, 2008)

**Key links to other SDGs:**



As the impacts of climate change are global and wide ranging, connections can be drawn with many other goals. Here are the key links of which to be aware:

**Goal 2 – Zero hunger:** reduced crop yields and losses in livestock and fishery productivity will drive food insecurity, especially in vulnerable regions. Studies suggest that warming (1.2°C - 1.9°C by 2050) in sub-Saharan Africa could increase the proportion of the undernourished population by 25-90% compared to the present<sup>17</sup>.

**Goal 3 – Good health and well-being:** climate change will likely lead to greater spread of vector- and water-borne diseases, such as malaria and cholera. This will be driven by changes in the climate, extending the areas which meet the conditions for disease to spread. Warming (2°C by 2040) is projected to increase the relative risk of malaria by 5% in 2050.

**Goal 6 – Clean water and sanitation:** global water availability is already under pressure from population growth, and uneven distribution. With projected temperature increases, the pressure on water resources is likely to grow. Declines of 20% in water availability are projected for many regions in the event of a 2°C warming and of 50% for some regions in the event of a 4°C warming<sup>18</sup>.

**Goal 7 – Affordable and clean energy:** energy is the source of 40% of man-made emissions<sup>19</sup>. Therein lies a risk and an opportunity for business. The risk is that without managing a transition to low-carbon, renewable energy technologies, our ability to limit global temperature increase to a safe level will be restricted. The opportunity is for companies to switch to newer, cleaner technologies, ultimately helping to future-proof as well as differentiate their business.

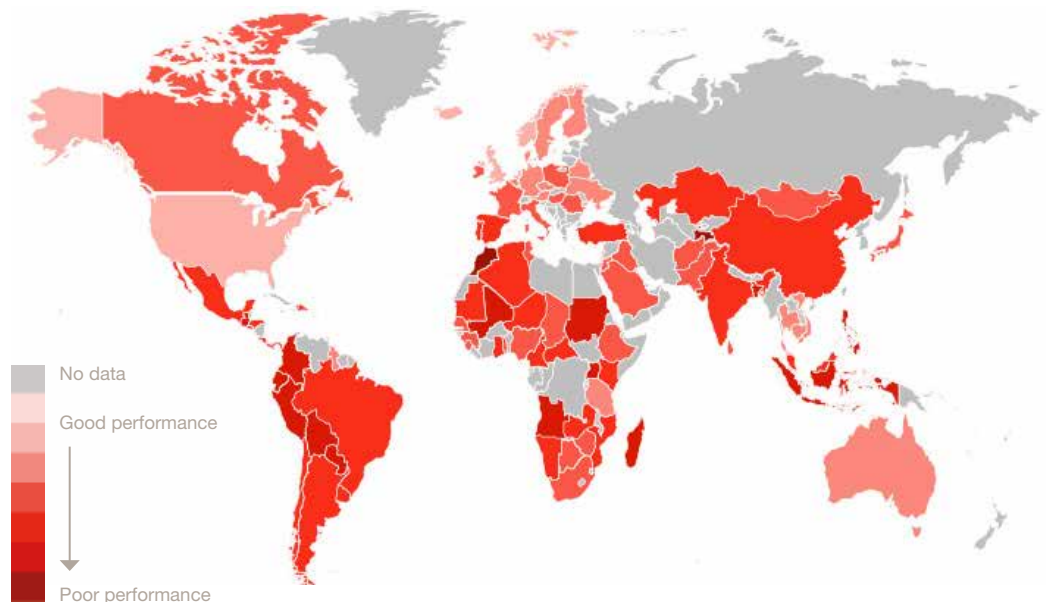
**Goal 14 – Life below water:** temperature increase and acidification of the oceans from climate change are expected to extensively damage coral reefs systems around the world, leading to drops in fishery production. In addition, damage to marine ecosystems from acidification could lead to disruption of food webs, loss of tourism and other human activities connected to the seas and would also have serious impacts on food security.

**Targets  
in focus**

This SDG has five targets, the first of which is “Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries”. The target shown in the heat map is “Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning”. For details on the remaining targets, please see ‘Global Goals and targets’ on page 6.

**The lie of the land – exploring the distance to cover to achieve**

**Target 13.3: Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning**



## Case Study

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**Company:** Adnams

**Sector:** Brewery

**Region/country of impact:**  
UK/Global

**Aligns to:** SDG 12 and SDG 13

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### Adnams produced the first carbon neutral beer, East Green

**Global Challenge:** Millions of people around the world are affected every year by climate change and weather extremes. To mitigate the impact of climate change, all countries and industries need to make a transition into becoming low-carbon economies. This means that businesses need to take active steps towards developing sustainable production practices that result in sustainable consumption.

