

# Development in Environmental Statistics with digitalization in the Arab region.

Expert Group meeting on Emerging Technologies 2023  
Beirut



Shared Prosperity **Dignified Life**



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Statistics, Information Society and Technology Cluster  
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# Content

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- I. Frameworks for Environment statistics and Environmental Economic Accounting
- II. Data Collection from Arab Countries on Environment Statistics and Accounts
- III. Climate Change Set of Indicators
- IV. Capacity building on Environment Statistics and Accounts and Contribution to Global Work
- V. New Technologies: Satellite Imagery and Geo-Statistics Information for informing on indicators (Land cover, Climate Change etc..) Digital capture of data from Sensors and intelligent objects, Citizen Data, Social Media

# Framework for Development of Environment statistics (FDES)

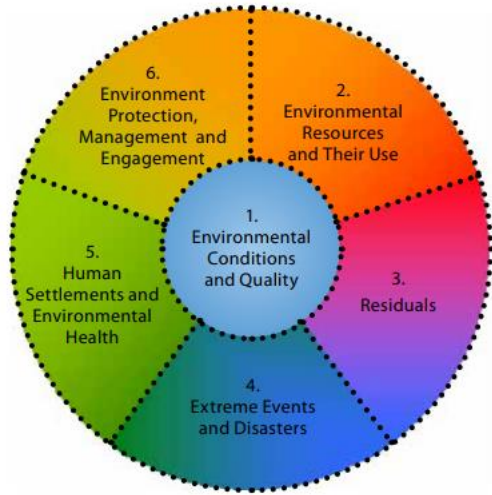
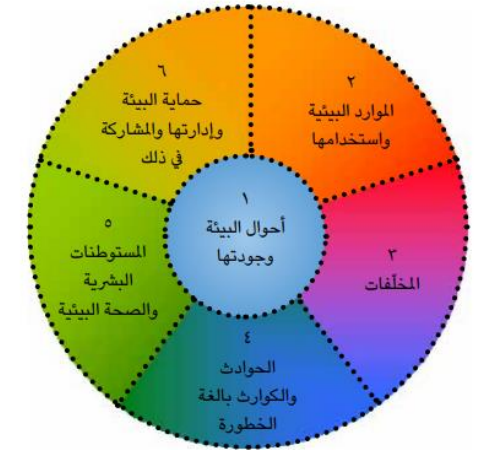
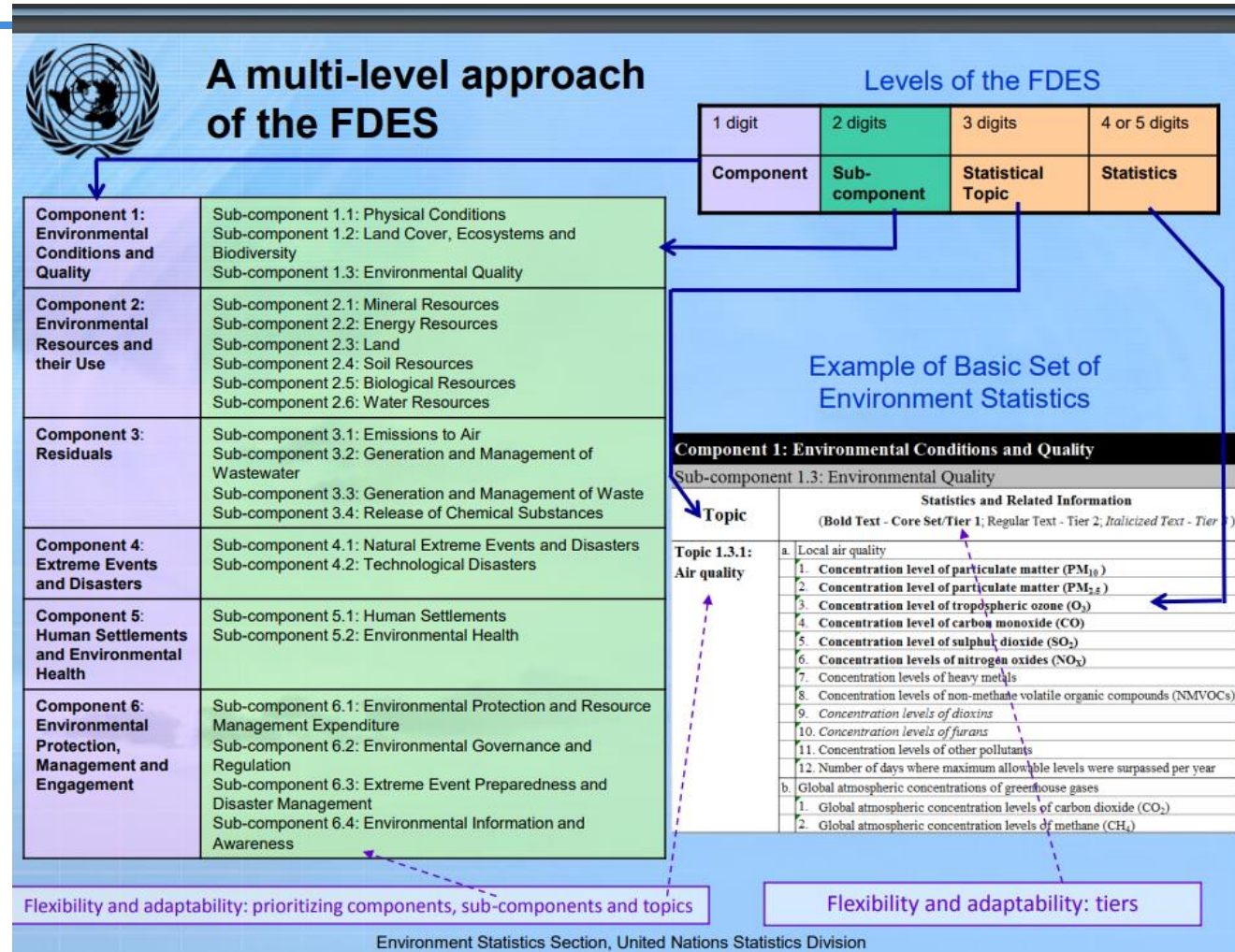


