

# Annex to chapter 15

## 1. Data for SDG 15

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SDG 15 comprises 12 targets and a total of 14 indicators (seven of which contain multiple subindicators). Of these indicators, seven are tier I, four are tier II, and one is tier III for which data are not available, as the indicators are still in the process of methodological definition. In addition, two indicators (15.a.1 and 15.b.1) are labeled as “tier I/III” and they are an exact repetition of each other and thus have identical data sets.

The United Nations Statistics Division provides data sets for a total of nine indicators: 15.1.1 - Forest area as a proportion of total land area; 15.1.2 - Proportion of important sites for terrestrial and freshwater biodiversity that are covered by protected areas, by ecosystem type; 15.2.1 - Progress towards sustainable forest management; 15.4.1 - Coverage by protected areas of important sites for mountain biodiversity; 15.4.2- Mountain Green Cover Index; 15.5.1 - Red List Index; 15.6.1 - Number of countries that have adopted legislative, administrative and policy frameworks to ensure fair and equitable sharing of benefits; 15.a.1 - Official development assistance and public expenditure on conservation and sustainable use of biodiversity and ecosystems; and 15.b.1 - Official development assistance and public expenditure on conservation and sustainable use of biodiversity and ecosystems (the same as 15.a.1). None of the provided data sets includes sex disaggregated data.

The data used in the analysis of SDG 15 was downloaded on 28 September 2018. After a country level data check following a major United Nations Statistics Division Global SDG Indicators Database update on 8 July 2019, one data series of 15.1.2 (Average proportion of terrestrial Key Biodiversity Areas (KBAs) covered by protected areas (percentage)), one data series of 15.4.1 (Average proportion of mountain KBAs covered by protected areas (percentage)), and one data series of 15.a.1 (Total official development assistance for biodiversity, by recipient countries (millions of constant 2017 United States dollars)) are replaced with amended data.

We examine data availability in the Arab region and implement data substitution, when needed, based on the criterion of having to cover half or more of the total population of the Arab region and at least one third of the Arab countries for an indicator/subindicator to be kept in the analysis. When there are many subindicators that mean the same but are expressed differently (as in the case of a pair of series under indicator 15.2.1), we choose the one among them that is more representative and easier to interpret, and has more data availability. This leads us to omit one of the six series of 15.2.1, keeping “Above-ground biomass in forest per hectare (in tonnes per hectare)” instead.

Indicator 15.1.1 has three series: “Forest area as a proportion of total land area (percentage)”, “Forest area (thousands of hectares)”, and “Land area (thousands of hectares)”; where the first series is equal to the second divided by the third series and then multiplied by 100. Therefore, we only keep the first series, which is also the most meaningful and representative of the indicator, and we drop the other two. Similarly, 15.4.2 has three series: “Mountain green cover area (square kilometres)”, “Mountain area (square kilometres)”, and “Mountain Green Cover Index”; where the last series is equal to the first series divided by the second series and then multiplied by 100. Therefore, we only keep the last series, which is also the most meaningful and representative of the indicator, and we drop the other two.

No data substitution was made for two subindicators under 15.6.1 (Countries that are contracting Parties to the International Treaty on Plant Genetic Resources for Food and Agriculture (PGRFA) (1 = YES; 0 = NO)) and (Countries that have legislative, administrative and policy framework or measures reported through the Online Reporting System on Compliance of the International Treaty on PGRFA (1 = YES; 0 = NO)).

Furthermore, no substitution was made for any of the following: both subindicators of 15.1.2 (Average proportion of terrestrial KBAs covered by protected areas (percentage)) and (Average proportion of freshwater KBAs covered by protected areas (percentage)), indicator 15.4.1, the preserved subindicator of 15.4.2 (Mountain Green Cover Index), and indicator 15.5.1. No substitution is made because data are complete or nearly complete for the base year (2017) or substitution is not possible within the considered time interval (2009–2017).

The rest of the indicators/subindicators are subject to our data substitution scheme for the year 2017, considering the data spanning 2009–2017. Table 15.1 shows the number of substituted data points for each year, including those from Arab countries.

**Table 15.1. Data substitution scheme for selected indicators and subindicators**

Indicator or subindicator	Number of substituted data points (Arab)	Year
15.1.1 (Forest area as a proportion of total land area (percentage))	233 (22)	2015
15.2.1 (Above-ground biomass in forest per hectare (tonnes per hectare))	164 (14)	2015
15.2.1 (Forest area certified under an independently verified certification scheme (thousands of hectares))	233 (22)	2015
15.2.1 (Proportion of forest area within legally established protected areas (percentage))	152 (12)	2015
	6 (1)	2010
15.2.1 (Forest area net change rate (percentage))*	223 (21)	2015
15.2.1 (Proportion of forest area with a long-term management plan (percentage))	121 (11)	2010
	1 (0)	2016
15.6.1 (Countries that are parties to the Nagoya Protocol (1 = YES; 0 = NO))	1 (1)	2015
	1 (0)	2014
15.6.1 (Countries that have legislative, administrative and policy framework or measures reported to the Access and Benefit-Sharing Clearing-House (1 = YES; 0 = NO))	1 (0)	2013
	192 (21)	2012
15.6.1 (Countries that have legislative, administrative and policy framework or measures reported to the Access and Benefit-Sharing Clearing-House (1 = YES; 0 = NO))	1 (0)	2016
	1 (1)	2015
15.6.1 (Countries that have legislative, administrative and policy framework or measures reported to the Access and Benefit-Sharing Clearing-House (1 = YES; 0 = NO))	1 (0)	2014
	1 (0)	2013
15.6.1 (Countries that have legislative, administrative and policy framework or measures reported to the Access and Benefit-Sharing Clearing-House (1 = YES; 0 = NO))	192 (21)	2012
	3 (1)	2016
15.a.1 (Total official development assistance for biodiversity, by recipient countries (millions of constant 2017 United States dollars))	1 (0)	2013
	5 (1)	2010

\* Substitution is technically not possible and thus was not conducted, as this subindicator measures the forest area net change rate between 2010 and 2015 (simple percentage change in forest area over a five-year time range). However, since the latest data available for this series, which is also nearly complete, is in 2015 (i.e. no data is available for it in 2016 or 2017), we consider the 2015 data as that of our base year (2017).

We drop the fifth subindicator of 15.6.1 (Total reported number of Standard Material Transfer Agreements (SMTAs)) because it is mentioned in the SDG Indicators Metadata Repository as an indicator to “provide complementary information”, when we prefer to focus on analysing the core indicators. Moreover, we note that, in the data set provided by the United Nations Statistics Division after the major data update of June 2018, the data series of this subindicator seems to be mistakenly the same as that of another subindicator (Countries that have legislative, administrative and policy framework or measures reported to the Access and Benefit-Sharing Clearing-House).

Finally, for 15.a.1, we drop the first series which represents the total official development assistance (ODA) for biodiversity by donor (where data are provided for only 28 donor countries) and only keep the other one, which represents ODA for biodiversity by recipient. The second series, which we keep, reflects the distribution of ODA to recipient countries and thus the pattern of the ODA contributions of donor countries, knowing that donor countries are in the driving seat in development financing. Therefore, these results can help with the formulation of policy recommendations as they indicate if there is need for donor countries to alter the amount of ODA that they pledge for biodiversity or to reconsider the countries/regions that they target.

This leaves us with 17 integral indicators/subindicators with which we can assess the position of the region by 2030, as noted in box 15.1.

