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FAOSTAT ANALYTICAL BRIEF 48

# Land statistics and indicators

Global, regional and country trends, 2000–2020

## HIGHLIGHTS

- In 2020, world total agricultural land was about 4.7 billion hectares, about one-third of the global land area. One-third of agricultural land was cropland (nearly 1.6 billion hectares) while the remaining two-thirds were permanent meadows and pastures (around 3.2 billion hectares).
- Agricultural land decreased by nearly 3 percent in the last two decades, due to a combined 5 percent increase in cropland and a 6 percent decrease in permanent meadows and pastures.
- The 2022 dissemination includes a significant update in arable land subcomponents (temporary crops, temporary meadows and pastures, temporary fallow). Annual crops represented in 2020 about 80 percent of the global arable land (1.1 billion hectares), going up 10 percent since 2001 while fallow land and temporary meadows and pastures decreased.
- In 2020, world per capita use of agricultural land and of cropland were 0.6 and 0.2 hectares per capita, respectively, down by about 20 percent since 2000, in line with population increases.
- World total area equipped for irrigation was 350 million hectares in 2020, or 22 percent of cropland area, a 20 percent increase since 2000. The area under organic agriculture was 75 million hectares in 2020, three times larger than the start of the series in 2004.
- In 2020, Asia had the largest cropland area (590 million hectares, one-fifth of which in China), followed by Africa and Europe (about 280 million hectares each). Conversely, Oceania and Northern America had the highest cropland per capita indicators (0.8 and 0.5 hectares per capita, respectively).

## LAND STATISTICS AND INDICATORS

### BACKGROUND

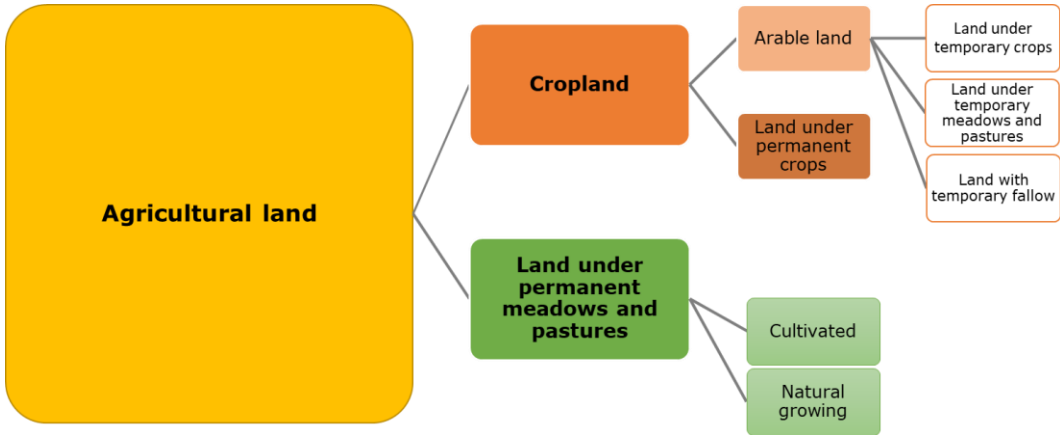
Land use statistics describe activities undertaken for the purpose of economic production, and more recently for the maintenance and restoration of environmental functions (FAO and UNSD, 2020). The term “use” implies the existence of human intervention or management, including the institutional arrangements put in place for administrative purpose. Land in use therefore includes areas that are under the active management of institutional units of a country.

The Food and Agriculture Organization of the United Nations (FAO) land use classification is an international statistical standard (see FAO and UNSD, 2020), consistent in addition with land classes of the Intergovernmental Panel on Climate Change (IPCC), used by countries for reporting to the United Nations Framework Convention on Climate Change (UNFCCC).

Since the 1950s and in line with the first article of its Constitution, FAO collects annual land use data from countries via a standard [Land Use, Irrigation and Agricultural Practices questionnaire, integrated every five years with independent information on forest land area collected via](#) the FAO Global Forest Resources Assessment (FAO, 2020). Resulting [Land Use statistics](#) and [Land use indicators](#) are published in FAOSTAT (FAO, 2022a, FAO, 2022b). Together they provide information on the full land use matrix of a country. [Land cover statistics](#) provide supplemental information on the related land cover features, and are used as a tool in support of land use data analysis (FAO, 2022c).

This analytical brief reports the main results and changes over time in land use with a focus on agricultural land uses and its components (Figure 1), including important irrigation and agricultural practices, and with details at global, regional and country level during the past decades (2000–2020).