Figure 1. The FDES components



الشكل ١: مكونات إطار تطوير الإحصاءات البيئية

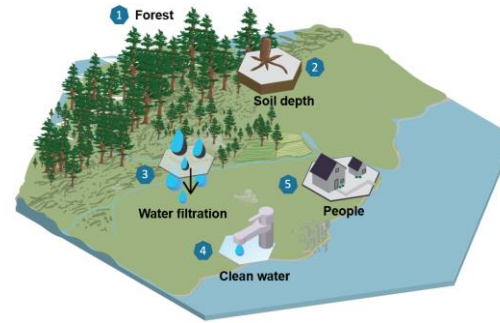
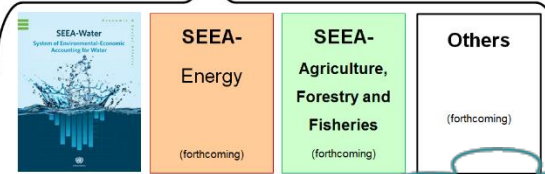
Adoption of the Global Set at the 53rd Session of the Statistical Commission  
[Implementation support tools and guidelines](#)  
[Climate Change Statistics and Indicators Self-Assessment Tool \(CISAT\)](#)  
[Tenth Meeting of the Expert Group on Environment Statistics](#)

# SEEA: Central framework and Ecosystem Accounting

<https://seea.un.org/>

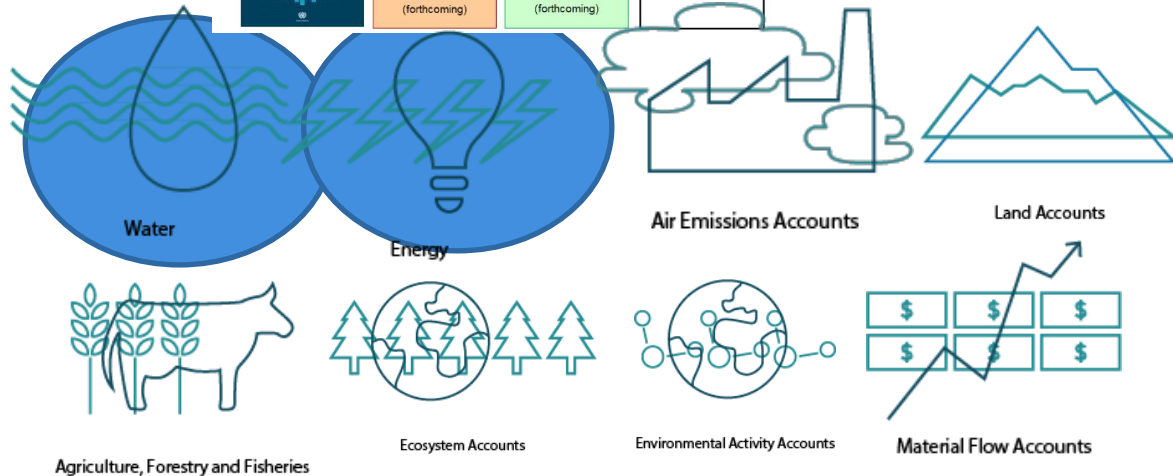
ESCWA had projects funded by UNDA and XB since 2004 on Environment, Energy and SDGS to provide technical assistance and capacity building to develop pilot accounts with Member Countries on SEEA Water and SEEA Energy.

But the production stopped when the projects ended. Countries do not produce regular accounts.