Box 15.1	Summary list of preserved and examined indicators/subindicators
	<ul style="list-style-type: none"> <li>• Indicator 15.1.1 – 1 series out of 3 – Forest area as a proportion of total land area</li> <li>• Indicator 15.1.2 – 2 series out of 2 – Proportion of important sites for terrestrial and freshwater biodiversity that are covered by protected areas, by ecosystem type</li> <li>• Indicator 15.2.1 – 5 series out of 6 – Progress towards sustainable forest management</li> <li>• Indicator 15.4.1 – Coverage by protected areas of important sites for mountain biodiversity</li> <li>• Indicator 15.4.2 – 1 series out of 3 – Mountain Green Cover Index</li> <li>• Indicator 15.5.1 – Red List Index</li> <li>• Indicator 15.6.1 – 4 series out of 5 – Number of countries that have adopted legislative, administrative and policy frameworks to ensure fair and equitable sharing of benefits</li> <li>• Indicator 15.a.1 – 1 series out of 2 – Official development assistance and public expenditure on conservation and sustainable use of biodiversity and ecosystems</li> <li>• Indicator 15.b.1 – 1 series out of 2 – Official development assistance and public expenditure on conservation and sustainable use of biodiversity and ecosystems (same as 15.a.1)</li> </ul>

However, we lose the ability to determine the region’s position on the rest of the targets and indicators as noted in box 15.2, including those listed in table 15.2 on targets, indicators, tiers and data availability in Arab countries for SDG 15, but that do not have sufficient data.

Box 15.2	Summary list of omitted targets
	<ul style="list-style-type: none"> <li>• 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</li> <li>• 15.7 Take urgent action to end poaching and trafficking of protected species of flora and fauna and address both demand and supply of illegal wildlife products</li> <li>• 15.8 By 2020, introduce measures to prevent the introduction and significantly reduce the impact of invasive alien species on land and water ecosystems and control or eradicate the priority species</li> <li>• 15.9 By 2020, integrate ecosystem and biodiversity values into national and local planning, development processes, poverty reduction strategies and accounts</li> </ul>

- 15.c Enhance global support for efforts to combat poaching and trafficking of protected species, including by increasing the capacity of local communities to pursue sustainable livelihood opportunities

We note that two subindicators of 15.1.2 and indicator 15.4.1 are disaggregated by “value type” based on the “geographic location (point) and/or boundary (polygon)” of the sites or areas measured,<sup>1</sup> and that thus we only use the “mid-point” values which make the averages of the upper and lower boundaries. Furthermore, indicator 15.5.1 (Red List Index) is also disaggregated by “value type” but based on the assumption of whether all the data-deficient species are threatened (upper bound), none of them are threatened (lower bound), or the fraction of them that is threatened is the same as that of the data-sufficient species that are threatened (mid-point). According to the original source (IUCN, 2015), when the first leads to overestimated or pessimistic results on extinction risk and the second leads to underestimated or optimistic results, the third (the mid-point) is the best estimate and closer to the true value. Hence, we only consider the mid-point values which are actually the averages of the other two.

For indicator 15.a.1, the exact repetition of indicator 15.b.1, the main data set provided by the United Nations Statistics Division (that of the series which we kept) only includes recipient countries and omits the donor countries that then, by the nature of construction of a full matrix consisting of all countries in the world, take missing values, which are de facto zeroes. Hence, 21 Arab countries are covered by data.

Annex 15.2 contains a graph for each of the evaluated series/indicators, showing the country level data values of the series/indicator for the years whose data points were used for every included country.

Indicator 15.5.1 (The Red List Index) can not be aggregated to the regional or global level:

"While global Red List Indices can be disaggregated to show trends for species at smaller spatial scales, the reverse is not true. National or regional Red List Indices cannot be aggregated to produce Red List Indices showing global trends. This is because a taxon's global extinction risk has to be evaluated at the global scale and cannot be directly determined from multiple national scale assessments across its range (although the data from such assessments can be aggregated for inclusion in the global assessment)" (SDG Indicators Metadata Repository).

The global, regional, and subregional aggregates of 15.5.1 and all four series of 15.6.1 are calculated as unweighted means, while one series of 15.2.1 and 15.a.1 (same as 15.b.1), they are calculated using a total sum. The aggregates of all the other series and indicators are calculated using a weighted average. The method of aggregation, in general, as well as the weighting variables to be used for the weighted averages and the weighting variables' properties are all chosen based on what is advised by the corresponding SDG Indicators Metadata Repository or by the original source of the corresponding data that is referred to by this metadata. If none of these two references advise on the aggregation methods or weights, the decisions are made based on the most common scientific logic fitting the case and its feasibility (e.g. the availability of the needed data for the weighting variables). The year of the data of the weighting variable is the most commonly used year for the data of the respective series/indicator. The following weights were actually used for the indicators/series whose global, regional and subregional aggregates are weighted averages: total land area in 2015; forest area in 2015; and mountain area in 2017. The data of all the weighting variables are taken from the United Nations Statistics Division Global SDG Database. The chapter includes more details about the weighting variables, including which weight was used for which series or indicator.

In the case of both series of 15.1.2 (Average proportion of freshwater KBAs covered by protected areas (percentage) and Average proportion of terrestrial KBAs covered by protected areas (percentage)), we would want to use freshwater KBAs and terrestrial KBAs as our weighting variables. However, since they were not readily available on a country level, total land area in 2015 was used as a proxy weight instead. Similarly for one series of 15.4.1 (Average proportion of mountain KBAs covered by protected areas (percentage)), we would want to use mountain KBAs as our weighting variable, but since it was not readily available on a country level, total land area in 2015 was used as a proxy weight instead.

Finally, we note again that the weighting variables sometimes prevent us from evaluating the series/indicator using all data that are available or provided to us, despite some efforts and compromises to mitigate this problem. A such, our final data coverage for the series/indicators is sometimes slightly undermined by the data availability of the weighting variable. This applies to 15.2.1 (Forest area net change rate (percentage)), losing two of the available Arab countries.

<sup>1</sup> This is according to the SDG Indicators Metadata Repository and the original source (UNEP).

We calculate the world, regional and subregional averages for each indicator. However, we are not able to include the target value to facilitate comparability for any of the analysed indicators/subindicators since the official desired target values cannot be inferred from the official target descriptions.