**Figure 1: Components of agricultural land**



**Source:** FAO. 2022. FAOSTAT: Land Use. In: FAO. Rome. Cited July 2022. <http://www.fao.org/faostat/en/#data/RL>

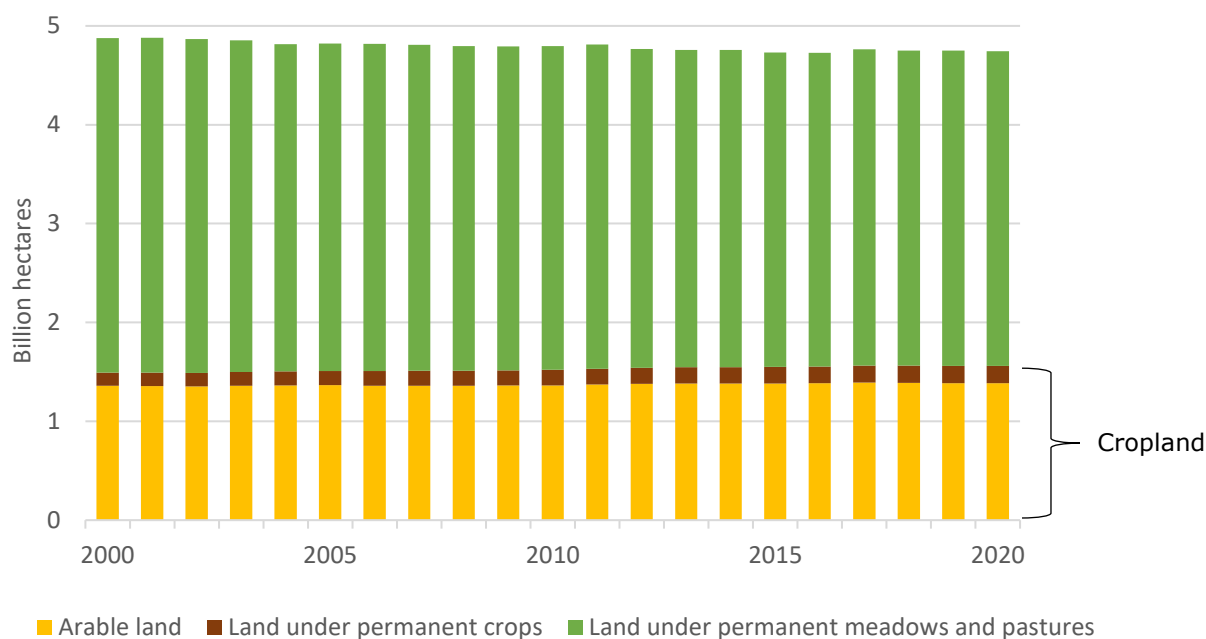
**GLOBAL**

The world land area excluding Antarctica is about 13 billion hectares (ha), reaching 13.5 billion ha with the addition of inland waters. In 2020, agricultural land, forest land and other land (the latter including barren and desert areas, urban land and infrastructure) occupied about one-third each of the total. More specifically, in 2020 the agricultural land area was 4.7 billion ha; forest land 4.1 billion ha; and other land 4.2 billion ha. Within agricultural land, the cropland area was nearly 1.6 billion ha (12 percent of the world land area), whereas permanent meadows and pastures covered almost 3.2 billion ha, or one-fourth of the world land area. These global shares have not changed significantly since 2000.

In the period 2000–2020, world total agricultural land decreased by 134 million ha, to 4 744 million ha, due to a decrease in the area of permanent meadows and pastures (-203 million ha), accompanied by an increase in cropland area of over 69 million hectares, representing a 5 percent increase to 1 562 million ha. At the same time, world total cropland area per capita decreased by 18 percent, to reach 0.2 ha/capita in 2020, reflecting much sharper increases in population numbers over the period.

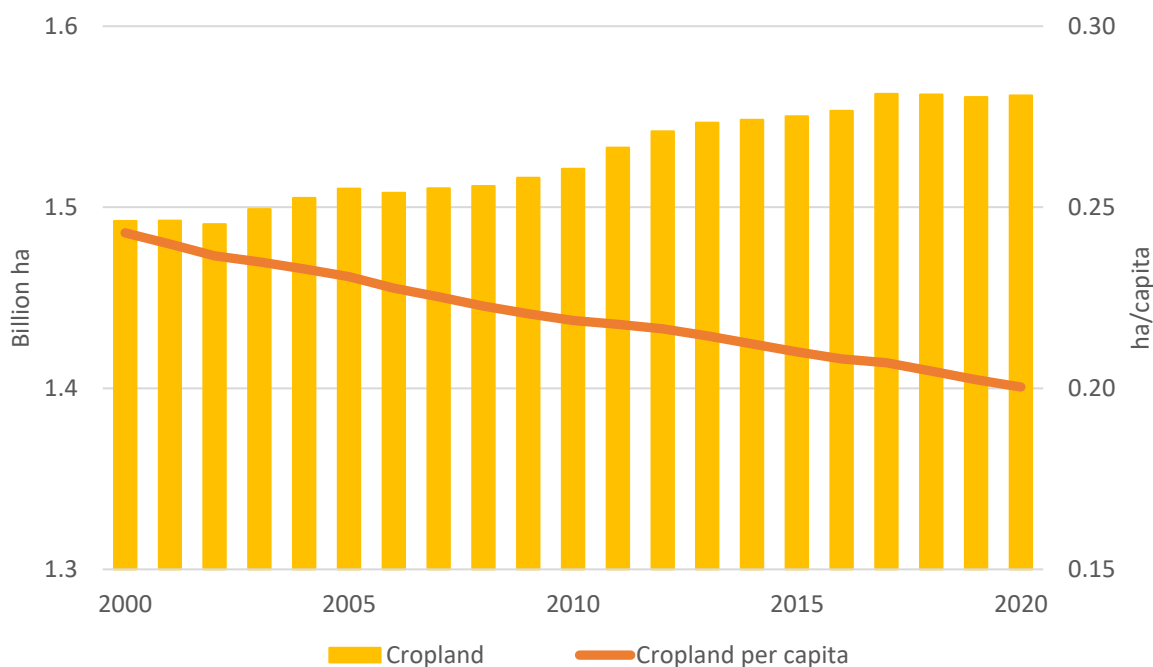
The increase in cropland area was largely driven by trends in area of permanent crops – oil palm, cocoa and coffee, olives, orchards, and other tree and shrub crops – which increased by 41 million ha from 2000 to 2020 (+31 percent), to reach 174 million ha, i.e. about one-tenth of total cropland area. Increases in arable land area over the same period were smaller both in absolute amounts (28 million ha) and relative terms (+2 percent) than the growth in permanent crops (Figures 2 and 3).

