



## SIAP Training Program for Supporting the Monitoring of Sustainable Development Goals (SDGs) 2030 in the Asia Pacific Region

### SDG Indicators under FAO Custodianship

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## IMPORTANCE OF FORESTS AND MOUNTAINS

- Meeting the world's increasing demand for food and other land-based products requires highly productive landscape
- Key roles in the water cycle, soil conservation, carbon sequestration
- Agriculture remains the most significant driver of global deforestation - an urgent need to promote more positive interactions between agriculture and forestry
- Mountains are characterized as biodiversity hotspots, providing ecosystem services for and protection against natural hazards in adjacent regions

## IMPORTANCE OF FORESTS AND MOUNTAINS

- Forests cover 31% of the world's land surface and shelter about 18% of world population
- In 1990 the world had 4128 million ha of forest; by 2015 this area had decreased to 3999 million ha. Net loss was about the size of South Africa
- Forests contain over 80% percent of terrestrial biodiversity
- About 12% of the terrestrial land area is mountains; and it covers ca. 3% of the global land area
- Mountains provide 70% of the world's freshwater resources for domestic, agricultural and industrial consumption

## 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**

- **15.1.1** Forest area as a proportion of total land area (Tier I)

## 15.1.1 OVERVIEW

- FAO definition of forest “land spanning more than 0.5 hectares with trees higher than 5 meters and a canopy cover of more than 10%, or trees able to reach these thresholds in situ. It does not include land that is predominantly under agricultural or urban land use”
- This indicator builds on the already established MDG indicator 7.1 (proportion of land covered by forest)
- FAO carries out global forest resources assessments at five-year intervals since 1946
- The main data collection instrument are the existing FAOSTAT land use questionnaire and the Forest Resource Assessment (FRA) five-year questionnaire cycles (covers 234 countries and territories)
- From 2018 data will be collected annually directly by countries

## 15.1.1 OVERVIEW

- Data on forest area and land area are available for all countries and territories
- For small number of countries that don't submit official data, FAO makes an estimate based on available documentation and/or remote sensing, which is then validated with national authorities
- FAO compiles the indicator for each country, regional aggregates, and a storyline for the SDG report

## FOREST RESOURCE ASSESSMENT (FRA) FIVE-YEAR QUESTIONNAIRE

- FOREST AREA AND FOREST CHARACTERISTICS
  - PRODUCTION
  - PROTECTIVE FUNCTIONS ECOSYSTEM SERVICES
  - BIODIVERSITY/CONSERVATION
  - DISTURBANCE AND FOREST DEGRADATION
  - MEASURING PROGRESS TOWARD SFM
  - ECONOMICS/LIVELIHOODS
  - LOOKING FORWARD
- Government targets/aspirations for forest area in 2020 and 2030
  - Forest area earmarked for conversion

Country	15.1.1 (%) - 2015	Nature of data
<b>Afghanistan</b>	2.07	E
<b>Bhutan</b>	72.28	C
<b>India</b>	23.77	C
<b>Iran</b>	6.56	C
<b>Japan</b>	68.46	C
<b>Lao PDR</b>	81.29	C
<b>Malaysia</b>	67.55	C
<b>Maldives</b>	3.33	E
<b>Mongolia</b>	8.08	C
<b>Pakistan</b>	1.91	E
<b>Papua New Guinea</b>	74.1	C
<b>Republic of Korea</b>	63.44	C
<b>Samoa</b>	60.42	E
<b>Thailand</b>	32.1	C
<b>Turkmenistan</b>	8.78	E
<b>Uzbekistan</b>	7.57	C