<https://seea.un.org/ecosystem-accounting>

Thematic Areas



# System of Environmental Economic Accounting (SEEA)

## Global Assessment of Environmental-Economic Accounting and Supporting Statistics 2023 Email to NSO from SEEA-DESA

### Global Assessment 2022

Figure 4. Top five categories of accounts per region

	AFRICA	ASIA	LATINAMERICA AND THE CARIBBEAN	OCEANIA	NORTHERN AMERICA AND EUROPE
①	Energy	Energy	Energy	Energy	Air emission, Energy
②	Water	Water	Water; Agriculture, forestry & fisheries	Water, Waste	Material flow, Environmental protection and management expenditure
③	Agriculture, forestry & fisheries	Material flow	Land, Environmental protection and management expenditures, Ecosystem extent	Land, Ocean	Taxes and subsidies
④	Land	Air emission, Land, Environmental protection and management expenditure	Ecosystem condition	Taxes & subsidies; Agriculture, forestry & fisheries; Ecosystem extent; Ecosystem services; Carbon	Environmental goods and services sector
⑤	Ecosystem extent	Waste	Air emission, Waste	N/A	Ecosystem extent



## SEEA status in Arab Countries in 2018

Country SEEA status 2018	Compiled and/or published accounts?	Funding?	CF account compiled (thematic area)	EEA account compiled (thematic area)	Plans to begin compilation of accounts in new thematic area?	Other notes
Egypt	Planning					Priority of water
Iraq	Yes (compilation/publis hing status unclear)		Water			Priorities of water, energy and land
Jordan	Planning					Received technical assistance and training in 2014, but could not establish programme at that time; there is a need for more training and more integration with other ministries Priorities are water, energy and waste. Would like to have a field visit to Indonesia to learn about their experience in applying the SEEA.
Kingdom of Saudi Arabia	No					Plans of the Department of Environment Statistics are: 1. Participation in UNSD/ESCWA/AITRS training; 2. In 2019, include questions in forms used by the General Authority of Statistics to cover the part of the environmental-economic accounting; 3. Statistics data of environmental-economic accounting will be published in 2020. Priorities of waste, water and energy
Kuwait	No					
Oman	No					Priorities of water and energy
Palestine	Compiled and published	Periodic funding but are planning to increase staff by three employees	EPEA		MFA, water, energy, land, timber, aquatic, water emissions, air emissions, waste, ReMEA, EGSS, taxes, subsidies, Agriculture forestry and fisheries; Plan to do all ecosystem accounts after 2020	SEEA embedded in NSDS; have received technical assistance for water and waste accounts  Priorities of energy and water
Qatar	Planning				Materials, water, energy, land, aquatic, biological, air emissions, water emissions, EPEA, ReMEA, EGSS, taxes, subsidies, agriculture forestry and fisheries	Water and EPEA are highest priority
Sudan	No					Priorities of energy and minerals, water and forest
Tunisia	Yes (compilation/publis hing status unclear)		Water			Did not respond to Global Assessment, but have water accounts; waste and energy are priorities
Turkey	Compiled and published	Regular funding	MFA, water, energy, timber, air emissions, EPEA, EGSS, taxes		Expansion plans for existing accounts	SEEA is in NSDS; DG Forestry did pilot study on ecosystems in 2015 for Bolu, Duzce region via WAVES. Have received technical assistance on CF accounts from Eurostat.
Yemen	No					Priorities of water and land