Figure 2: World total agricultural land by component



Source: FAO. 2022. FAOSTAT: Land Use. In: FAO. Rome. Cited July 2022. <http://www.fao.org/faostat/en/#data/RL>

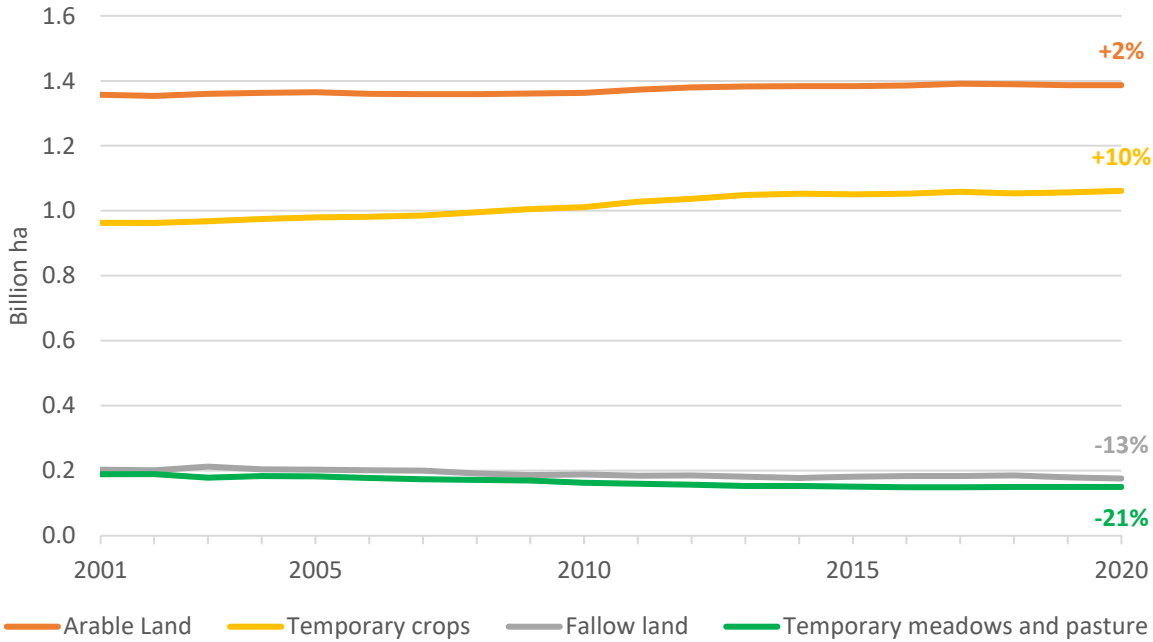
Figure 3: Global cropland area trends



Source: FAO. 2022. FAOSTAT: Land Use. In: FAO. Rome. Cited July 2022. <http://www.fao.org/faostat/en/#data/RL> and FAO. 2022. FAOSTAT: Land Use indicators. In: FAO. Rome. Cited July 2022. <http://www.fao.org/faostat/en/#data/EL>

Detailed statistics of arable land subcomponents (starting in 2001) provided with this dissemination allow for a more in-depth analysis of trends in arable land and shed light on the relative stability between 2001–2020. The small growth rates observed above for arable land were in fact the result of robust growth in temporary (annual) crops – cereals, soy and other herbaceous crops – which added 98 million ha from 2001 to 2020 (+10 percent) to reach 1 061 million ha in 2020. This growth was offset by significant decreases in the area used as fallow land or temporary meadows and pastures, which decreased by 27 and 39 million ha, or -13 and -21 percent, respectively (Figure 4).

**Figure 4: Global arable land by subcomponent**



**Source:** FAO. 2022. FAOSTAT: Land Use. In: FAO. Rome. Cited July 2022. <http://www.fao.org/faostat/en/#data/RL>

**Irrigation and agricultural practices (organic agriculture)**

In 2020, land area equipped for irrigation covered 349 million ha, or 7 percent of total agricultural land. It increased by over 20 percent since 2000. Land area equipped for irrigation does not coincide with the area actually irrigated, for which the associated statistics have insufficient temporal and geographical coverage due to low response rate.

In 2020, the global agricultural area under organic agriculture was 75 million ha, more than triple its value of 22 million ha in 2004, the first year for which data are available. In 2020, the amount of agricultural area under organic practices was 1.6 percent of the global agricultural land and 4.8 percent of total cropland area. The European Union (Eurostat, 2021) reports these statistics as a proxy in reporting on Sustainable Development Goal indicator 2.4.1 on sustainable and productive agriculture.

**REGIONAL**

With nearly 1.7 billion ha in 2020, Asia was the region with the largest area of agricultural land, one-third of which was located in China. Africa and Latin America and the Caribbean followed with about



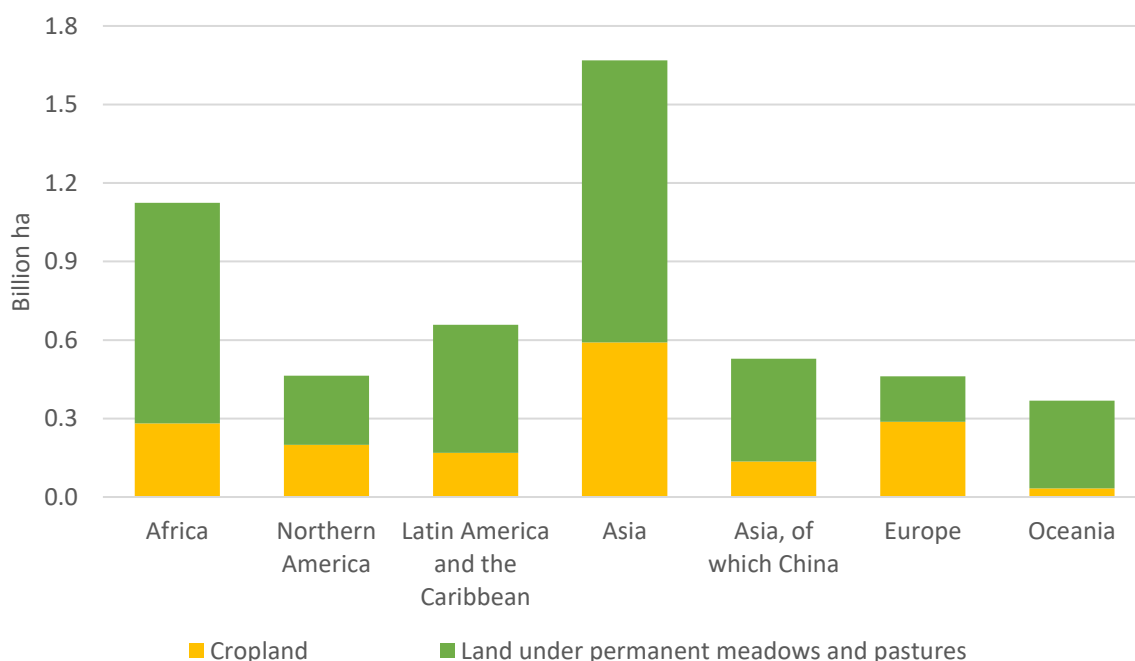
1.1 billion ha and nearly 700 million ha respectively. Northern America and Europe had a similar extent, about 460 million ha each and Oceania had the smallest area (370 million ha) (Figure 5).