Country	2020 National Focal Point for FAO FRA
<b>Afghanistan</b>	<ul style="list-style-type: none"> <li>▪ Mr. Hammayoon Jamal, Ministry of Agriculture, Irrigation and Livestock (MAIL)</li> <li>▪ Mr. Ahmadshah Amarkhil, Ministry of Agriculture, Irrigation and Livestock (MAIL)</li> </ul>
<b>Bhutan</b>	<ul style="list-style-type: none"> <li>▪ Mr. Lobzang Dorji, Ministry of Agriculture and Forest</li> <li>▪ Mr. Arun Rai, Ministry of Agriculture and Forest</li> </ul>
<b>India</b>	<ul style="list-style-type: none"> <li>▪ Mr. Subhash Ashutosh, Ministry of Environment, Forests and Climate Change, Forest Survey of India</li> <li>▪ Mr. Rajesh Kumar, Ministry of Environment, Forests and Climate Change, Forest Survey of India</li> </ul>
<b>Iran</b>	<ul style="list-style-type: none"> <li>▪ Mr. Reza Bayani, Ministry of Agriculture Forests, Range &amp; Watershed Management Organization (FRWO)</li> <li>▪ Mr. Kamran Pourmoghadam, (FRWO)</li> </ul>
<b>Japan</b>	<ul style="list-style-type: none"> <li>▪ Mr. Nobuyuki Muto, Ministry of Agriculture, Forestry and Fisheries</li> <li>▪ Ms. Yukiko Sawa, Ministry of Agriculture, Forestry and Fisheries</li> </ul>
<b>Lao PDR</b>	<ul style="list-style-type: none"> <li>▪ Mr. Soukanh Bounthabandid, Ministry of Agriculture and Forestry</li> <li>▪ Mr. Khamkhong Inthavong, Ministry of Agriculture and Forestry</li> </ul>
<b>Malaysia</b>	<ul style="list-style-type: none"> <li>▪ Mr. Azimuddin bin Bahari, Ministry of Natural Resources and Environment</li> <li>▪ Mr. Mohd Ridza bin Awang, Forestry Department Peninsular Malaysia</li> </ul>
<b>Maldives</b>	<ul style="list-style-type: none"> <li>▪ Ms. Aminath Shafia, Director General, Ministry of Fisheries and Agriculture</li> </ul>

Country	2020 National Focal Point for FAO FRA
<b>Mongolia</b>	<ul style="list-style-type: none"> <li>▪ Mr. Oyunsanaa Byambasuren, Ministry of Environment and Tourism</li> <li>▪ Mr. Altangadas Janchivdorjas, National Forest Inventory Department</li> </ul>
<b>Pakistan</b>	<ul style="list-style-type: none"> <li>▪ Mr. Aurangzeb Ashraf Awan, Assistant Inspector General of Forests, Ministry of Climate Change</li> </ul>
<b>Papua New Guinea</b>	<ul style="list-style-type: none"> <li>▪ Ms. Ruth Turia, Director, Papua New Guinea Forest Authority</li> <li>▪ Mr. Gewa Gamoga, REDD &amp; Climate Change Officer, Papua New Guinea Forest Authority</li> </ul>
<b>Republic of Korea</b>	<ul style="list-style-type: none"> <li>▪ Mr. Jongsu Yim, National Institute of Forest Science, ROK</li> </ul>
<b>Samoa</b>	<ul style="list-style-type: none"> <li>▪ Mr. Moafanua Tolusina Pouli, Ministry of Natural Resources and Environment – MNRE</li> <li>▪ Ms. Susau Siolo, Ministry of Natural Resources and Environment - MNRE</li> </ul>
<b>Thailand</b>	<ul style="list-style-type: none"> <li>▪ Mr. Korn Manassrisuksi, Forest Land Management Bureau</li> <li>▪ Mr. Sukan Pungkul, Royal Forest Department</li> </ul>
<b>Turkmenistan</b>	<ul style="list-style-type: none"> <li>▪ Mr. Akmyrat Atamyradov, Forest Seeds Growing and Natural Parks Protection Inspectorate</li> </ul>
<b>Uzbekistan</b>	<ul style="list-style-type: none"> <li>▪ Mr. Abduvokhid Zakhadullaev, State Committee on Forestry</li> <li>▪ Mr. Mukhtorjon Shojalilov, State Committee on Forestry</li> </ul>

## 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



**15.2 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 (Tier I)

## METHODOLOGY

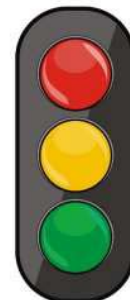
- Sustainable Forest Management is a dynamic and complex concept
- Five sub-indicators:
  1. Annual average percent **change in forest** area over most recent available five-year period
  2. Annual average percent change in **stock of carbon** in above ground biomass over most recent available five-year period
  3. Share of forest area whose primary designated function is **biodiversity conservation**, most recent period
  4. Share of forest area under a **forest management plan**, most recent period
  5. Forest area under an independently verified **forest management certification scheme**
- Data will be collected through FRA