**Business Response:** Adnams, the brewery based in Suffolk, decided to assess the carbon footprint of the production and distribution of their products. They looked at their product lifecycle from farm to delivery and were able to target the key parts of the process where emissions could be cut. From this, they developed their carbon neutral beer, East Green. It is brewed in a brewery with an Energy Recovery System which recycles 100% of the steam created, to be used to heat 90% of the following brew. The barley used is grown locally in Suffolk and the Boadicea hops used are naturally aphid-resistant.

**Benefits:** East Green was created as part of a sustainable production plan and a reduction in carbon-emissions plan. The most important benefit to Adnams is that East Green is sustainable and hopefully similar production methods can be implemented both by Adnams and by other breweries to create more carbon neutral beers with a good taste. The study of their carbon lifecycle enabled Adnams to quantify the risks to their supply chain, and identify opportunities to take on more sustainable practices and build resilience to a changing climate. By sourcing the barley locally, they are helping to fund local employment as well as reducing CO2 emissions released during transportation and its transportation costs. The aphid-resistant hops reduces the use of pesticides which is better for biodiversity and importantly, bees.

Source: Adnams

<http://adnams.co.uk/about/news/beer-news/adnams-launches-carbon-neutral-beer-on-draught/>

<http://adnams.co.uk/about/news/beer-news/east-green-%E2%80%93-the-first-carbon-neutral-beer-from-the-coast/>

# Global Goals and targets

Please note 'Targets' are referenced as n.1 n.2 n.3 etc. 'The means of implementing the targets' are referenced as n.a n.b n.c etc.



## Goal 13. Take urgent action to combat climate change and its impacts\*

- 13.1 Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries
  - 13.2 Integrate climate change measures into national policies, strategies and planning
  - 13.3 Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning
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- 13.a Implement the commitment undertaken by developed-country parties to the United Nations Framework Convention on Climate Change to a goal of mobilizing jointly \$100 billion annually by 2020 from all sources to address the needs of developing countries in the context of meaningful mitigation actions and transparency on implementation and fully operationalize the Green Climate Fund through its capitalization as soon as possible
  - 13.b Promote mechanisms for raising capacity for effective climate change-related planning and management in least developed countries, including focusing on women, youth and local and marginalized communities

\* Acknowledging that the United Nations Framework Convention on Climate Change is the primary international, intergovernmental forum for negotiating the global response to climate change.

## Sources

- 1 C2ES, Building Business Resilience to Climate Change, 2013 <http://bit.ly/1pyWRs9>, and <http://bit.ly/1QOfTkT>
- 2 National Oceanic and Atmospheric Administration (NOAA), Billion-Dollar Weather and Climate Disasters: Table of Events webpage <http://www.ncdc.noaa.gov/billions/events>
- 3 PwC, IPCC AR5 Synthesis Report, 2014 <http://bit.ly/1q3FvDP>
- 4 Davidson, H. and Vaughan, A., Climate change report: 'The worst is yet to come'. Guardian Newspaper, 2014 <http://bit.ly/1i6GcSH>
- 5 PwC, Briefing: IPCC AR5 Synthesis Report, November 2014 <http://pwc.blogs.com/files/pwc-briefing---ipcc-synthesis-report-6-nov-2014.pdf>
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- 7 World Bank, Turning down the heat: the new climate normal, 2014 <http://bit.ly/11LKaO5>
- 8 NASA, Analyses Reveal Record-Shattering Global Warm Temperatures in 2015, press release, 2015 <http://go.nasa.gov/1OG1KVO>
- 9 World Bank, Climate Extremes, Regional Impacts, and the Case for Resilience, 2013 <http://bit.ly/1B1p5An>
- 10 PwC UK, Low Carbon Economy Index 2015 | Conscious uncoupling?, 2015 <http://pwc.to/1LXtIX>
- 11 C2ES, Building Business Resilience to Climate Change, 2013 <http://bit.ly/1pyWRs9>, and <http://bit.ly/1QOfTkT>
- 12 We Mean Business webpage <http://wemeanbusinesscoalition.org>
- 13 PwC, What's changed since the Paris climate summit?, 2016 <http://bit.ly/1Lv9Nta>
- 14 WBSCD, Energy and Climate Focus Area, 2016 <http://www.wbcsd.org/work-program/energy-and-climate.aspx>
- 15 UNFCCC, Adaptation to Climate Change - Private Sector Initiative webpage [http://unfccc.int/adaptation/workstreams/nairobi\\_work\\_programme/items/4623.php](http://unfccc.int/adaptation/workstreams/nairobi_work_programme/items/4623.php)
- 16 UN Global Compact, UNFCC & UN Environment Programme, Caring for Climate webpage <http://caringforclimate.org/>
- 17 World Bank, Climate Extremes, Regional Impacts, and the Case for Resilience, 2013 <http://bit.ly/1B1p5An>
- 18 World Bank, Climate Extremes, Regional Impacts, and the Case for Resilience, 2013 <http://bit.ly/1B1p5An>
- 19 Foster, V., & Bedrosyan, D., Understanding CO2 emissions from the global energy sector, 2014 <http://bit.ly/1QJfxj3>