Although the distribution of permanent meadows and pastures drives the regional distribution of agricultural land, the regions exhibited some significant differences. Oceania had the largest proportion of meadows and pastures, with cropland covering less than one-tenth of agricultural land. Conversely, permanent meadows and pastures occupied about one-third of agricultural land in Europe. In Africa, Latin America and Asia, the land under permanent meadows and pastures was about three-fourths of the total. The agricultural area in Northern America was two-fifths cropland and three-fifths pastures.

In 2020, Asia had the largest extent of cropland, with 600 million ha (of which more than one-fifth was in China). Europe and Africa followed with about 285 million ha each. The area of cropland was 200 million ha in Northern America and 170 million ha in Latin America and the Caribbean. Oceania, at 35 million ha, had the smallest extent.

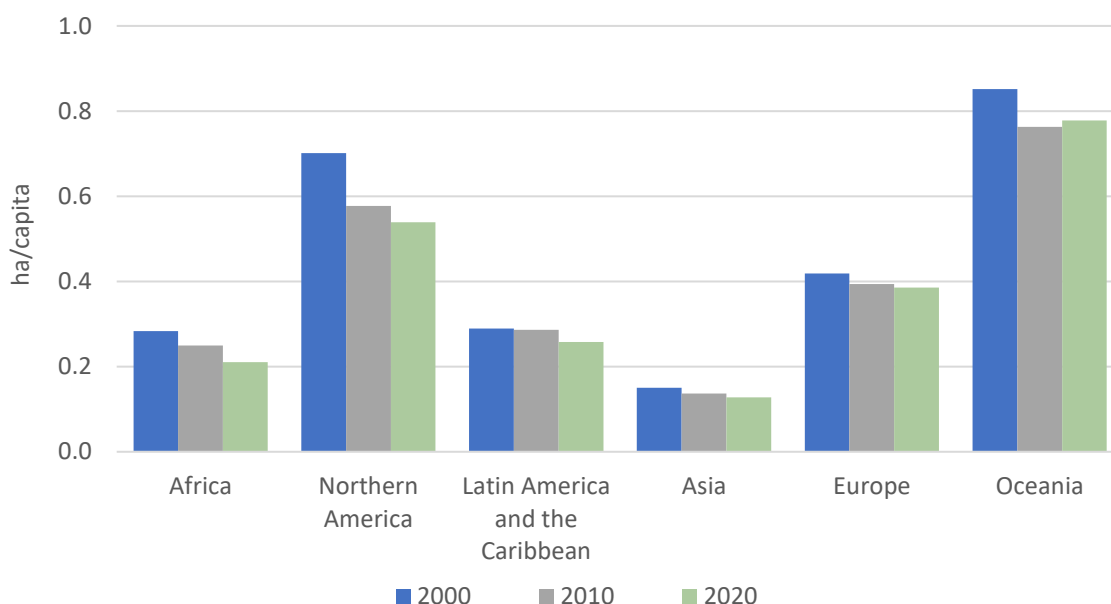
In 2020, the global per capita value of cropland (0.2 hectares per person) varied among regions (Figure 4). With nearly 0.8 ha per person, Oceania's value was nearly eight times larger than Asia's and about four times larger than Africa's. In 2020, Northern America had the second largest cropland area per capita (0.5 ha per capita), followed by Europe (0.4 ha per capita). Latin America and the Caribbean and Asia closed the ranking with only 0.3 and 0.1 ha of cropland area per capita, respectively. Over the past two decades, all the regions showed a reduction in cropland area per capita. The largest decrease was in Africa (-26 percent), primarily driven by a sustained growth in population. The second largest decrease (-23 percent) was recorded in Northern America, where the cropland area decreased by 9 percent and the population grew by 18 percent since 2000. The rates of decrease overall slowed down in the regions over the last decade.

**Figure 5: Agricultural land by region and component (2020)**



**Source:** FAO. 2022. FAOSTAT: Land Use. In: FAO. Rome. Cited July 2022. <http://www.fao.org/faostat/en/#data/RL>

**Figure 6: Cropland area per capita by region**



**Source:** FAO. 2022. FAOSTAT: Land Use indicators. In: FAO. Rome. Cited July 2022. <http://www.fao.org/faostat/en/#data/EL>