## METHODOLOGY

- The environmental values of forests are covered by three sub-indicators focused on the extension of forest area, biomass within the forest area and protection and maintenance of biological diversity, and of natural and associated cultural resources
- Social and economic values of forests are reconciled with environmental values through sustainable management plans

## METHODOLOGY

- A dashboard with traffic lights is used to indicate progress in each of sub-indicators. It provides a clear view of areas where progress towards sustainable development goals has been achieved
- The color of the traffic light (green, yellow, red) describes the progress of each sub-indicator, comparing the latest value of the indicator with the previous reported value
  - increase
  - decrease
  - no change



# 1. ANNUAL AVERAGE PERCENT CHANGE IN FOREST AREA

- Sub-indicator focuses on both the direction of change (whether there is a loss or gain in forest area) and how the change rate is changing over time
- Change rate is important in order to capture progress among countries that are losing forest area, but have managed to reduce the rate of annual forest area loss
- The forest area change rate is calculated with the formula for Compound Annual Growth Rate (CAGR):
  - $(\text{End value}/\text{starting value})^{1/n} - 1$
  - A negative CAGR indicates a loss of forest area

Country	Annual average percent change in forest area (%)
Afghanistan	0.000
Bhutan	0.360
India	0.250
Iran	0.000
Japan	-0.010
Lao PDR	1.040
Malaysia	0.060
Maldives	0.000
Mongolia	-0.760
Pakistan	-2.690
Papua New Guinea	-0.010
Republic of Korea	-0.120
Samoa	0.000
Thailand	0.180
Turkmenistan	0.000
Uzbekistan	-0.340



## 2. ABOVE-GROUND BIOMASS IN FOREST, PER HECTARE

- Changes in the above-ground biomass stock in forest indicate the balance between gains in biomass stock due to forest growth and losses due to wood removals, natural losses, fire, wind, pests and diseases
- At country level and over a longer period, sustainable forest management would imply a stable or increasing biomass stock per hectare

Country	Above-ground biomass in forest, per hectare (tonnes/hactre)
Afghanistan	46.96
Bhutan	165.09
India	43.86
Iran	25.78
Japan	
Lao PDR	100.53
Malaysia	215.45
Maldives	
Mongolia	
Pakistan	184.78
Papua New Guinea	300.01
Republic of Korea	104.95
Samoa	
Thailand	88.24
Turkmenistan	4.24
Uzbekistan	19.17

### 3. SHARE OF FOREST AREA WHOSE PRIMARY DESIGNATED FUNCTION IS BIODIVERSITY CONSERVATION

- The change in forest area within legally protected areas is a proxy for trends in forest biodiversity conservation and a clear indication of the political will to protect and conserve forest biodiversity

Country	Share of forest area whose primary designated function is biodiversity conservation (%)
Afghanistan	
Bhutan	32.21
India	22.81
Iran	10
Japan	
Lao PDR	
Malaysia	22.71
Maldives	
Mongolia	40.22
Pakistan	
Papua New Guinea	5.35
Republic of Korea	11.3
Samoa	
Thailand	64.78
Turkmenistan	
Uzbekistan	6.52

## 4. SHARE OF FOREST AREA UNDER A FOREST MANAGEMENT PLAN

- The existence of a documented forest management plan is the basis for long term and sustainable management of the forest resources for a variety of management objectives such as for wood and non-wood forest products, protection of soil and water, biodiversity conservation, social and cultural use, and a combination of two or several of these
- An increasing area under forest management plan is therefore an indicator of progress towards sustainable forest management

Country	Share of forest area under a forest management plan(%)
Afghanistan	
Bhutan	9.7876
India	44.7102
Iran	
Japan	100
Lao PDR	
Malaysia	92.5939
Maldives	
Mongolia	3.6704
Pakistan	
Papua New Guinea	
Republic of Korea	48.875
Samoa	
Thailand	86.343
Turkmenistan	
Uzbekistan	100