# I. UNSD/UNEP Data Collection of Water Waste Statistics Inform FDES 2002-2021

Prepared by Christoph Rouhana

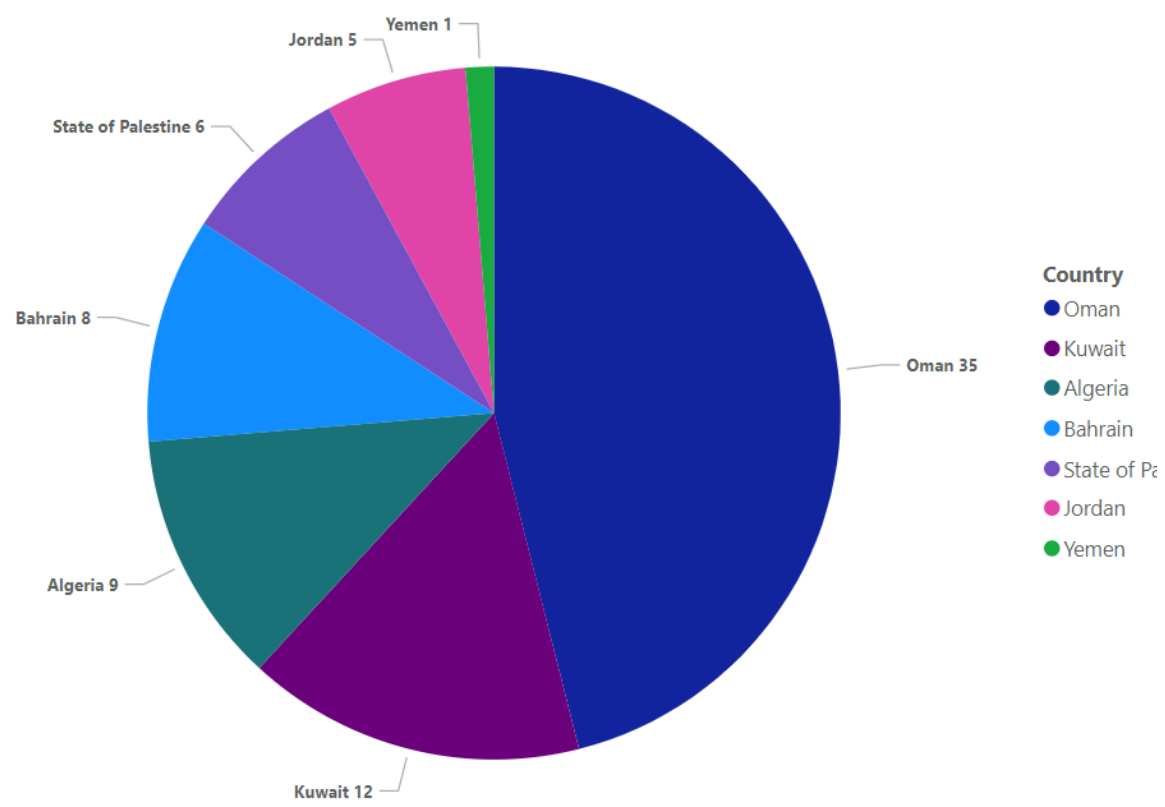


Filters

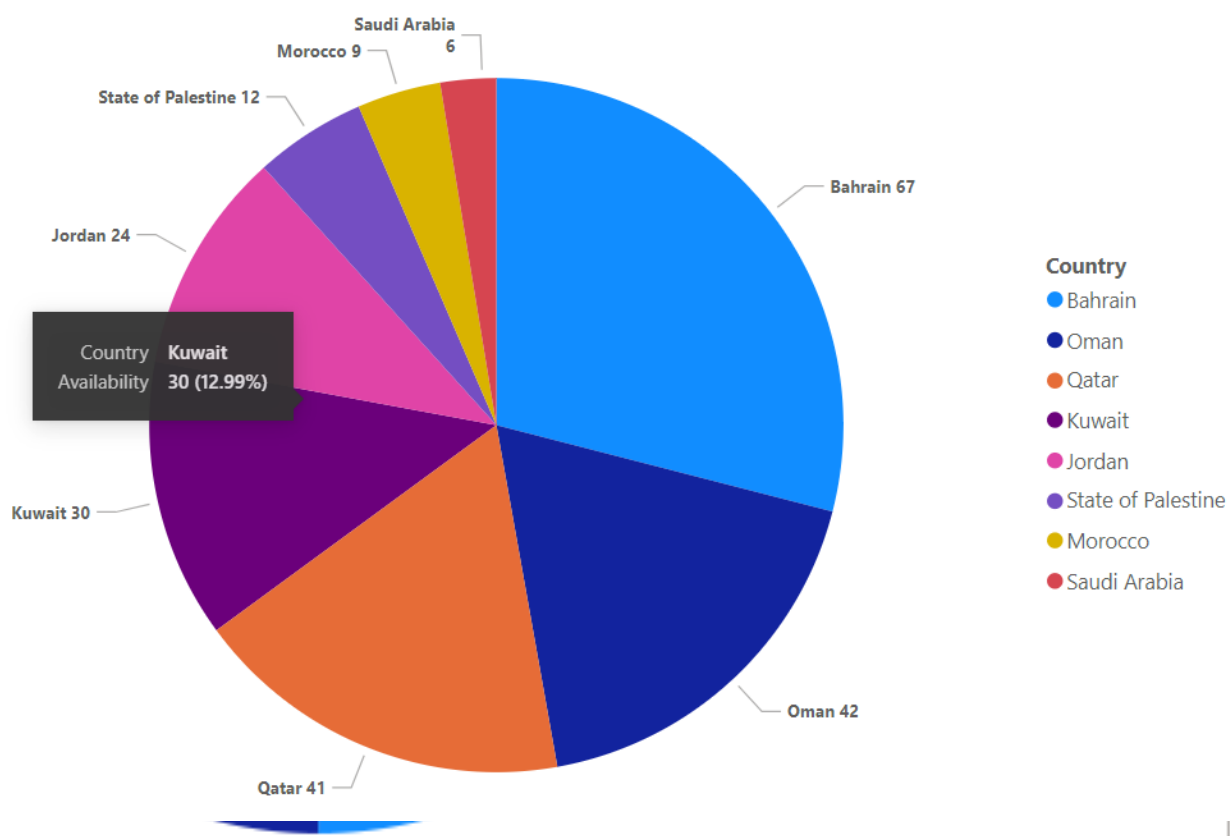
### Waste

### Water

Type



- Country
- Oman
- Kuwait
- Algeria
- Bahrain
- State of Palestine
- Jordan
- Yemen

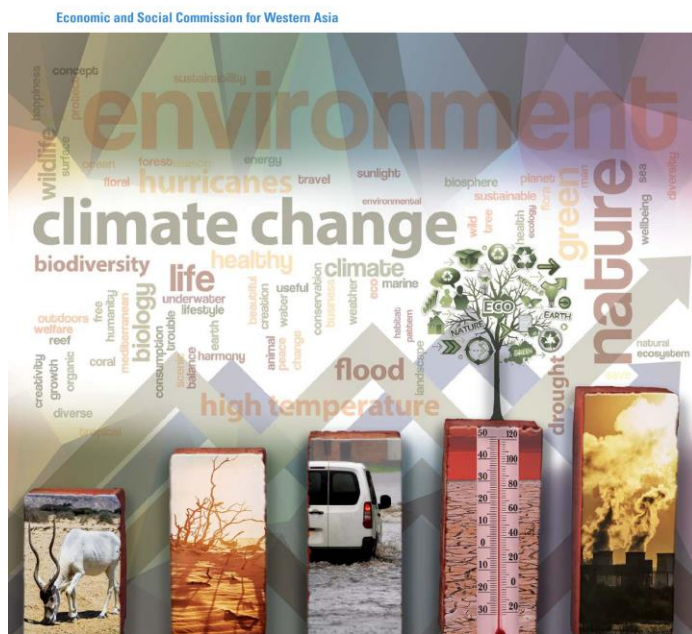


- Country
- Bahrain
- Oman
- Qatar
- Kuwait
- Jordan
- State of Palestine
- Morocco
- Saudi Arabia