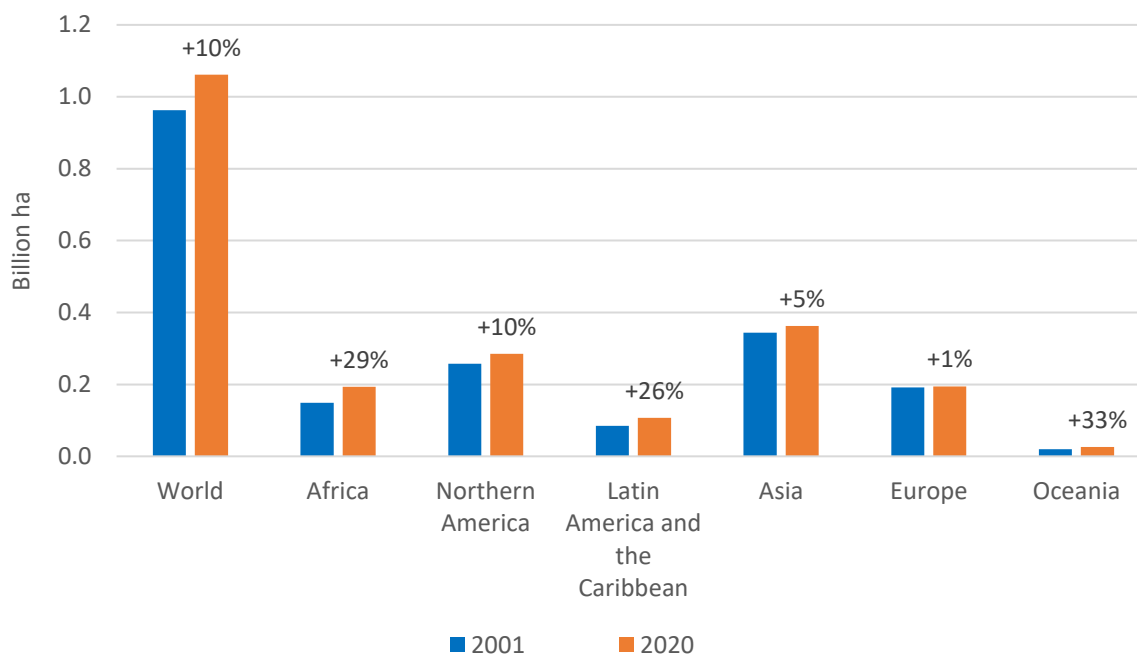
#### Temporary crops

As seen in Figure 4, the global area of temporary (annual) crops was 1 061 million ha in 2020, up 10 percent from 963 million ha in 2001, while land used as fallow land or for temporary meadows and pastures decreased. Figure 7 shows much larger growth rates in Oceania (+33 percent, to 26 million ha), Africa (+29 percent, to 193 million ha) and Latin America and the Caribbean (+26 percent, to 107 million ha in 2020). Conversely, the area of annual crops grew by 5 percent in Asia (to 362 million ha) and 1 percent in Europe<sup>1</sup> (to 194 million ha), and was in line with the world average in North America (+10 percent, to 285 million ha).

The new estimated data on temporary crops allowed for a better use of land cover data and harvested area data to improve quality assurance and quality control processes. In particular, land use data were compared to MODIS land cover data for herbaceous crops (FAO, 2022c), showing a high correlation over the entire period 2001–2020 (Figure 8).

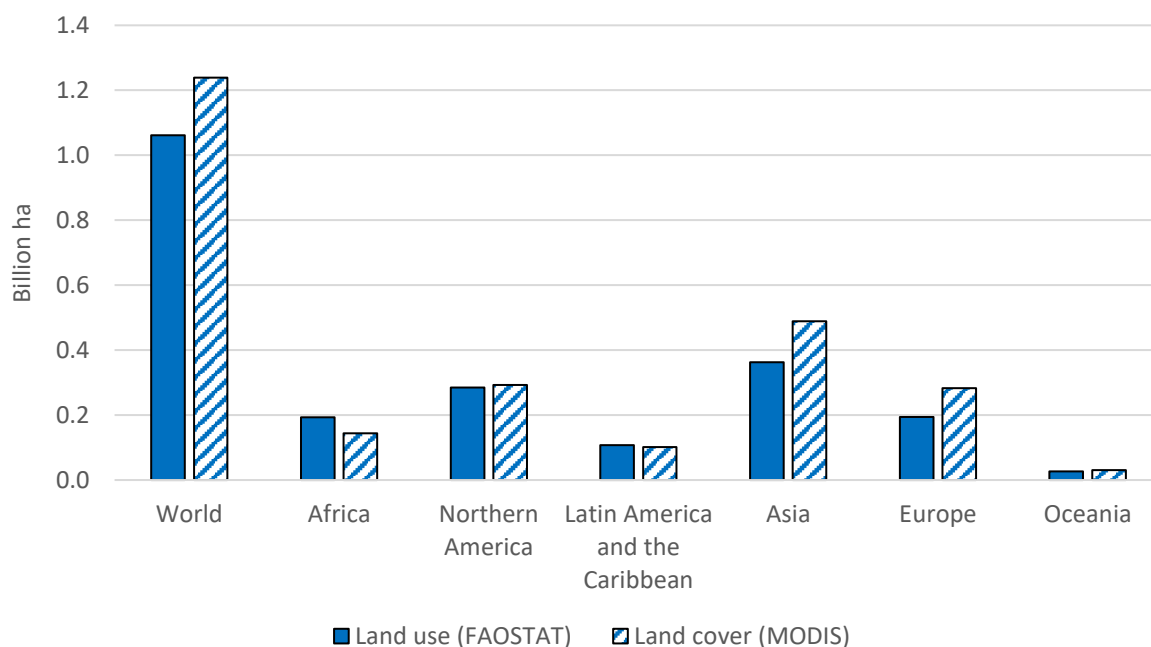
<sup>1</sup> Including the Russian Federation.

Figure 7: Temporary crops area and change between 2001 and 2020 by region



Source: FAO. 2022. FAOSTAT: Land Use. In: FAO. Rome. Cited July 2022. <http://www.fao.org/faostat/en/#data/RL>

Figure 8: Comparisons of land use data with land cover data for herbaceous crops (2020)



Source: FAO. 2022. FAOSTAT: Land Use. In: FAO. Rome. Cited July 2022. <http://www.fao.org/faostat/en/#data/RL> and FAO. 2022. FAOSTAT: Land Cover. In: FAO. Rome. Cited July 2022. <http://www.fao.org/faostat/en/#data/LC>