**Table 15.2 Targets, indicators, tiers and data availability for Arab countries – SDG 15 (Protect, restore and promote sustainable use of terrestrial ecosystems, sustainable manage forests, combat desertification, and to halt and reverse land degradation and halt biodiversity loss)**

Target	Indicator	Number of subindicators	Tier	Data availability*
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	15.1.1 Forest area as a proportion of total land area	1 chosen out of 3	Tier I	22
	15.1.2 Proportion of important sites for terrestrial and freshwater biodiversity that are covered by protected areas, by ecosystem type	2 chosen out of 2	Tier I	13, 22
15.2 By 2020, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation globally	15.2.1 Progress towards sustainable forest management	5 chosen out of 6	Tier I	14, 22, 21, 10, 13
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	15.3.1 Proportion of land that is degraded over total land area	(No data)	Tier II	x
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	15.4.1 Coverage by protected areas of important sites for mountain biodiversity	1 chosen out of 1	Tier I	19
	15.4.2 Mountain Green Cover Index	1 chosen out of 3	Tier I	19
15.5 Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species	15.5.1 Red List Index	1 chosen out of 1	Tier I	22

15.6 Promote fair and equitable sharing of the benefits arising from the utilization of genetic resources and promote appropriate access to such resources, as internationally agreed	15.6.1 Number of countries that have adopted legislative, administrative and policy frameworks to ensure fair and equitable sharing of benefits	4 chosen out of 5	Tier I	22
15.7 Take urgent action to end poaching and trafficking of protected species of flora and fauna and address both demand and supply of illegal wildlife products	15.7.1 Proportion of traded wildlife that was poached or illicitly trafficked	(No data)	Tier II	x
15.8 By 2020, introduce measures to prevent the introduction and significantly reduce the impact of invasive alien species on land and water ecosystems and control or eradicate the priority species	15.8.1 Proportion of countries adopting relevant national legislation and adequately resourcing the prevention or control of invasive alien species	(No data)	Tier II	x
15.9 By 2020, integrate ecosystem and biodiversity values into national and local planning, development processes, poverty reduction strategies and accounts	15.9.1 Progress towards national targets established in accordance with Aichi Biodiversity Target 2 of the Strategic Plan for Biodiversity 2011–2020	(No data)	Tier III	x
15.a Mobilize and significantly increase financial resources from all sources to conserve and sustainably use biodiversity and ecosystems	15.a.1 Official development assistance and public expenditure on conservation and sustainable use of biodiversity and ecosystems	1 chosen out of 2	Tier I/III	22
15.b Mobilize significant resources from all sources and at all levels to finance sustainable forest management and provide adequate incentives to developing countries to advance such management, including for conservation and reforestation	15.b.1 Official development assistance and public expenditure on conservation and sustainable use of biodiversity and ecosystems	1 chosen out of 2**	Tier I/III	22
15.c Enhance global support for efforts to combat poaching and trafficking of protected species, including by increasing the capacity of local communities to pursue sustainable livelihood opportunities	15.c.1 Proportion of traded wildlife that was poached or illicitly trafficked	(No data)	Tier II	x

Note: \* Figures refer to the number of Arab countries with data for the indicator, while x means there are no data or the indicator was dropped.

\*\* The same as the subindicator of 15.a.1.

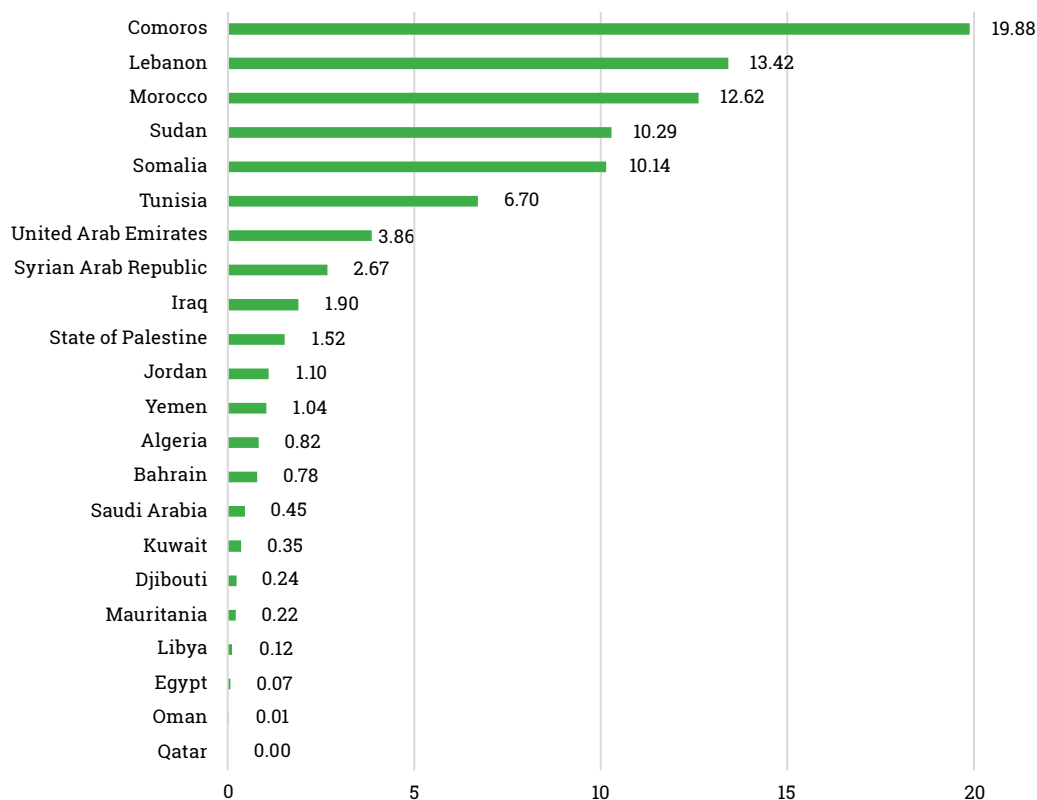
We note that the weighting variables sometimes prevent us from evaluating the series/indicator using the full data that are available or provided to us. As such, our final data coverage for the series/indicators is sometimes slightly undermined by the data availability of the weighting variable. While this affects the global, regional, and/or subregional aggregates, the country-year graphs include all the Arab countries for the evaluated series/indicator that have data, regardless of the weighting variable's data availability.

Source: <https://unstats.un.org/sdgs/indicators/indicators-list/> and author's calculations.

## 2. Country graphs

**Figure 15.1. Indicator 15.1.1 - Forest area as a proportion of total land area**

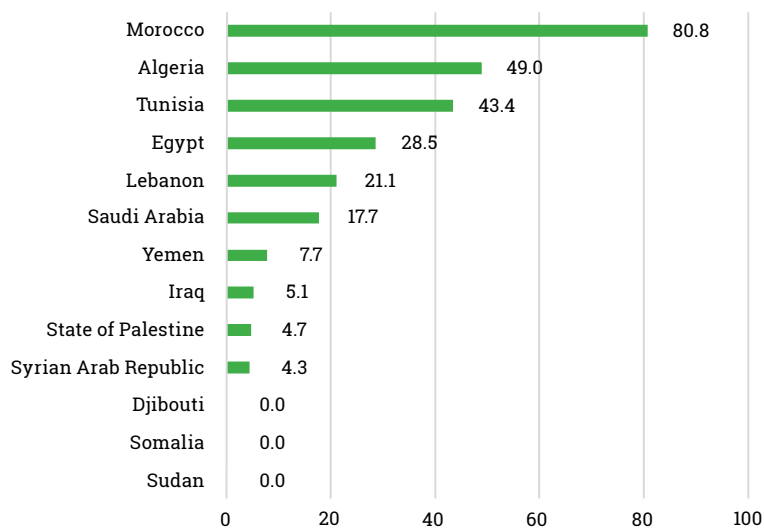
Forest area as a proportion of total land area (percentage)



Note: All data are from 2015.