# Climate Change-Related Statistics in the Arab Region A Proposed Set of Indicators 2017

## Building on List of Indicators for the ECE and UNSD

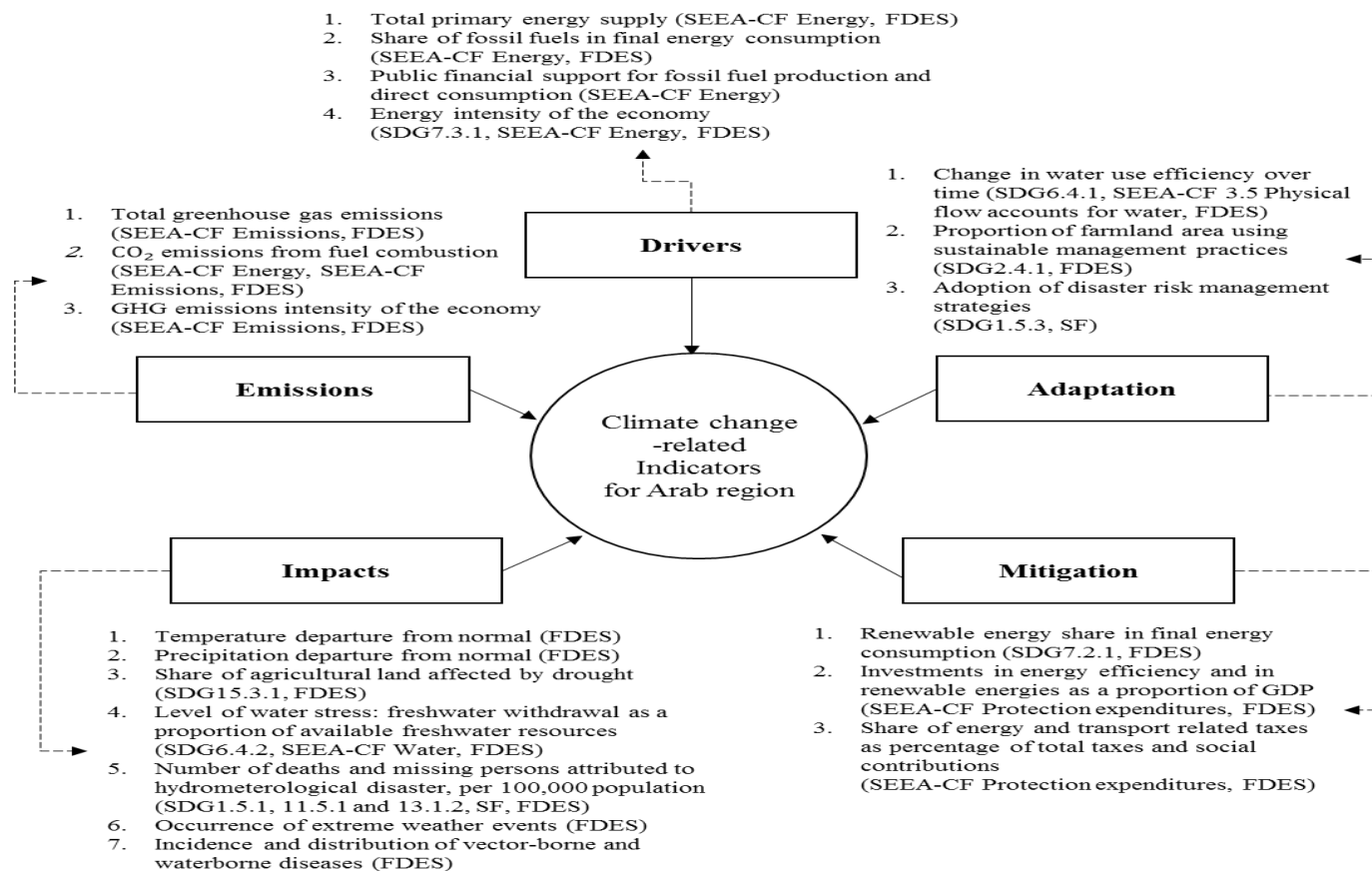


### Climate Change-Related Statistics in the Arab Region

A Proposed Set of Indicators

Special Issue of the Compendium of Environment Statistics in the Arab Region 2017