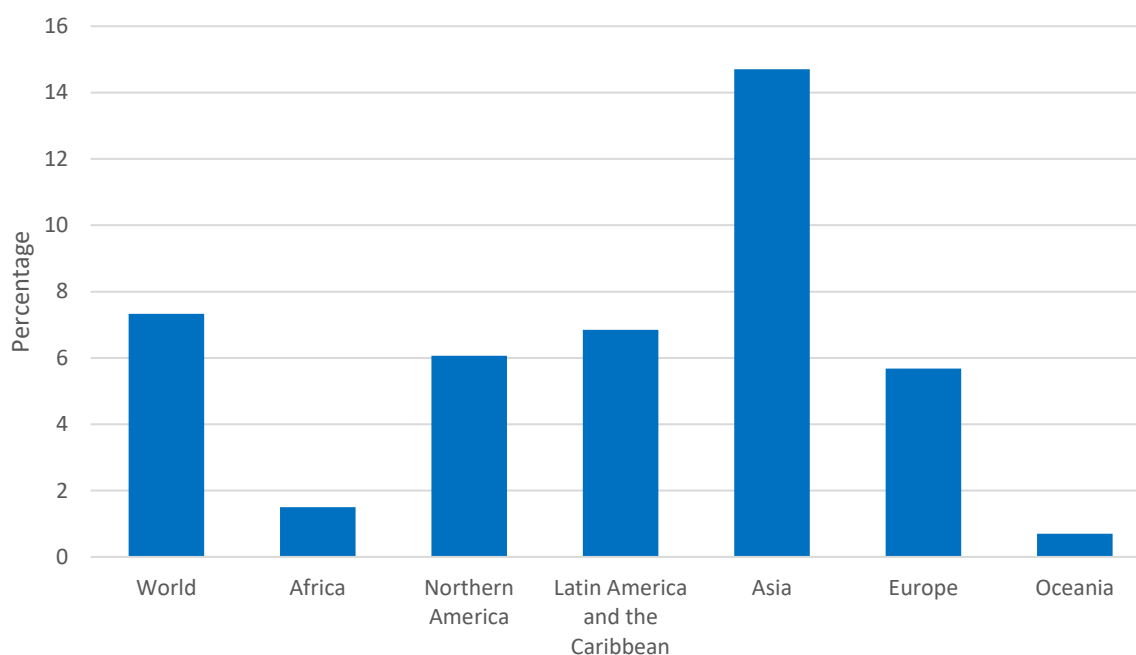


### Irrigation and agricultural practices

In 2020, Asia, with 245 million hectares (30 percent of which was in China), had more than two-thirds of all land equipped for irrigation in the world. In comparison, Latin America and the Caribbean and Northern America, respectively second and third, had 28–29 million ha each.

Asia was the region with the highest relative share of land equipped for irrigation to the total agricultural land in 2020 (15 percent). Much lower shares were found in Latin America and the Caribbean (7 percent), Northern America and Europe (6 percent each) and Africa and Oceania (nearly 2 and 1 percent respectively) (Figure 9).

**Figure 9: Share of area equipped for irrigation over total agricultural land area, by region (2020)**



**Source:** FAO. 2022. FAOSTAT: Land Use indicators. In: FAO. Rome. Cited July 2022. <http://www.fao.org/faostat/en/#data/EL>

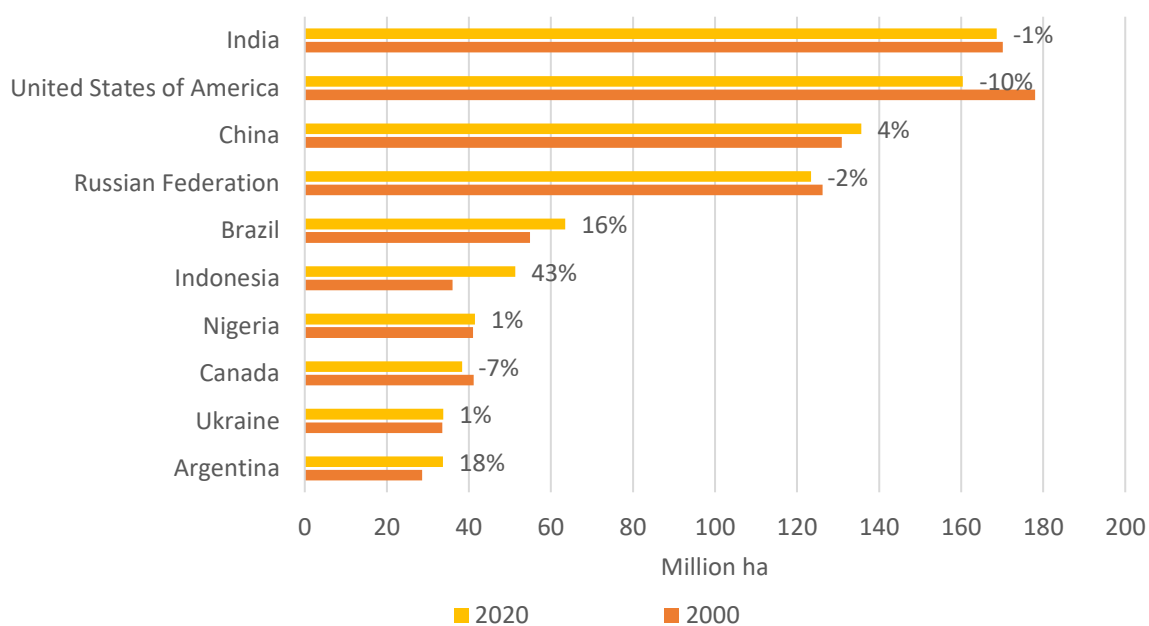
In 2020, about half of the global agricultural land under organic agriculture was in Oceania (36 million ha) and nearly one-fifth was in Europe (17 million ha).

### COUNTRY

In 2020, India had the largest total cropland area, with 169 million ha. It was closely followed by the United States of America (160 million ha), China (136 million ha), the Russian Federation (123 million ha) and Brazil (64 million ha). The remaining highest-ranking countries (Indonesia, Nigeria, Canada, Ukraine and Argentina) had values between 30 and 60 million ha (Figure 10).