## 5. FOREST AREA UNDER AN INDEPENDENTLY VERIFIED FOREST MANAGEMENT CERTIFICATION SCHEME
















- The fifth sub-indicator is the forest area that is certified by an independently verified forest management certification scheme
- Such certification schemes apply standards that generally are higher than those established by the countries' own normative frameworks, and compliance is verified by an independent and accredited certifier

Country	Forest area under an independently verified forest management certification scheme(1000 Hectares)
Afghanistan	0.00
Bhutan	0.00
India	509.93
Iran	0.00
Japan	523.87
Lao PDR	13.56
Malaysia	4,863.80
Maldives	0.00
Mongolia	0.00
Pakistan	0.00
Papua New Guinea	37.58
Republic of Korea	392.29
Samoa	0.00
Thailand	63.37
Turkmenistan	0.00
Uzbekistan	0.00

## DATA COLLECTION

- Data is submitted directly to FAO (once in 5 years so far)
- Based on data collected from countries, FAO assesses level of progress towards sustainable forest management on country level
- National coordinators prepare country reports (as in case of 15.1.1)

## GLOBAL AND REGIONAL REPORTING

	Forest area change rate	Biomass stock density	Proportion of forest area within protected areas	Proportion of forest area under management plan	Forest area certified
World					
Eastern Asia					
South-eastern Asia					

**Green**- positive change, **yellow** - no/small change, **red**- negative change



## IMPLEMENTATION CHALLENGES (15.1.1 AND 15.2.1)

- Forest statistics traditionally collected by specialized agencies, with little or no involvement of NSOs
- Reporting national institutions often don't have a formal mandate to provide official statistics on forests
- Data officially reported to FAO/FRA is harmonized to global definitions and reporting years. Therefore often not recognized by country experts and may cause confusion



## HOW FAO CAN SUPPORT COUNTRIES

- Through training and technical assistance supporting countries in developing and strengthening integrated monitoring systems
- Help countries improve their statistics on the production and trade of forest products
- Enhancing statistical capacity on forest products at the national and regional levels has been one of the core FAO activities
- Development of e-learning courses for 15.1.1. and 15.2.1 (coming soon!)
- Global meeting with FRA national correspondents on 6-9 March 2018, including training on new requirements

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**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**

- **15.4.2 Mountain Green Cover Index (Tier I)**

### 15.4.2 OVERVIEW

- Measures the changes of the green vegetation in mountain areas – i.e. forest, shrubs, trees, pasture land, crop land, etc. – in order to monitor progress on the mountain target
- Compiled by FAO using remote sensing data
- Index has a global coverage and it is possible to compute the indicator at the global, regional, national and sub-national level
- Data can be disaggregated by elevation class and land cover type
- Baseline established in 2017, expressed as the proportion of the area of green vegetation over the total mountain area for each country
- Assessment expected to be repeated every 3 years

## 15.4.2 METHODOLOGY

- The juxtaposition of land cover data extracted from FAO Collect Earth tool and the global map of mountains produced by FAO/Mountain Partnership Steering Committee (MPS) in 2015
- Collect Earth is a free and open source tool that enables data collection through Google Earth for a wide variety of purposes, including
  - ✓ Support multi-phase National Forest Inventories
  - ✓ Land Use, Land Use Change and Forestry (LULUCF) assessments
  - ✓ Monitoring agricultural land and urban areas
  - ✓ Validation of existing maps
  - ✓ Quantifying deforestation, reforestation and desertification
- Collect Earth- (<http://www.openforis.org/tools/collect-earth.html>)