**E/ESCWA/SD/2017/3**  
**In Arabic and English**



**SURVEY OF ECONOMIC AND SOCIAL DEVELOPMENTS IN THE ARAB REGION**  
**2017-2018**

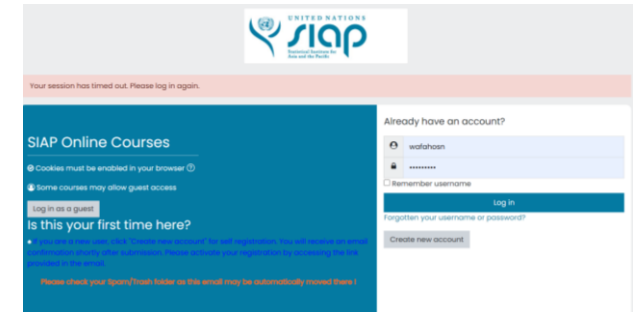
# Capacity Building on SEEA , Water, Energy, Climate Change and DRR

## UNGP LMS: All courses (officialstatistics.org)

- [SEEA - Central Framework \(Arabic\)](#)
- [SEEA - Energy \(Arabic\)](#)
- [SEEA - Water \(Arabic\)](#)

## Other Courses

- [SEEA - In Depth Training on Energy Accounting \(Arabic\) تدريب متعمق حول المحاسبة في مجال الطاقة](#)
- [SIAP on-line training open to ESCWA member states: Compiling Climate Change Indicators: An Accounting Approach](#)
- [DRSF التدريب الإلكتروني حول الإطار الإحصائي المعنى بالكوارث](#)



# Contribution to Global and Regional Work

ESCWA is member of the following:

- Expert Group meetings: EGES (Includes CC )
- Intergovernmental-UN Committees: UNCEEA and London Group
- ISWG on DRS
- UNEP-LAS-ESCWA Environment-Related SDGs of Priority for the Arab Region



# New Technologies: Satellite Imagery and Geospatial Information Use in official Statistics on Climate Change and Environment Statistics

- Google Earth Engine Project with Egypt on Monitoring Disasters on Land Use in Egypt 2020-2022
- ESCWA Geo Statistics Lab: 2022- Current

## Component 1: Environmental Conditions and Quality

subcomponent 1.2, Land cover Ecosystems and Biodiversity

### Topic 1.2.1 Land cover

**Area of land cover** By location, By type of land cover (e.g., artificial surfaces including urban and associated areas; herbaceous crops; woody crops; multiple or layered crops; grassland; tree covered areas; mangroves; shrub covered areas; shrubs and/or herbaceous vegetation, aquatic or regularly flooded; sparsely natural vegetated areas; terrestrial barren land; permanent snow and glaciers; inland water bodies; and coastal water bodies and inter-tidal areas) at national (Arab Countries) and subnational by administrative boundaries .

### Topic 1.2.2: Ecosystems and biodiversity

**d. Protected areas** Total, terrestrial and marine (number and area)

### Topic 1.2.3: Forests

**1.2.3.a. Forest area:** Total and By forest type (Natural, Planted Protected forest area Forest area affected byfire)

## Component 1: Environmental Conditions and Quality

### Sub-component 1.1: Physical Conditions

Topic 1.1.4: Soil characteristics

1.1.4.b. Soil degradation

**1.1.4.b.1. Area affected by soil erosion**

## **Component 5: Human Settlements and Environmental Health,**

Sub-component 5.1: Human Settlements,

Topic 5.1.5: Environmental concerns specific to urban settlements

**5.1.5.f. Extent of roadways**





# Leave No Location Behind - iSEE\* The Arab World (un.org)

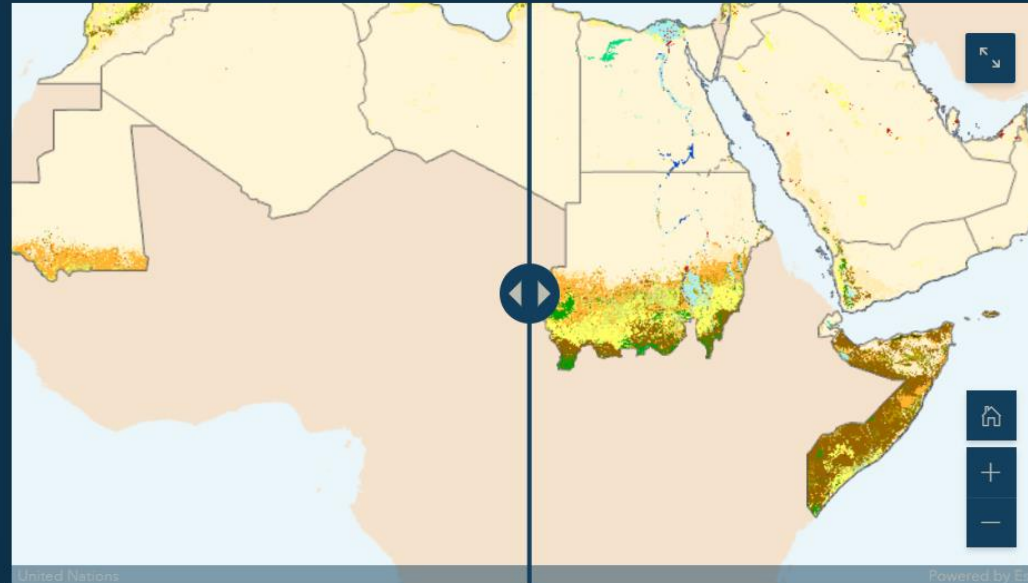
Leave No Location Behind - iSEE\* The Arab World