Over the period 2000–2020, the top ten countries by the extent of cropland showed diverse trends. In India, China, the Russian Federation, Nigeria and Ukraine, the cropland area remained constant or showed little variation. The area of cropland declined in the United States of America (-10 percent) and Canada (-7 percent). Conversely, large increases were recorded in Indonesia (+43 percent), Argentina (+18 percent) and Brazil (+16 percent).

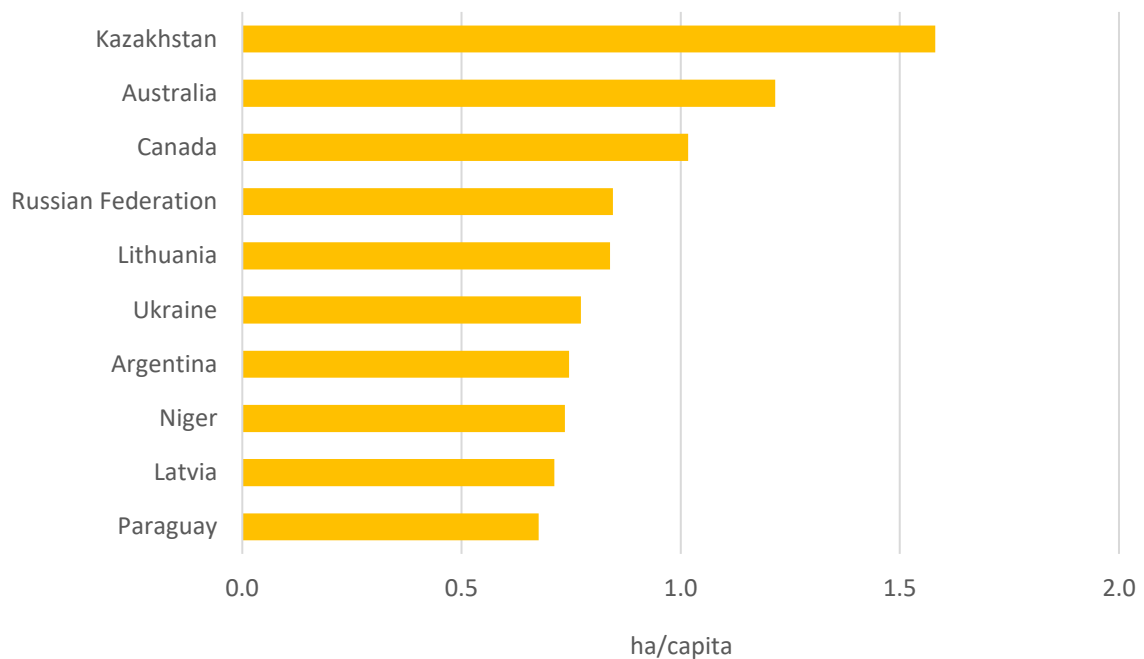
Figure 10: Cropland area and change between 2000 and 2020, top countries



**Source:** FAO. 2022. FAOSTAT: Land Use. In: FAO. Rome. Cited July 2022. <http://www.fao.org/faostat/en/#data/RL>

The analysis yields some additional insights when looking at the per capita values of cropland (Figure 11). In 2020, only three countries in the world had more than 1 hectare per capita of cropland. The per capita use in Kazakhstan (1.6 ha/capita) was eight times the global average (0.2 ha/capita). Australia and Canada followed with 1.2 and 1.0 ha/capita, respectively. The remaining top-ranking countries had close values, between 0.7 and 0.8 ha/capita.

**Figure 11: Cropland area per capita, top countries (2020)**



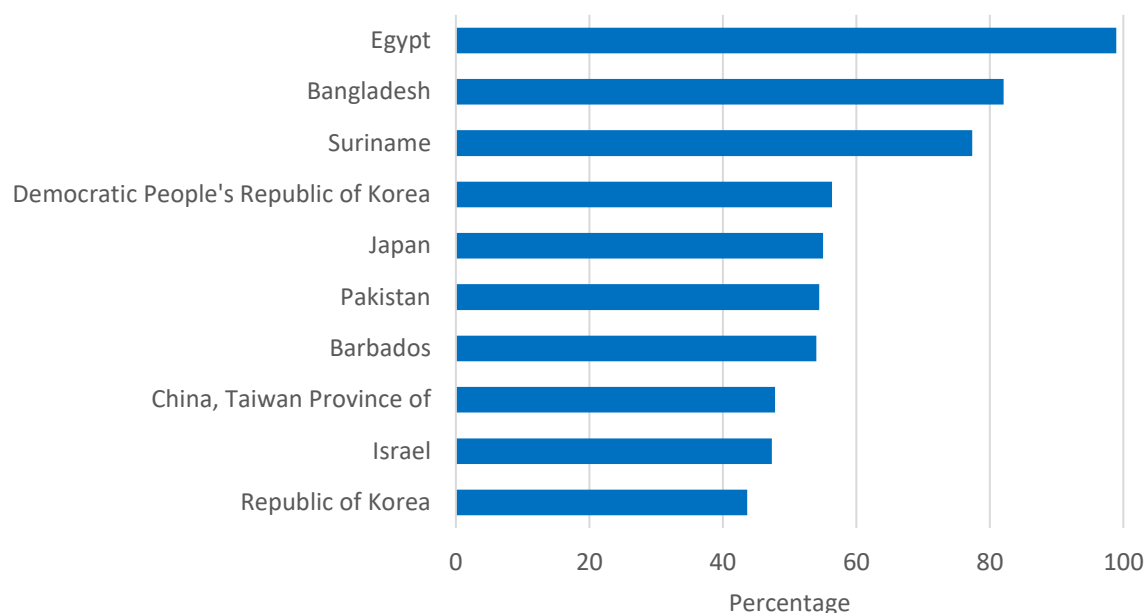
**Source:** FAO. 2022. FAOSTAT: Land Use indicators. In: FAO. Rome. Cited July 2022. <http://www.fao.org/faostat/en/#data/EL>

#### Irrigation and agricultural practices

In 2020, China and India had the largest areas equipped for irrigation, above 70 million hectares each, followed distantly by the United States of America (27 million ha), Pakistan (20 million ha), the Islamic Republic of Iran (10 million ha), Brazil (8 million ha) and Mexico, Indonesia, Thailand and Bangladesh with 6–7 million ha each.