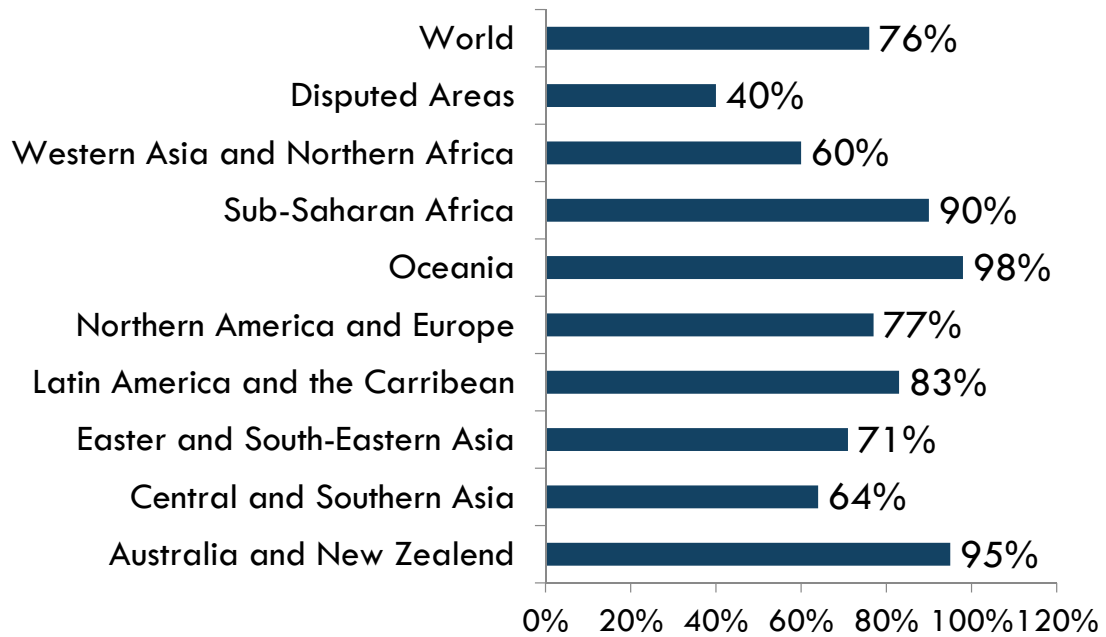
## INTERNATIONAL DEFINITION OF MOUNTAINS

- UNEP/WCMC Classification based on Kapos *et. al* scale
  - Class 1: elevation > 4,500 meters
  - Class 2: elevation 3,500–4,500 meters
  - Class 3: elevation 2,500–3,500 meters
  - Class 4: elevation 1,500–2,500 meters and slope > 2
  - Class 5: elevation 1,000–1,500 meters and slope > 5 or local elevation range (LER 7 kilometer radius) > 300 meters
  - Class 6: elevation 300–1,000 meters and local elevation range (7 kilometer radius) > 300 meters