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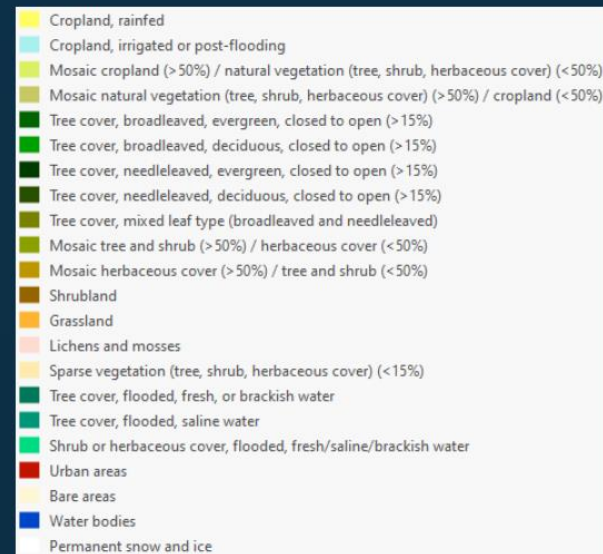
## Leave No Location Behind - iSEE\* The Arab World

\*Integrating Society, Economy, and the Environment





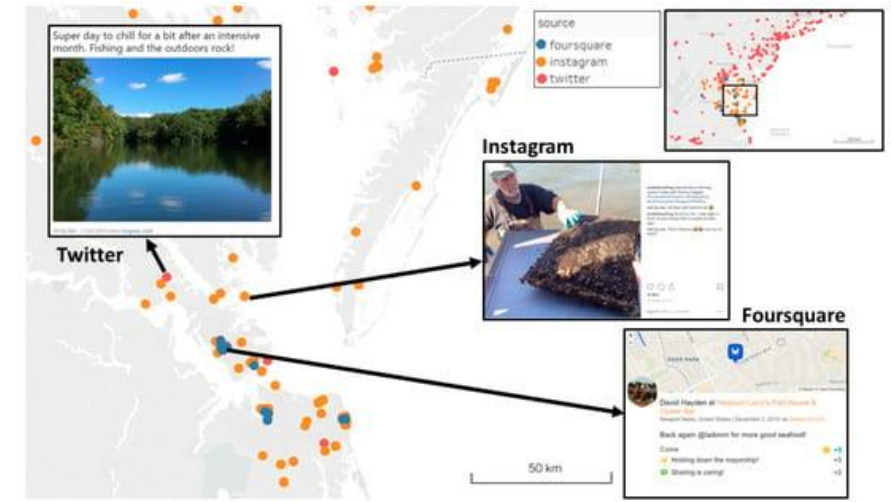
Map 1: Land Cover Change 1992 (Left) versus 2020 (Right), Arab Region (twenty-two Member States).





# New Technologies: CS, IOT, SM

- Sensor-based data collection and IOT (Temperature sensors at airports **for** weather forecast),
- Citizen Data (CS) activities : Complimentary science to traditional sensor-based data collection in collaboration with citizens and local communities, feedback loop on local issues (Photographs on pollution, biodiversity status, resource use, land cover, forests, rivers, etc..)