## How well are countries performing against the indicators that sit behind the SDG goals and targets?

### SDG 13 Indicator Profile: CO2 emissions from energy

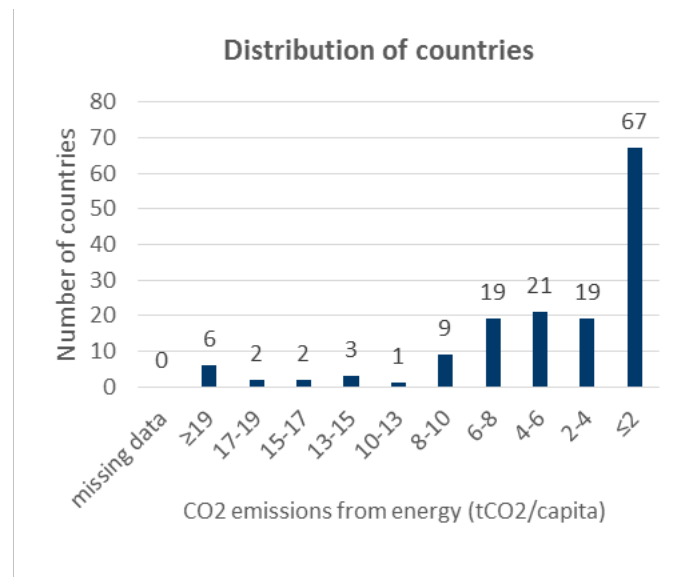
(NB. this table is from the SDG Index & Dashboards - Global Report)



### CO2 emissions from energy (tCO2/capita)

Country	Value/Rating
Chad	0 ●
Burundi	0 ●
Congo, Dem. Rep.	0.1 ●
Uganda	0.1 ●
Madagascar	0.1 ●
Burkina Faso	0.1 ●
Mali	0.1 ●
Rwanda	0.1 ●
Mozamb.	0.1 ●
Ethiopia	0.1 ●
CAR	0.1 ●
Niger	0.1 ●
Malawi	0.1 ●
Guinea	0.2 ●
Haiti	0.2 ●
Nepal	0.2 ●
Tanzania	0.2 ●
Lao PDR	0.2 ●
Sierra Leone	0.2 ●
Zambia	0.2 ●
Myanmar	0.2 ●
Gambia	0.2 ●
Liberia	0.2 ●
Cote d'Ivoire	0.3 ●
Cameroon	0.3 ●
Togo	0.3 ●
Sudan	0.3 ●
Kenya	0.3 ●
Cambodia	0.3 ●
Ghana	0.4 ●
Afghanistan	0.4 ●
Tajikistan	0.4 ●
Bangladesh	0.4 ●
Congo, Rep.	0.5 ●
Nigeria	0.5 ●
Benin	0.5 ●
Senegal	0.6 ●
Mauritania	0.6 ●
Guatemala	0.7 ●
Sri Lanka	0.7 ●
Zimbabwe	0.7 ●
Bhutan	0.8 ●
Nicaragua	0.8 ●

Country	Value/Rating
Paraguay	0.8 ●
Yemen	0.9 ●
Philippines	0.9 ●
Pakistan	0.9 ●
Swaziland	0.9 ●
Cabo Verde	0.9 ●
El Salvador	1.1 ●
Honduras	1.1 ●
Lesotho	1.1 ●
Kyrgyzstan	1.2 ●
Namibia	1.2 ●
Moldova	1.4 ●
Gabon	1.4 ●
Angola	1.4 ●
Colombia	1.6 ●
Bolivia	1.6 ●
Albania	1.6 ●
Armenia	1.7 ●
Costa Rica	1.7 ●
Morocco	1.7 ●
India	1.7 ●
Peru	1.8 ●
Vietnam	2 ●
Georgia	2 ●
Dominican Republic	2.2 ●
Brazil	2.2 ●
Botswana	2.3 ●
Uruguay	2.3 ●
Indonesia	2.3 ●
Tunisia	2.4 ●
Ecuador	2.4 ●
Guyana	2.4 ●
Panama	2.6 ●
Egypt	2.6 ●
Jamaica	2.9 ●
Mauritius	3.1 ●
Algeria	3.3 ●
Jordan	3.6 ●
Azerbaijan	3.6 ●
Suriname	3.6 ●
Latvia	3.8 ●
Mexico	3.9 ●
Montenegro	4.1 ●
Romania	4.2 ●