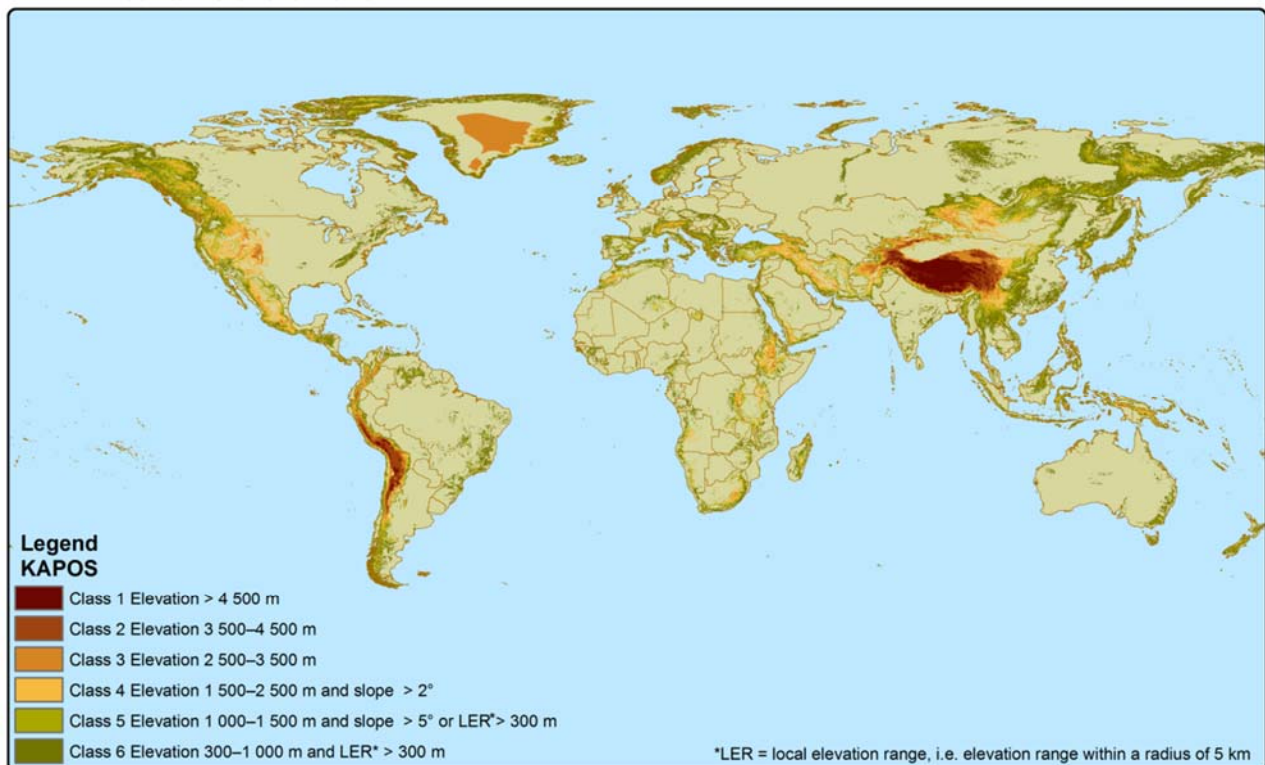


## 15.4.2 – 2017 BASELINE DATA

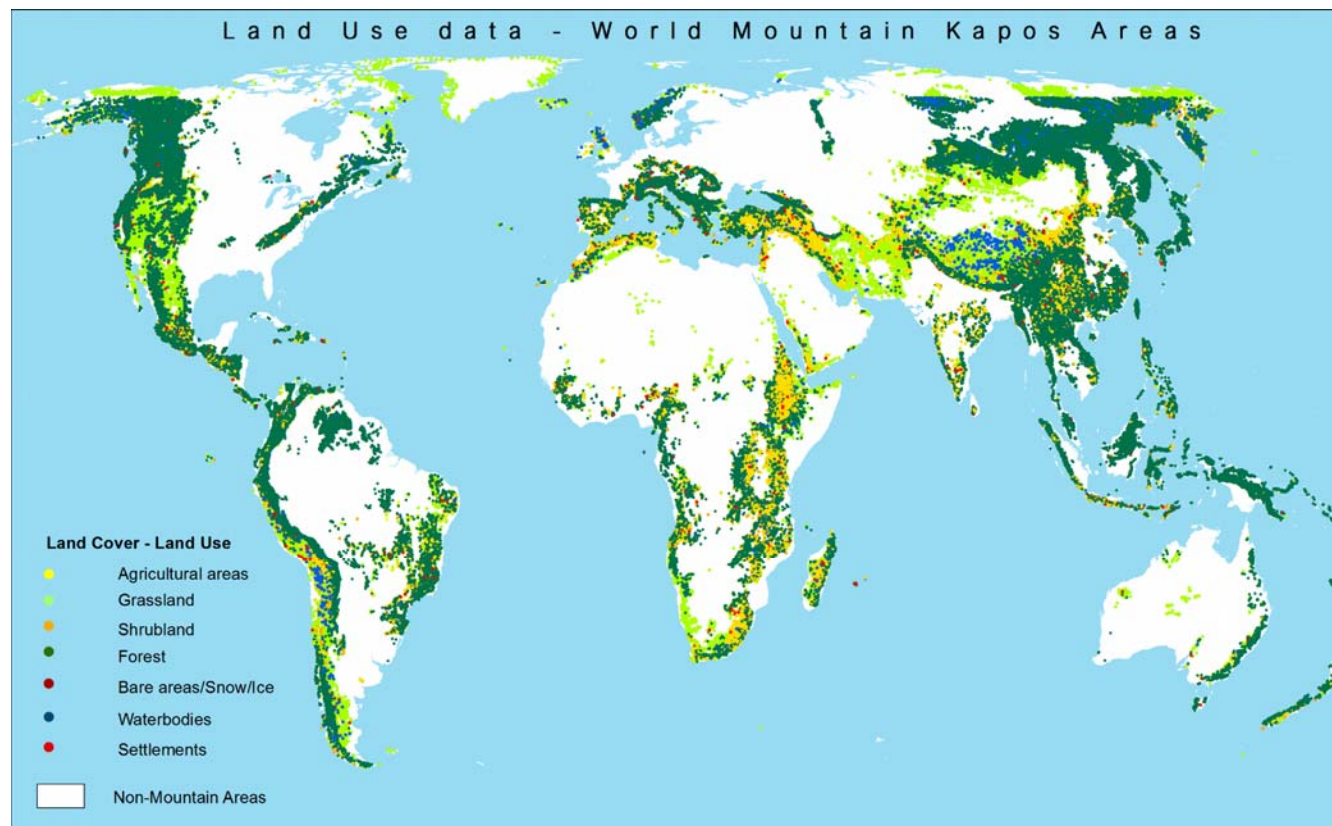
### Percentage of mountain areas with green coverage