At the same time, Egypt had the largest share of area equipped for irrigation over its total agricultural area (nearly 100 percent), followed by Bangladesh, Suriname, the Democratic People's Republic of Korea, Japan, Pakistan and Barbados (all above 50 percent) (Figure 12).

**Figure 12: Share of area equipped for irrigation over total agricultural land area, top countries and territories (2020)**



**Source:** FAO. 2022. FAOSTAT: Land Use indicators. In: FAO. Rome. Cited July 2022. <http://www.fao.org/faostat/en/#data/EL>

## EXPLANATORY NOTES

The FAOSTAT domains [Land Use](#), [Land use indicators](#) and [Land Cover](#) are available for 198 countries and 43 territories over 1961–2020. Methodological and country notes are available as supplementary information in each FAOSTAT domains.

FAO annually collects from countries land use information via a standard questionnaire on [Land Use, Irrigation and Agricultural Practices](#). The Land Use dataset implements the FAO Land Use classification disseminating data on 21 land use categories and 23 categories of irrigation and agricultural practices. Definitions for all land use categories are available within the FAO questionnaire. A full mapping of the corresponding FAO land use matrix is provided below (Table 1).

The FAO Land Use classification is used by the United Nations System of Environmental and Economic Accounting (SEEA); the UN Framework for the Development of Environmental Statistics (FDES); and the World Census of Agriculture. It is furthermore consistent with the land use classes of the IPCC, used for country reporting to the UNFCCC.

FAO also collects forest data from countries via the Global Forest Resources Assessment (FRA) (FAO, 2020) in five-year cycles. Data include detail on the forest categories 'Naturally regenerating forest' and 'Planted forest'. These data are disseminated in the FAOSTAT Land Use domain, with values in between FRA years (1990, 2000, 2010, 2015) linearly interpolated. Annual data for the period 2016–2020 are taken directly from the FRA.

Land use data provided by countries to FAO are typically sourced from national agricultural censuses or agricultural surveys, conducted at regular intervals, usually of 5–10 years. The rationale for sending annual FAO Land Use Questionnaires is because such cycles are not synchronized among countries. Changes in national definitions and data practices that may occur between collection cycles may cause breaks in time series. Intensive work is carried out with countries to reconcile this information against the background of the FAO [land use definitions](#). When reconciliation is not possible, the nature of the time series break is documented in the [FAOSTAT country notes](#), with information of the possible implications of such changes on relevant national and regional land use trends.

The FAOSTAT Land Cover domain contains statistics of land cover area, aggregated at national level and by land cover category following the international land cover classification of the SEEA Central Framework (UN SEEA 2012). Land Cover statistics are used as supplementary information for the land use statistics. The FAOSTAT land cover data are compiled by national aggregation of geospatial information, which is distributed via publicly available global land cover mapping products as described in the methodological note of the domain. In this update, 2020 values of SEEA land cover statistics were updated for two medium resolution global land cover products:

1) CCI Land Cover. Catholic University of Louvain (UCLouvain) Geomatics land cover, produced as part of the Climate Change Initiative of the European Spatial Agency and currently under the framework of the European Copernicus Climate Change Service (C3S) (UCL Geomatics, 2017) available for 1992–2020. These maps have a spatial resolution of 300m and are used to compute the SEEA-CCI land cover statistics in FAOSTAT.

2) MODIS-LCCS. NASA MODIS Land Cover Collection 6 (MCD12Q1), available for 2001–2020 (Sulla-Menashe and Friedl, 2018; Sulla-Menashe *et al.*, 2019). MODIS Land Cover Classification System (LCCS) types at 500m resolution are used to compute the SEEA-MODIS land cover data in FAOSTAT.

Official country documents including agricultural surveys and censuses, government websites and regional assessments but also sectoral studies are routinely used to fill missing information. Increasingly, land cover data derived from remote sensing products are also used to complement the FAOSTAT analysis.

The land use data disseminated in FAOSTAT are relevant to monitor sustainable and productive agriculture, forestry and fisheries activities at the national, regional and global level. In particular, agricultural land statistics serve as a denominator to compute SDG indicator 2.4.1.



Table 1: FAO land use matrix

<b>Country area</b>	<b>Land area</b> <i>Equipped for irrigation</i> <i>Actually irrigated</i>	<b>Agriculture</b> <i>Actually irrigated</i> <i>Organic</i>	<b>Agricultural land</b>	<b>Cropland</b> <i>Actually irrigated</i> <i>Organic</i> <i>Tillage</i>	<b>Arable land</b>	<b>Land under temporary crops</b>	
						<b>Land under temporary meadows &amp; pastures</b>	
						<b>Land with temporary fallow</b>	
				<b>Land under permanent meadows &amp; pastures</b> <i>Actually irrigated</i> <i>Organic</i>	<b>Land under permanent crops</b>	<b>Cultivated</b>	
							<b>Naturally growing</b>
		<b>Land under protective cover</b> <i>Farm buildings and farmyards</i>					
		<b>Forest land</b> <i>Forestry</i> <i>Forestry actually irrigated</i>					
		<b>Other land</b>					
		<b>Inland waters</b> <i>Aquaculture</i> <i>Capture fisheries</i>					
<b>Coastal waters</b> <i>Aquaculture</i> <i>Capture fisheries</i>							
<b>Exclusive Economic Zone</b> <i>Aquaculture</i> <i>Capture fisheries</i>							

**Source:** FAO. 2022. FAOSTAT: Land Use. In: FAO. Rome. Cited July 2022.  
<http://www.fao.org/faostat/en/#data/RL>

Note: Categories of the Land use domain are represented in bold. The additional categories in italics represent those under "Irrigation and agricultural practices" and "Aquaculture and fisheries", mapping them onto the main categories of the Land use domain.

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