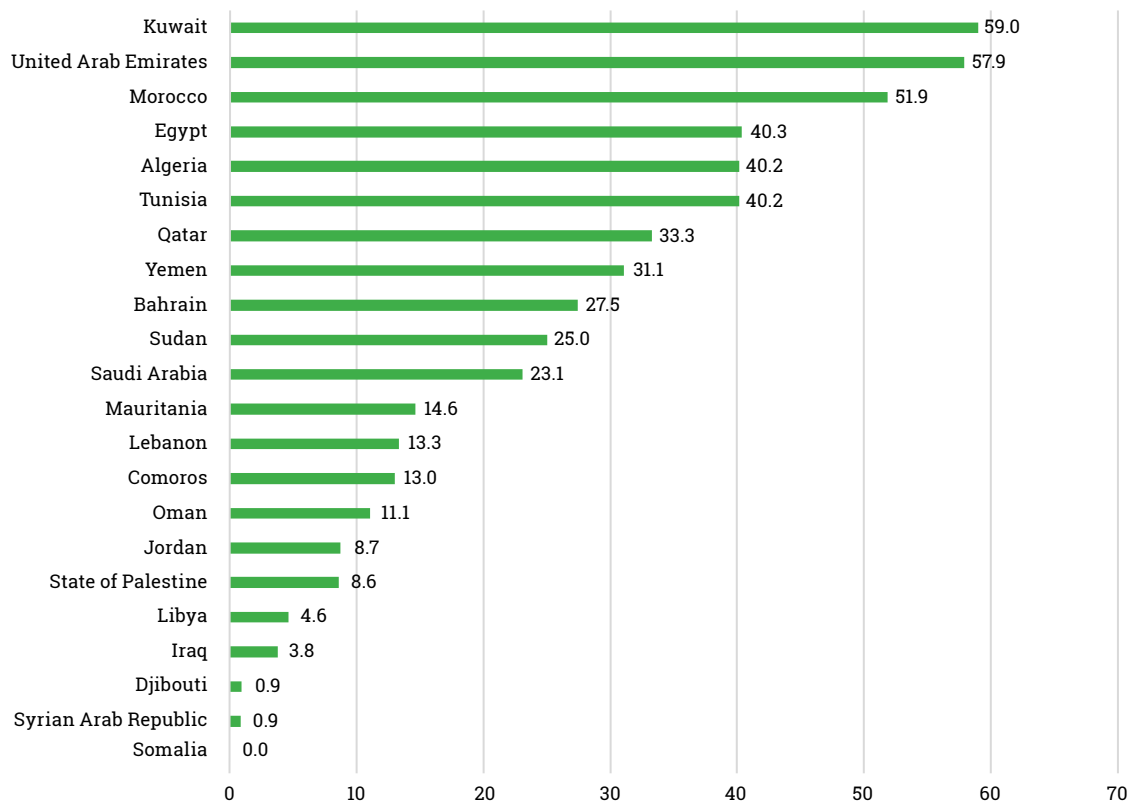
**Figure 15.2 Two series of indicator 15.1.2 - Proportion of important sites for terrestrial and freshwater biodiversity that are covered by protected areas, by ecosystem type**

Average proportion of freshwater KBAs covered by protected areas (percentage)



Note: All data are for 2017.

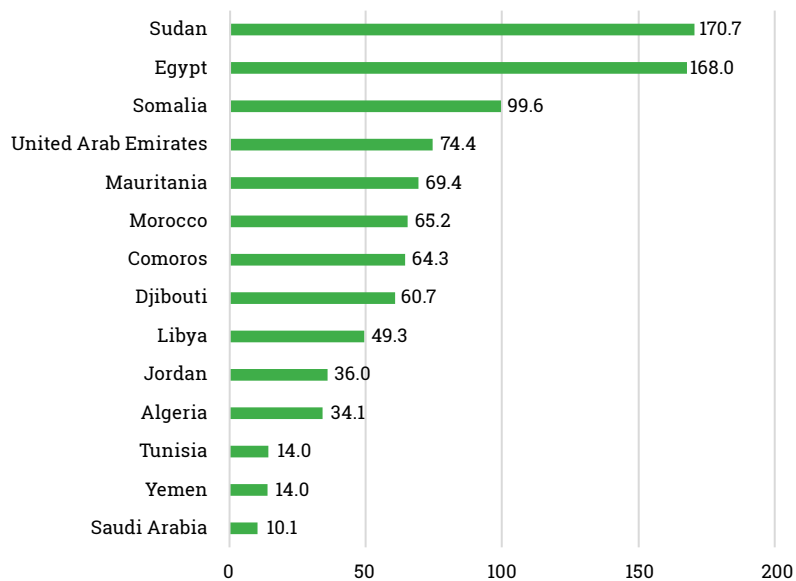
Average proportion of terrestrial KBAs covered by protected areas (percentage)



Note: All data are for 2017.

**Figure 15.3** Five series of indicator 15.2.1 - Progress towards sustainable forest management

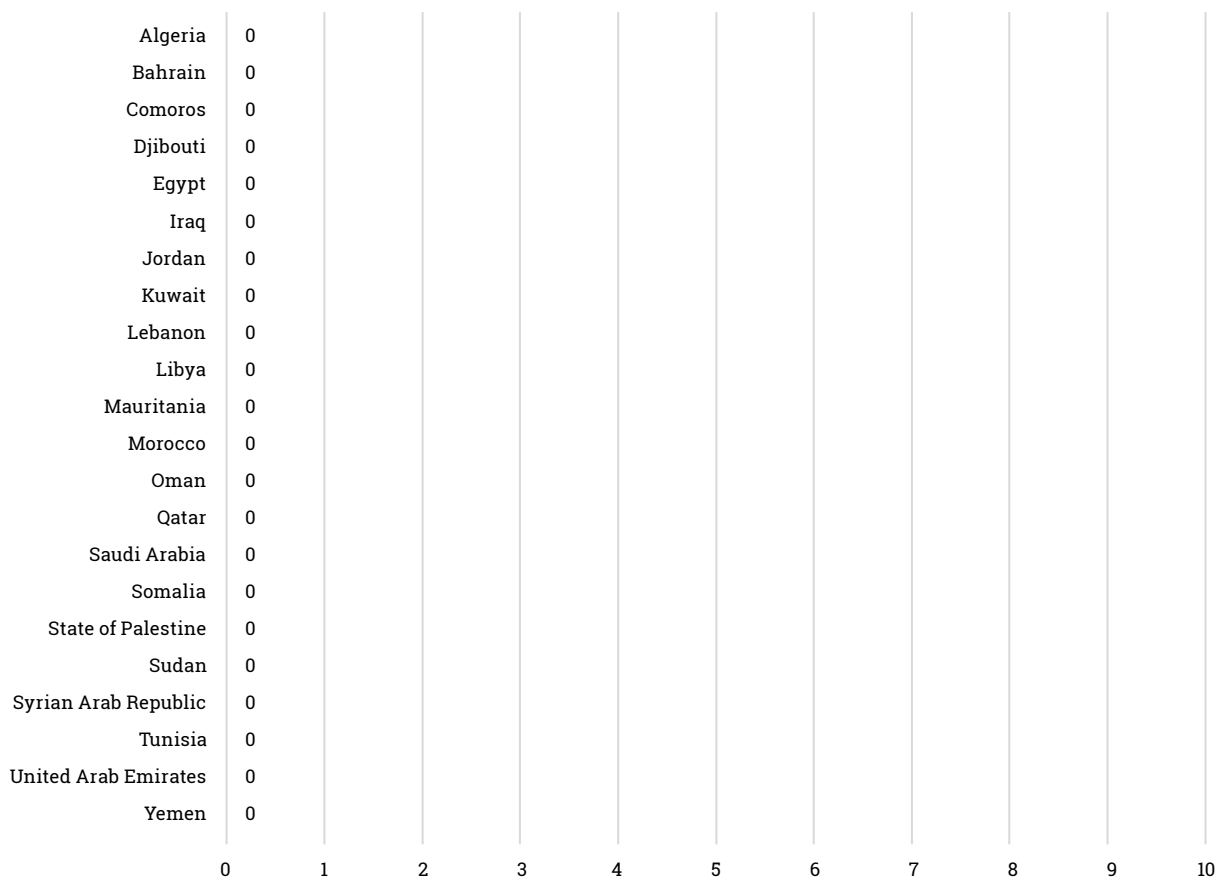
Above-ground biomass in forest per hectare (tonnes per hectare)



Note: All data are for 2015.