## MAP OF MOUNTAIN AREAS – UNEP/WCMC CLASSIFICATION



## RESULTS: LAND COVER – LAND USE



Country	15.4.2 (%) - 2017	Authorization status
<b>Afghanistan</b>	<b>56.002422</b>	Pending Validation
<b>Bhutan</b>	<b>85.714286</b>	Pending Validation
<b>India</b>		
<b>Iran</b>	<b>64.140561</b>	Pending Validation
<b>Japan</b>	<b>97.121212</b>	Conditional Validation
<b>Lao PDR</b>	<b>99.244713</b>	Pending Validation
<b>Malaysia</b>	<b>99.28401</b>	Pending Validation
<b>Maldives</b>		
<b>Mongolia</b>	<b>64.180175</b>	Pending Validation
<b>Pakistan</b>	<b>60.206565</b>	Pending Validation
<b>Papua New Guinea</b>	<b>98.343236</b>	Pending Validation
<b>Republic of Korea</b>	<b>96.268657</b>	Pending Validation
<b>Samoa</b>		
<b>Thailand</b>	<b>98.217469</b>	Pending Validation
<b>Turkmenistan</b>	<b>61.538462</b>	Pending Validation
<b>Uzbekistan</b>	<b>54.811319</b>	Pending Validation

Land Cover - Land Use Area (Km2 '000)							
Kapos	Forest	Grassland - Shrubland	Cropland	Otherland	Wetland	Settlement	TOTAL AREA KAPOS
K1	-	-	-	-	-	-	-
K2	-	-	-	-	-	-	-
K3	-	-	-	-	-	-	-
K4	20.4	13.6	11.0	1.8	0.8	1.0	48.5
K5	27.6	16.1	6.4	1.0	0.8	0.3	52.2
K6	37.0	31.0	2.3	3.3	0.3	0.4	74.4
<b>SUM</b>	<b>85.0</b>	<b>60.7</b>	<b>19.7</b>	<b>6.2</b>	<b>1.8</b>	<b>1.7</b>	<b>175.1</b>
	Sum green cover classes 165			Sum other land cover classes 10			



## HOW FAO CAN SUPPORT COUNTRIES

- Help countries increase their sampling grid and collect more data to improve the accuracy of indicator 15.4.2.
- On-demand technical assistance
- Hands-on training on using Collect Earth on 14-15 December 2017 and to be held on 26-29 November 2018 in Rome HQ.

➤ Three Asian Pacific countries participated:

<b>Afghanistan</b>	<ul style="list-style-type: none"> <li>▪ Ali Ahmad Osmani, Ministry of Energy and Water</li> <li>▪ Abdullah Hameed, Ministry of Energy and Water</li> <li>▪ Noorzai Farhad, Ministry of Energy and Water</li> </ul>
<b>Pakistan</b>	<ul style="list-style-type: none"> <li>▪ Bashir Wani, Mountain Areas Conservation and Development Services</li> </ul>
<b>Mongolia</b>	<ul style="list-style-type: none"> <li>▪ Batzorigt Yunden , National Accounts and Statistical Research Department of NSO</li> </ul>



# THANK YOU

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**For more detailed information please see:**

- <http://www.fao.org/sustainable-development-goals/indicators/1511/en/>
- <http://www.fao.org/sustainable-development-goals/indicators/1521/en/>
- <http://www.fao.org/sustainable-development-goals/indicators/1542/en/>