Country	Value/Rating
Iraq	4.2 ●
Singapore	4.3 ●
Turkey	4.4 ●
Lithuania	4.5 ●
Macedonia	4.5 ●
Thailand	4.5 ●
Switzerland	4.6 ●
Chile	4.6 ●
Argentina	4.6 ●
Portugal	4.7 ●
Lebanon	4.7 ●
Croatia	4.8 ●
Hungary	4.9 ●
France	5.2 ●
Sweden	5.5 ●
Spain	5.8 ●
Iceland	5.9 ●
Malta	6 ●
Bosnia and Herzegovina	6.2 ●
Ukraine	6.3 ●
Slovakia	6.4 ●
Venezuela	6.4 ●
Belarus	6.7 ●
Bulgaria	6.7 ●
Italy	6.7 ●
Cyprus	6.7 ●
China	6.7 ●
Serbia	6.8 ●
Mongolia	6.9 ●
UK	7.1 ●
New Zealand	7.1 ●

Country	Value/Rating
Denmark	7.2 ●
Slovenia	7.5 ●
Greece	7.6 ●
Austria	7.8 ●
Iran	7.8 ●
Ireland	7.9 ●
Malaysia	7.9 ●
Poland	8.3 ●
Belgium	8.8 ●
Germany	8.9 ●
Israel	9 ●
Norway	9.2 ●
Japan	9.3 ●
South Africa	9.3 ●
Netherlands	10.1 ●
Finland	10.2 ●
Czech Republic	10.4 ●
Korea, Rep.	11.8 ●
Russia	12.6 ●
Estonia	14 ●
Canada	14.1 ●
Kazakhstan	15.8 ●
Australia	16.5 ●
USA	17 ●
Saudi Arabia	18.1 ●
Oman	20.2 ●
UAE	20.4 ●
Luxemb.	20.9 ●
Kuwait	28.1 ●
Trinidad and Tobago	37.1 ●
Qatar	44 ●

Source : Oak Ridge National Laboratory (2012). Years : 2011. Detailed metadata and quantitative thresholds used for each indicator are available online at [www.sdgindex.org](http://www.sdgindex.org). Data refer to the most recent year available during the period specified.

## How well are countries performing against the indicators that sit behind the SDG goals and targets?

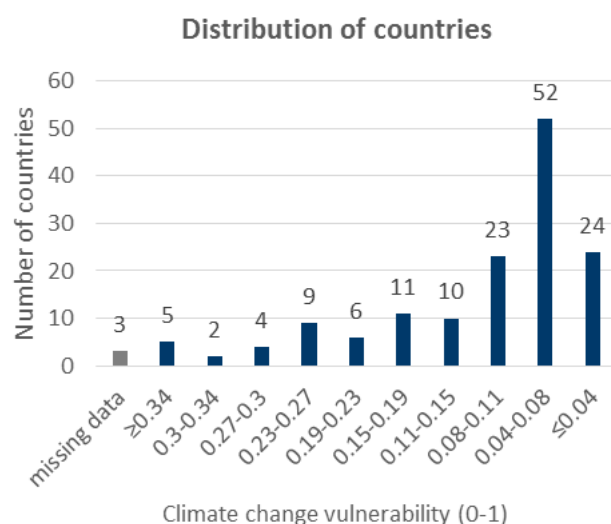
### SDG 13 Indicator Profile: Climate change vulnerability

(NB. this table is from the SDG Index & Dashboards - Global Report)