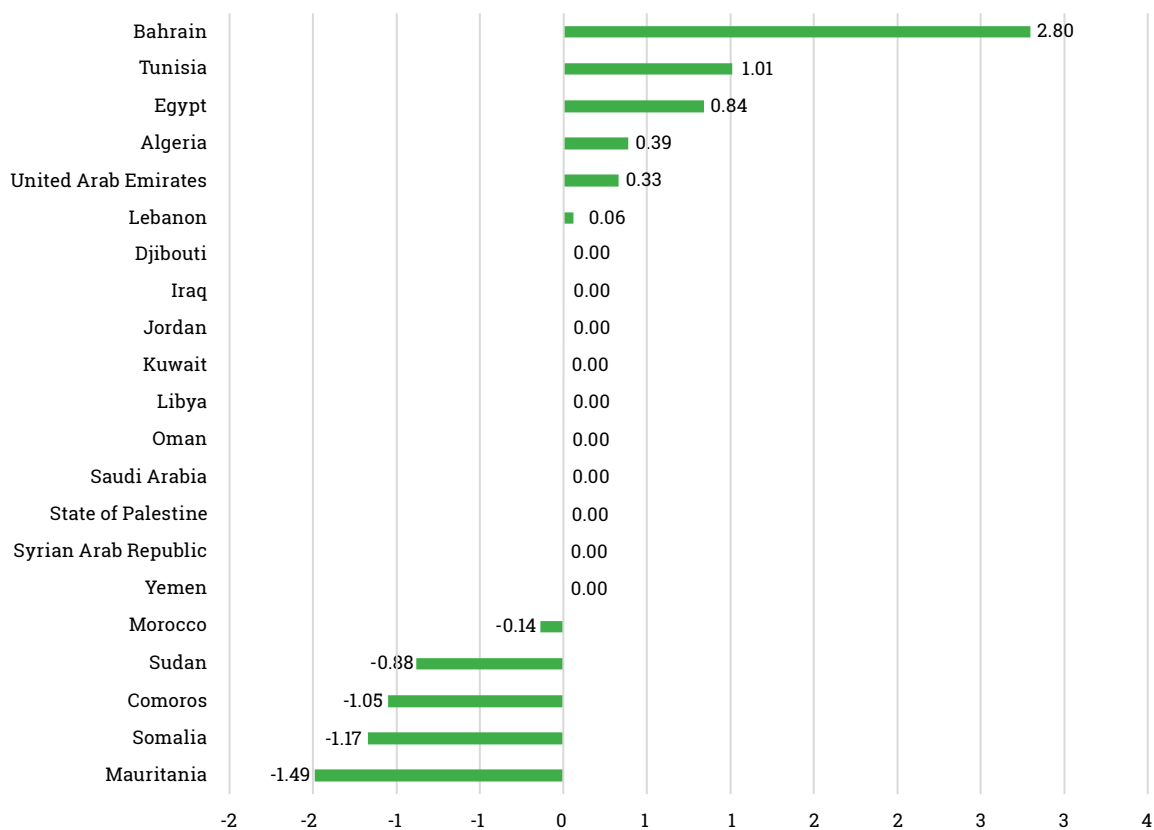


Forest area certified under an independently verified certification scheme (thousands of hectares)



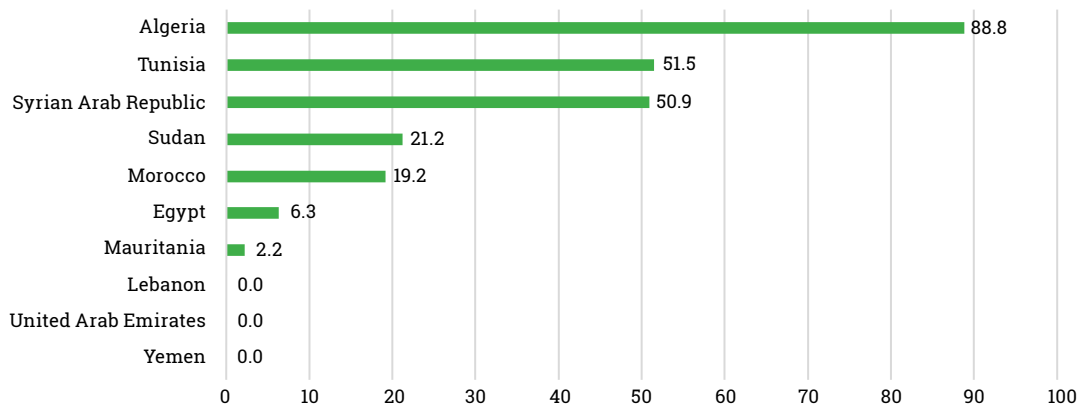
Note: All data are for 2017.

Forest area net change rate (percentage)



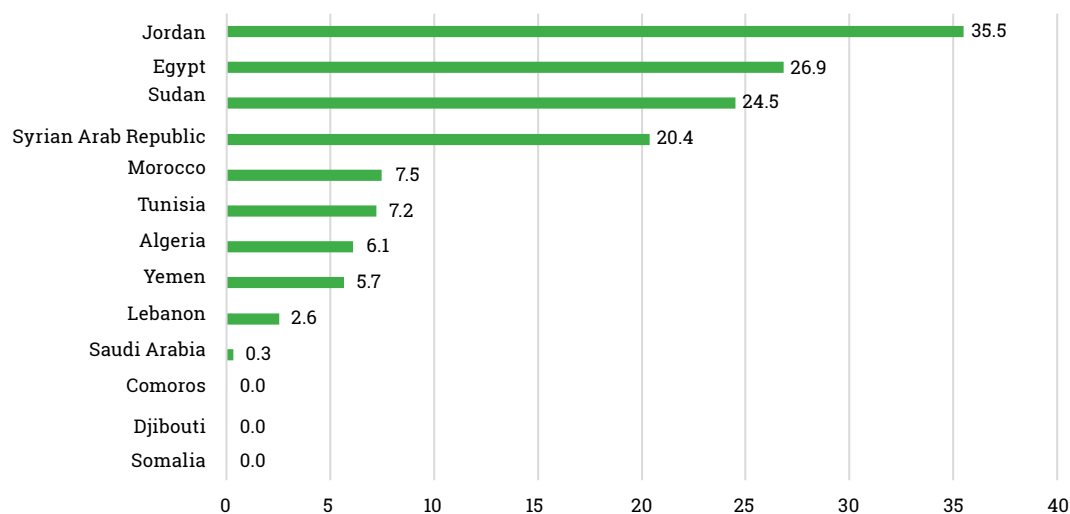
Note: All data are for 2015.