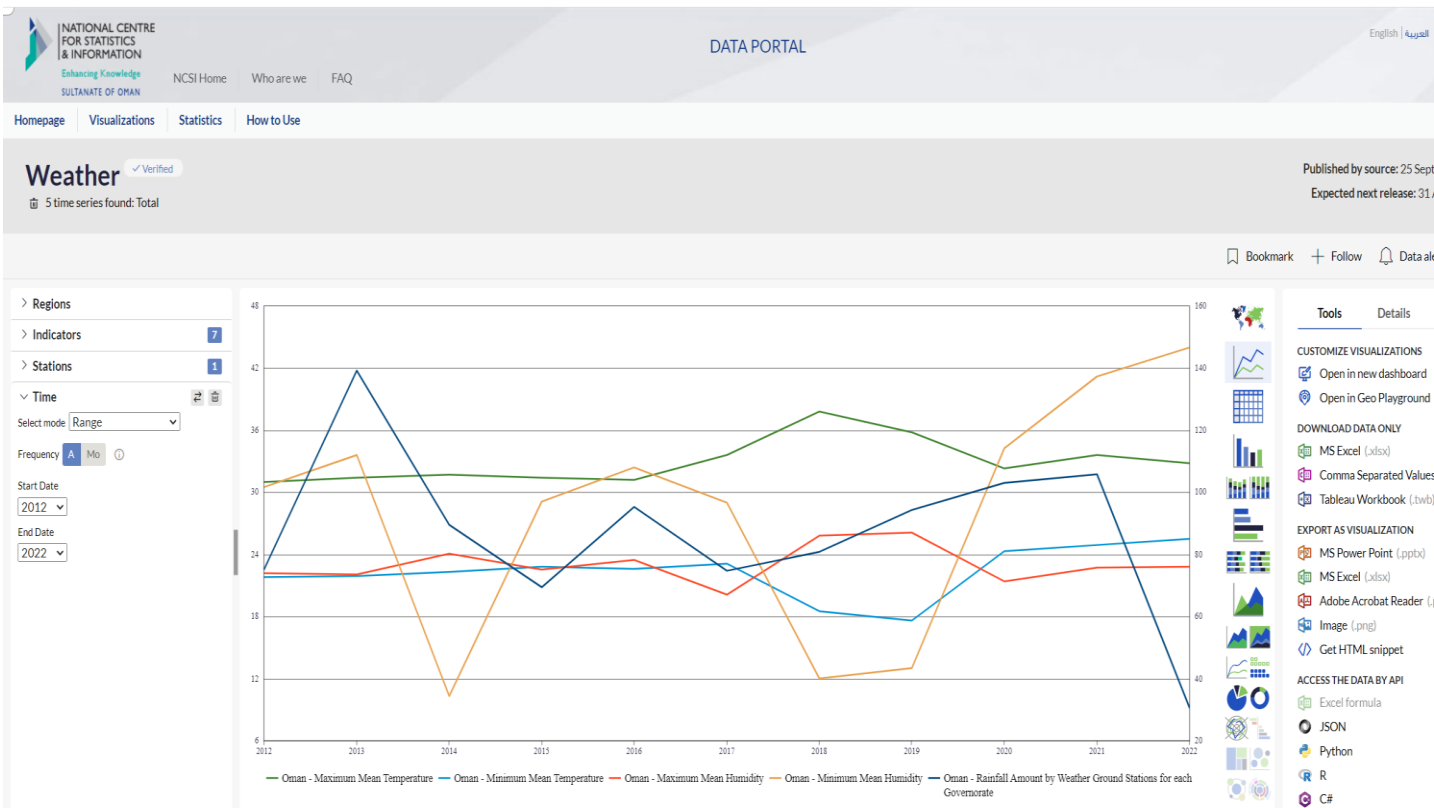


Source [Conserv Biol . 2021 Apr;35\(2\):437-446. doi: 10.1111/cobi.13708. Epub 2021 Mar 22](https://doi.org/10.1111/cobi.13708)

- Social media data: Increasingly used in conservation science to study human-nature interactions. User-generated content: images, video, text, and audio, and the associated metadata can be used to assess such interactions.

# Oman Case: Digital data to statistics and Indicators

Oman Weather Station Data  
<https://data.gov.om/bixytwb/weather>



## Oman Statistical Yearbook 2023

[https://www.ncsi.gov.om/Elibrary/LibraryContent/Doc/bar\\_bar\\_Statistical%20Year%20Book%202023\\_2\\_a4cd0646-e258-4045-a604-08a669488faf.pdf](https://www.ncsi.gov.om/Elibrary/LibraryContent/Doc/bar_bar_Statistical%20Year%20Book%202023_2_a4cd0646-e258-4045-a604-08a669488faf.pdf)  
 45  
 Statistical Year Book 2 0 2 3 الكتاب الإحصائي السنوي

### مؤشرات المناخ Climate Indicators

Item		2017	2016	2015	2014	2013	البيان
Mean Temperature (C°)	Max.	33.6	31.2	31.4	31.7	31.4	عظمى
	Min.	23.1	22.6	22.8	22.3	21.9	صغرى
Mean Humidity (%)	Max.	67.0	78.2	75.1	80.2	73.5	عظمى
	Min.	29.0	32.4	29.1	10.3	33.6	صغرى
Mean Atmospheric Pressure (HPA.)	Max.	938.8	1,012.9	1,014.0	1,012.9	1,012.9	عظمى
	Min.	926.6	1,008.8	1,009.7	1,008.5	1,008.9	صغرى
Rainfall Quantity (M.M.)	(M.M.)	74.7	95.3	69.4	89.5	139.2	كمية هطول الأمطار (ملم)

### مؤشرات المناخ Climate Indicators

Item		2022	2021	2020	2019	2018	البيان
Mean Temperature (C°)	Max.	32.8	33.6	32.3	35.8	37.8	عظمى
	Min.	25.5	24.9	24.3	17.6	18.5	صغرى
Mean Humidity (%)	Max.	76.0	75.7	71.3	87.0	86.0	عظمى
	Min.	44.0	41.2	34.3	13.0	12.0	صغرى
Mean Atmospheric Pressure (HPA.)	Max.	1,014.1	1,009.6	992.8	935.5	958.8	عظمى
	Min.	1,001.5	1,006.1	988.9	920.8	946.9	صغرى
Rainfall Quantity (M.M.)	(M.M.)	30.6	105.8	103.0	94.3	80.8	كمية هطول الأمطار (ملم)

Note: The indicators represent Muscat Governorate only for the Muscat International Airport station from 2020 to 2022

ملاحظة: المؤشرات تمثل محافظة مسقط فقط لمحطة مطار مسقط الدولي من عام 2020 إلى 2022

Thank you

Economic And Social Commission For Western Asia



UNITED NATIONS

الاسكوا  
ESCWA