### Climate change vulnerability (0-1)

Country	Value/Rating	Country	Value/Rating
Luxemb.	0.01 ●	Greece	0.05 ●
Switzerland	0.02 ●	Iceland	0.05 ●
Belarus	0.02 ●	Jordan	0.05 ●
Austria	0.02 ●	Algeria	0.05 ●
Czech Republic	0.02 ●	Armenia	0.05 ●
Hungary	0.02 ●	Panama	0.05 ●
Slovakia	0.02 ●	Venezuela	0.05 ●
Slovenia	0.02 ●	Argentina	0.05 ●
Bulgaria	0.02 ●	Cyprus	0.05 ●
Saudi Arabia	0.02 ●	Dominican Republic	0.05 ●
Serbia	0.02 ●	Botswana	0.05 ●
Germany	0.03 ●	Congo, Rep.	0.05 ●
Sweden	0.03 ●	Singapore	0.06 ●
Finland	0.03 ●	New Zealand	0.06 ●
France	0.03 ●	Belgium	0.06 ●
Canada	0.03 ●	Lebanon	0.06 ●
Portugal	0.03 ●	Brazil	0.06 ●
Poland	0.03 ●	Uruguay	0.06 ●
Lithuania	0.03 ●	Colombia	0.06 ●
Kazakhstan	0.03 ●	Costa Rica	0.06 ●
Russia	0.03 ●	Cote d'Ivoire	0.06 ●
Croatia	0.03 ●	El Salvador	0.06 ●
Romania	0.03 ●	Bhutan	0.06 ●
Macedonia	0.03 ●	Cameroon	0.06 ●
Italy	0.04 ●	Georgia	0.06 ●
Ireland	0.04 ●	Spain	0.07 ●
Korea, Rep.	0.04 ●	Japan	0.07 ●
Norway	0.04 ●	Tunisia	0.07 ●
Estonia	0.04 ●	Malaysia	0.07 ●
Chile	0.04 ●	Iraq	0.07 ●
UAE	0.04 ●	Ecuador	0.07 ●
USA	0.04 ●	Guinea	0.07 ●
Turkey	0.04 ●	Congo, Dem. Rep.	0.07 ●
Mexico	0.04 ●	Gabon	0.07 ●
Moldova	0.04 ●	Denmark	0.08 ●
Ukraine	0.04 ●	Montenegro	0.08 ●
Oman	0.04 ●	Nigeria	0.08 ●
Trinidad and Tobago	0.04 ●	Uganda	0.08 ●
Bosnia and Herzegovina	0.04 ●	Angola	0.08 ●
Yemen	0.04 ●	Indonesia	0.08 ●
UK	0.05 ●	Qatar	0.09 ●
Israel	0.05 ●	Egypt	0.09 ●



Country	Value/Rating	Country	Value/Rating
Kuwait	0.09 ●	Namibia	0.18 ●
Morocco	0.09 ●	Lao PDR	0.19 ●
South Africa	0.09 ●	Rwanda	0.19 ●
Guatemala	0.09 ●	Sierra Leone	0.19 ●
Haiti	0.09 ●	Zambia	0.2 ●
Latvia	0.1 ●	Benin	0.2 ●
Honduras	0.1 ●	Myanmar	0.2 ●
Ghana	0.1 ●	Gambia	0.21 ●
Jamaica	0.1 ●	Netherlands	0.22 ●
Nicaragua	0.1 ●	Tajikistan	0.22 ●
Kyrgyzstan	0.1 ●	Thailand	0.23 ●
Nepal	0.1 ●	Mozamb.	0.23 ●
Peru	0.11 ●	Burundi	0.23 ●
Bolivia	0.11 ●	Vietnam	0.24 ●
Philippines	0.11 ●	Sudan	0.24 ●
Mongolia	0.12 ●	India	0.25 ●
Pakistan	0.12 ●	Albania	0.25 ●
Madagascar	0.12 ●	Mauritania	0.25 ●
Afghanistan	0.12 ●	Bangladesh	0.26 ●
Paraguay	0.13 ●	Kenya	0.27 ●
Burkina Faso	0.13 ●	Ethiopia	0.27 ●
Tanzania	0.14 ●	Suriname	0.27 ●
Sri Lanka	0.14 ●	Liberia	0.28 ●
Australia	0.15 ●	China	0.34 ●
Togo	0.15 ●	CAR	0.34 ●
Azerbaijan	0.16 ●	Swaziland	0.37 ●
Chad	0.16 ●	Cambodia	0.38 ●
Mali	0.16 ●	Niger	0.41 ●
Zimbabwe	0.17 ●	Malawi	0.42 ●
Iran	0.17 ●	Guyana	0.43 ●
Senegal	0.17 ●	Cabo Verde	n/a ●
Lesotho	0.17 ●	Malta	n/a ●
		Mauritius	n/a ●

Source : The Hague Center for Strategic Studies (2014). Years : 2014. Detailed metadata and quantitative thresholds used for each indicator are available online at [www.sdgindex.org](http://www.sdgindex.org). Data refer to the most recent year.



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