Proportion of forest area with a long-term management plan (percentage)



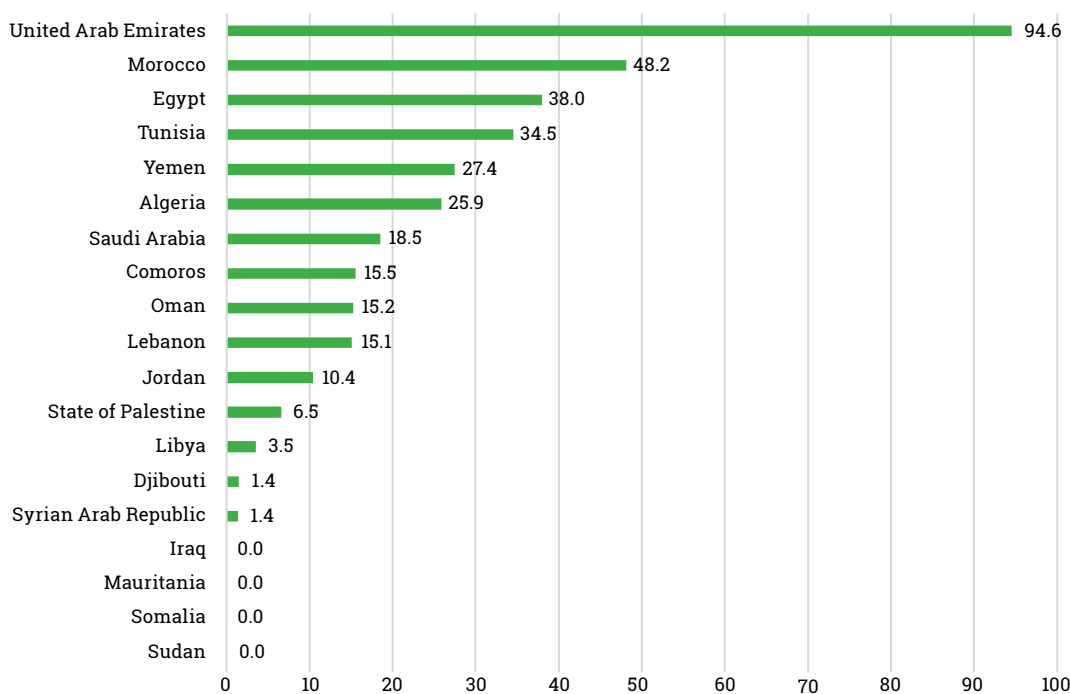
Note: All data are for 2010.

Proportion of forest area within legally established protected areas (percentage)



Note: All data are for 2015 apart from Syrian Arab Republic (2010).

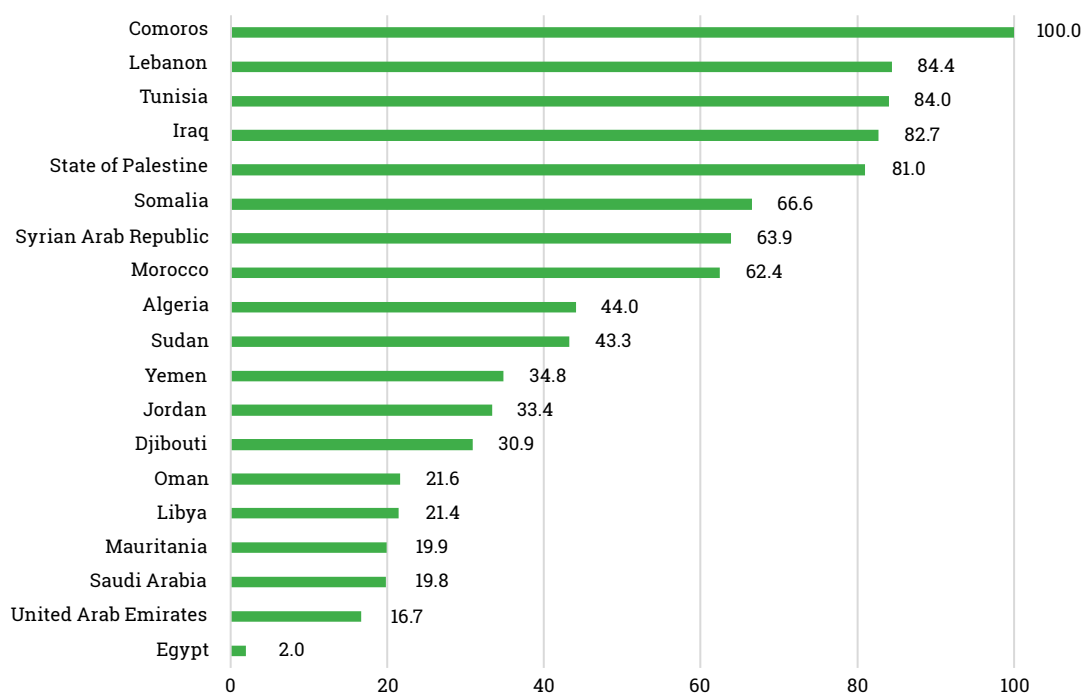
**Figure 15.4 Indicator 15.4.1 - Coverage by protected areas of important sites for mountain biodiversity**  
Average proportion of mountain KBAs covered by protected areas (percentage)



Note: All data are for 2017.

**Figure 15.5 Indicator 15.4.2 - Mountain Green Cover Index**

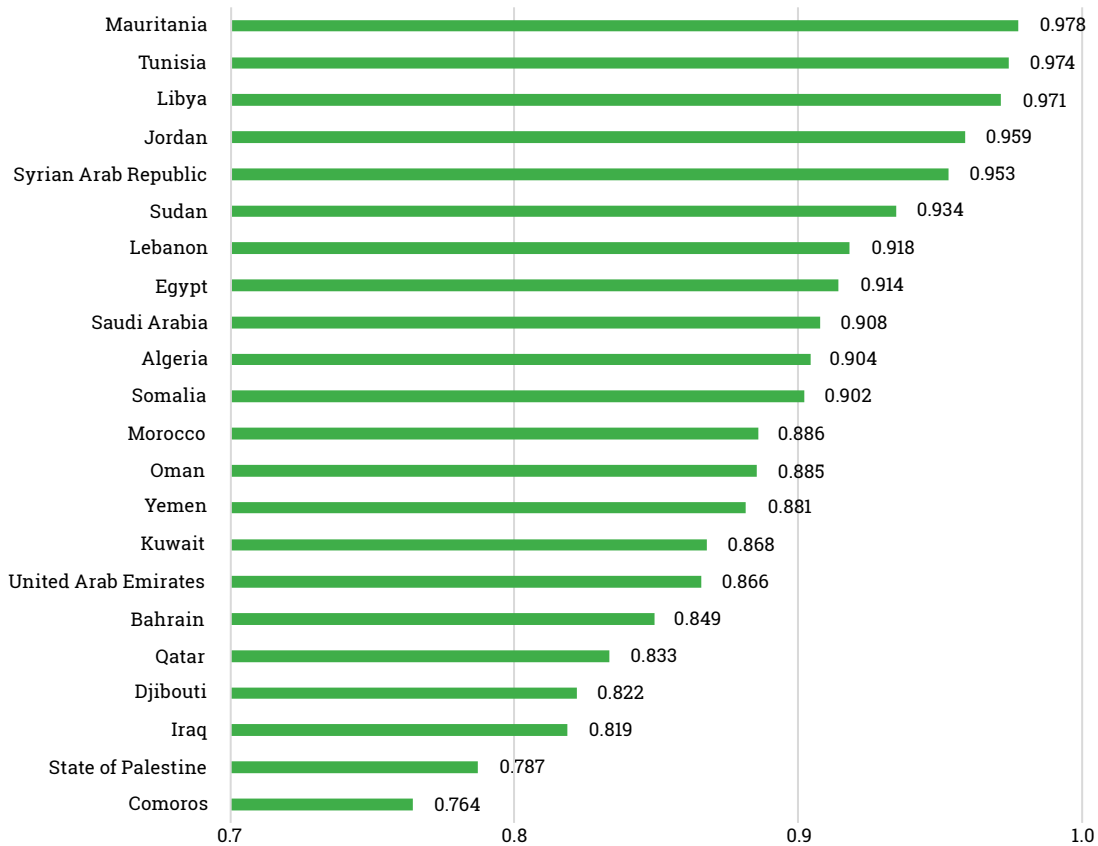
Mountain Green Cover Index



Note: All data are for 2017.

**Figure 15.6 Indicator 15.5.1 - Red List Index**

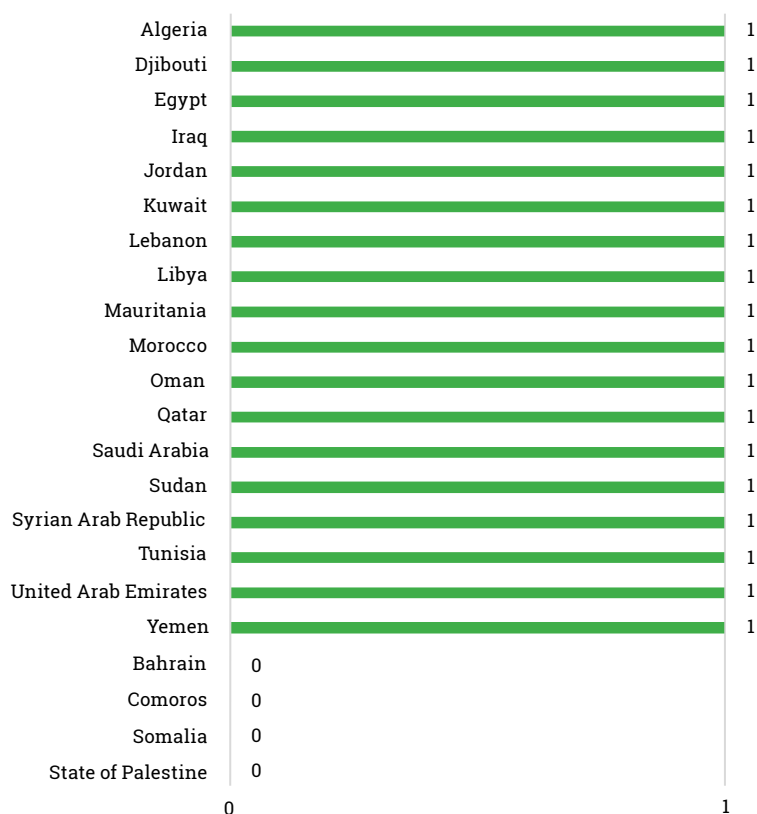
The Red List Index



Note: The index ranges from 0 to 1. All data are for 2017.

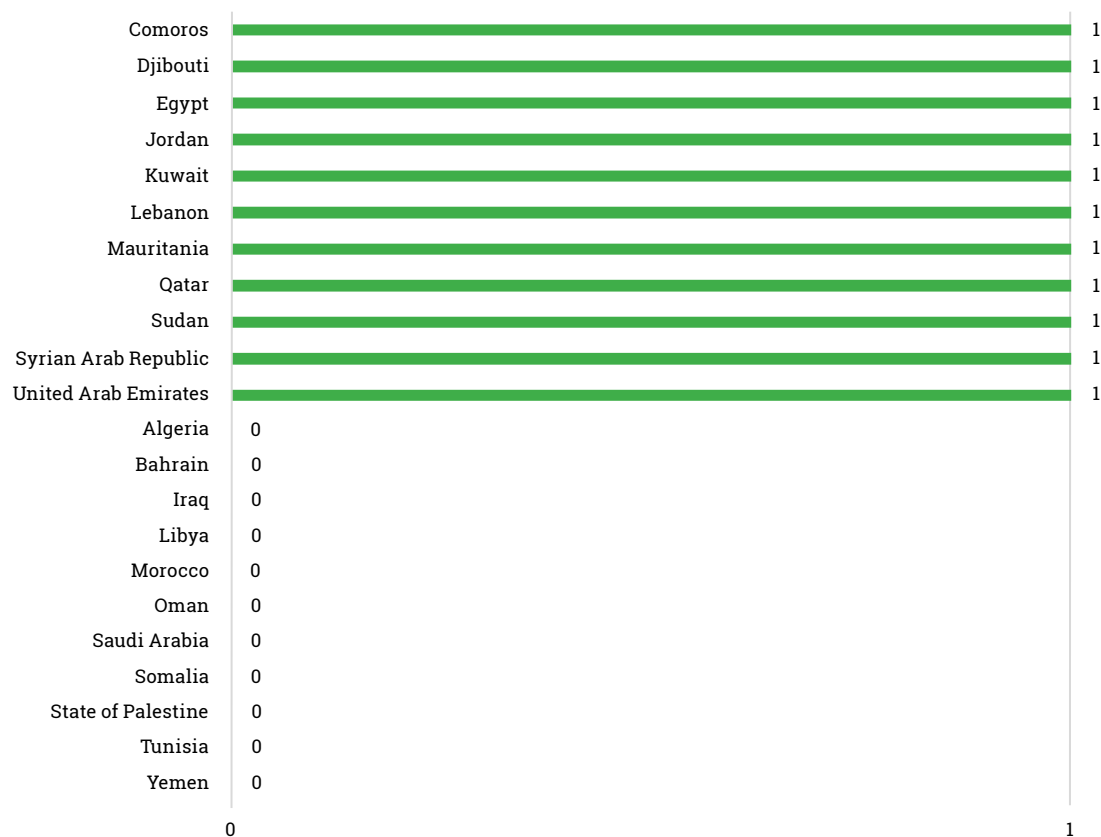
**Figure 15.7** Four series of indicator 15.6.1 - Number of countries that have adopted legislative, administrative and policy frameworks to ensure fair and equitable sharing of benefits

Countries that are contracting Parties to the International Treaty on PGRFA



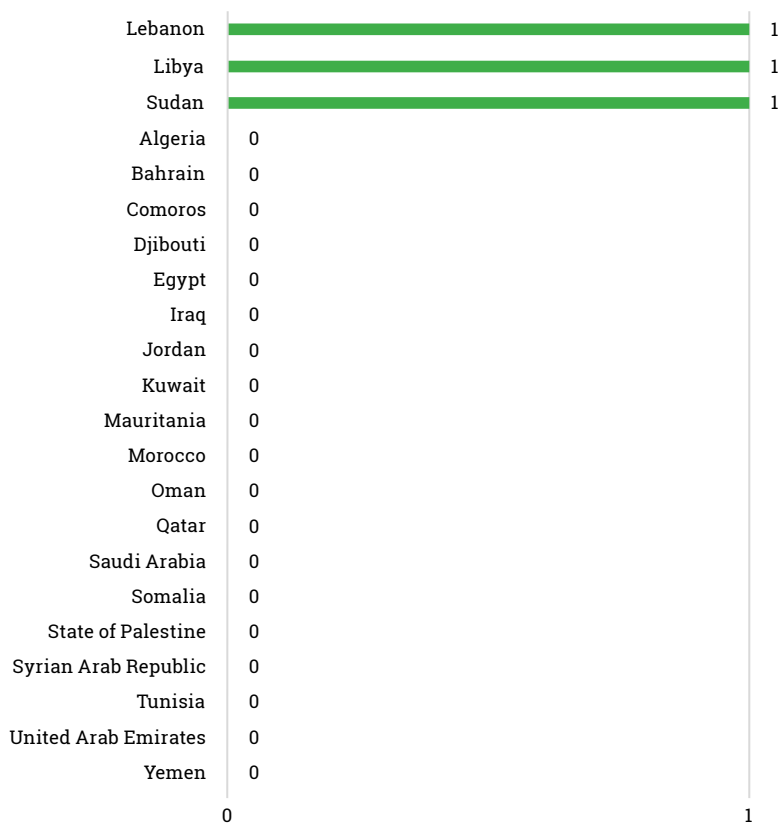
Note: 1 = yes; 0 = no. All data are for 2017.

Countries that are parties to the Nagoya Protocol



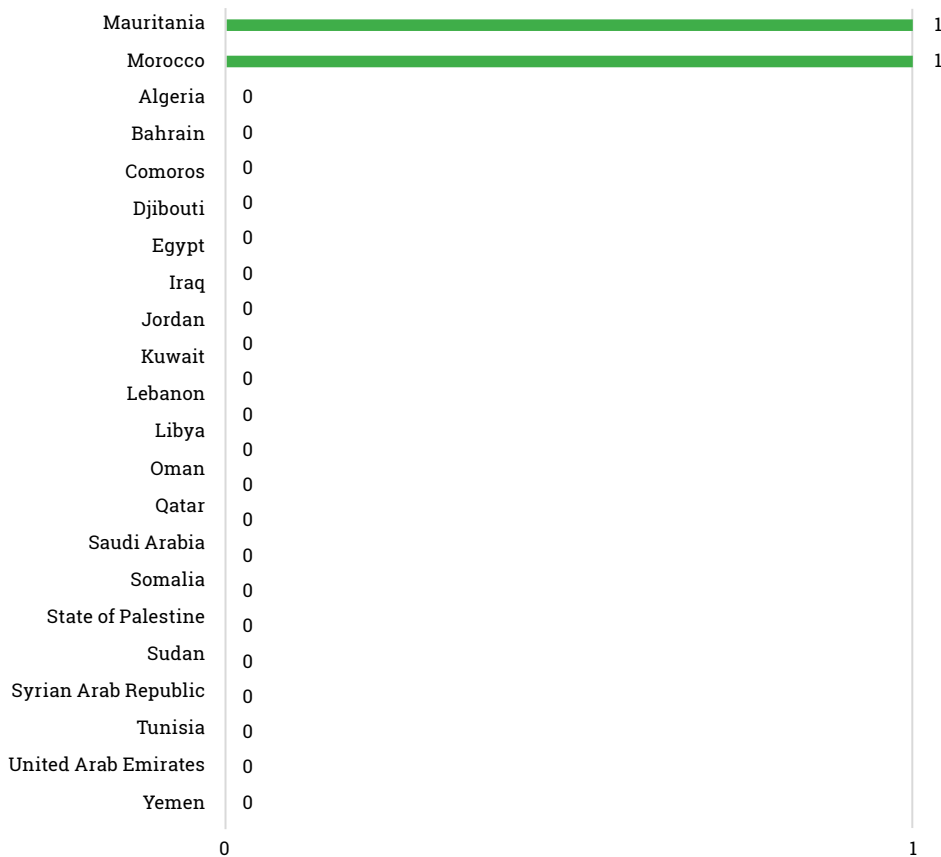
Note: 1 = yes; 0 = no. All data are for 2012 apart from Yemen (2015).

Countries that have legislative, administrative and policy framework or measures reported through the Online Reporting System on Compliance of the International Treaty on PGRFA



Note: 1 = yes; 0 = no. All data are for 2017.

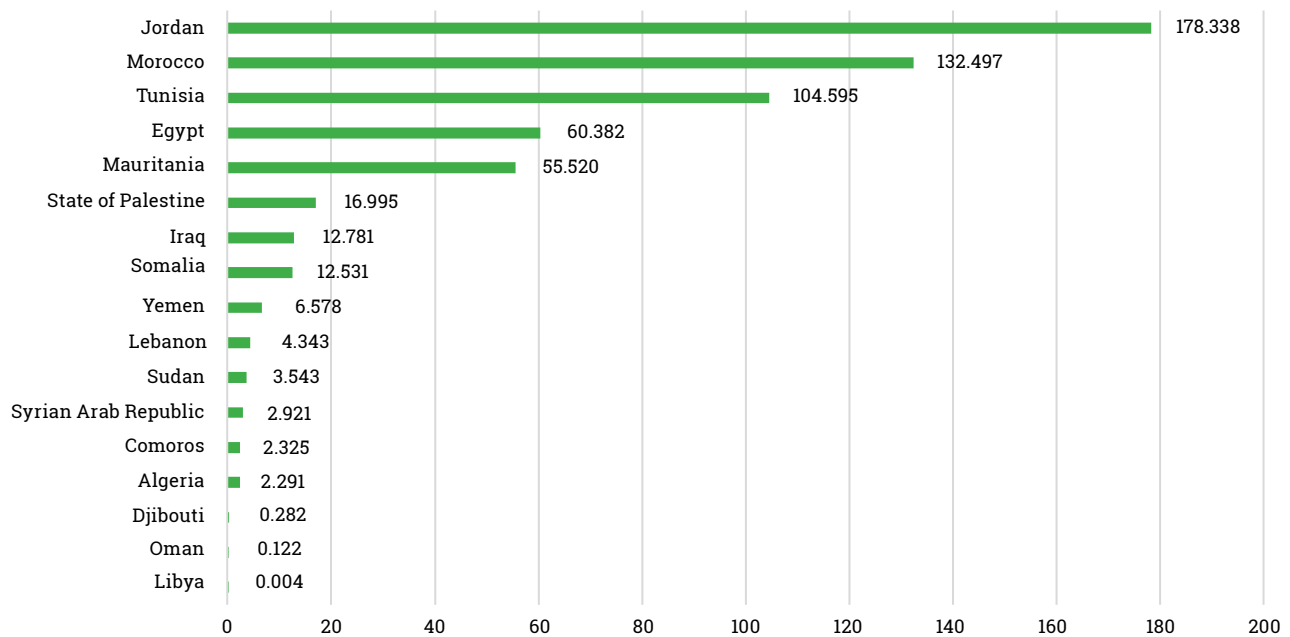
Countries that have legislative, administrative and policy framework or measures reported to the Access and Benefit-Sharing Clearing-House



Note: 1 = yes; 0 = no. All data are for 2012 apart from Yemen (2015).

**Figure 15.8 Indicator 15.a.1 - Official development assistance and public expenditure on conservation and sustainable use of biodiversity and ecosystems**

Total official development assistance for biodiversity, by recipient countries (millions of constant 2017 United States dollars)



Note: All data are for 2017 apart from Oman (2010) and Libya (2016). The illustration is the same for indicator 15.b.1 Official development assistance and public expenditure on conservation and sustainable use of biodiversity and ecosystems.

**Indicator 15.b.1 - Official development assistance and public expenditure on conservation and sustainable use of biodiversity and ecosystems**