دائرة الإحصاءات العامة
Department of Statistics

Comparing NSO dataset for climate change and data gap analysis with FDES

data set for climate change (ESSAT) based on the FDES 2013

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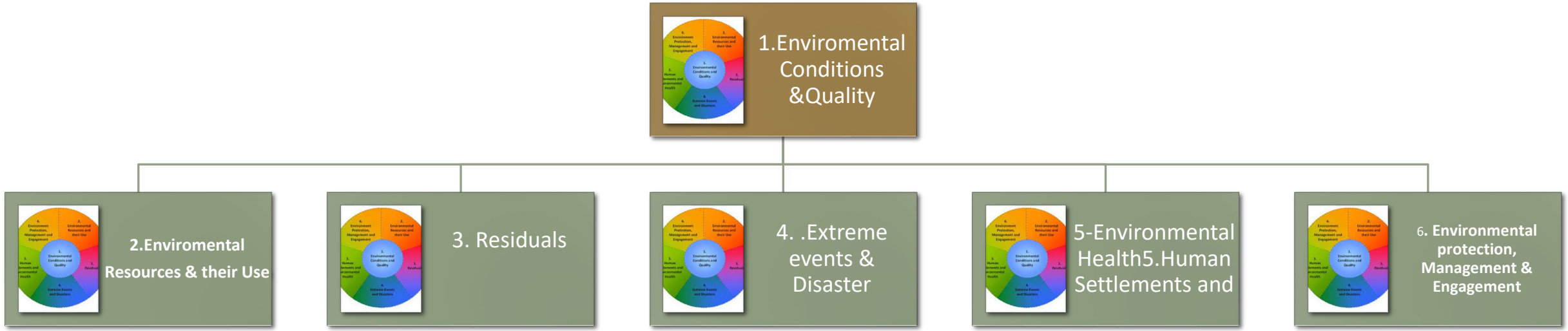
Classification of Environment Statistics (FDES) Jordan

The Framework for the Development of Environment Statistics (FDES) consists of six components, each containing sub-components, statistical subjects and individual statistics arranged flexibly to accommodate using a multi-level approach as follows:



Applications of the FDES to cross-cutting issues component 5 . (of FDES 2013)

The FDES can be applied to inform about cross-cutting policy issues important to countries at any given time.
Examples:

- Water and the environment
- Energy and the environment Climate change
- Agriculture and the environment

Evaluation of Climate Change Indicators

To conduct an assessment of the Department of Statistics (DOS) Framework for the Development of Statistics (FDES) database to identify and address missing variables essential for calculating climate change indicators.

تعزيز قاعدة بيانات إطار تطوير الإحصاءات التابع لدائرة الاحصاءات

إجراء تقييم لقاعدة بيانات إطار تطوير الإحصاءات التابع لإدارة الإحصاء لتحديد وتصحيح المتغيرات المفقودة التي تعد بالغة الأهمية لحساب مؤشرات تغير المناخ.

Auditing indicators available in the DOS database for environment sector

. Environmental Conditions and Quality

1.1 Physical Conditions

1.1.1 Climate

- **Data Availability**: The database includes a comprehensive set of climate-related data spanning from **1994 to 2022**. Key variables such as monthly rainfall, average relative humidity, wind speed, and temperature are available.
- **Periodicity** دورية : Most tables report data monthly, enabling detailed trend analysis.
- **Data Quality**: Generally high, with standardized methods for measurement across various stations and governorates.
- **Gaps**:
  - Limited data on extreme weather events (e.g., heatwaves, floods) which are crucial for assessing climate resilience.
- **Recommendations**:
  - Integrate real-time weather monitoring systems.
  - Conduct annual assessments of climate extremes to inform policy.

1.1.2 Hydrographical Characteristics
الصفات الوصفية للمياه

Data Availability: Data on river lengths, groundwater wells, and dam storage capacities covers **2014 to 2023**.

Periodicity دورية : Annual updates are common, though some variables are recorded bi-annually.

Data Quality: High reliability but may lack granularity for specific watersheds.

Gaps:

- More data on seasonal changes would enhance understanding of water availability throughout the year.
- إن الحصول على المزيد من البيانات المتعلقة بالتغيرات الموسمية من شأنه أن يعزز فهم مدى توفر المياه على مدار العام.

Recommendations:

- Increase data collection frequency during critical hydrological periods (e.g., rainy seasons).
- **زيادة وتيرة جمع البيانات خلال الفترات الهيدرولوجية الحرجة (على سبيل المثال، مواسم الأمطار**

1.2 Land Cover Ecosystems and Biodiversity

Data Availability: Data on cultivated areas and organic farming spans **1998 to 2022**.

Periodicity: Annual updates for most agricultural data.

Data Quality: Reliable, though definitions of "organic" may vary. موثوقة، على الرغم من أن تعريفات "العضوي" قد تختلف

Gaps:

- Insufficient tracking of land-use changes over time, which can impact biodiversity and ecosystem health
- **عدم كفاية تتبع التغيرات في استخدام الأراضي بمرور الوقت، مما قد يؤثر على التنوع البيولوجي وصحة النظام البيئي..**

Recommendations:

- Establish a comprehensive land-use monitoring program to track changes in real time.

إنشاء برنامج شامل لرصد استخدام الأراضي لتتبع التغييرات في الوقت الحقيقي.

Extreme Events and Disaster

4.1 Natural Extreme Events and Disaster

Data Availability: Data on disasters is available, primarily from **2018**.

Periodicity: Infrequently updated, typically after major events. يتم تحديثه بشكل غير متكرر، عادةً بعد الأحداث الكبرى.

Data Quality: Varies based on event reporting.

Gaps:

- Comprehensive disaster impact assessments are lacking. **لا توجد تقييمات شاملة لتأثير الكوارث**

Recommendations:

- Develop a systematic approach to disaster data collection and impact assessment following events.

تطوير نهج منهجي لجمع البيانات حول الكوارث وتقييم الأثر بعد الأحداث.

Evaluation of Climate Change Indicators

• Energy Methodology

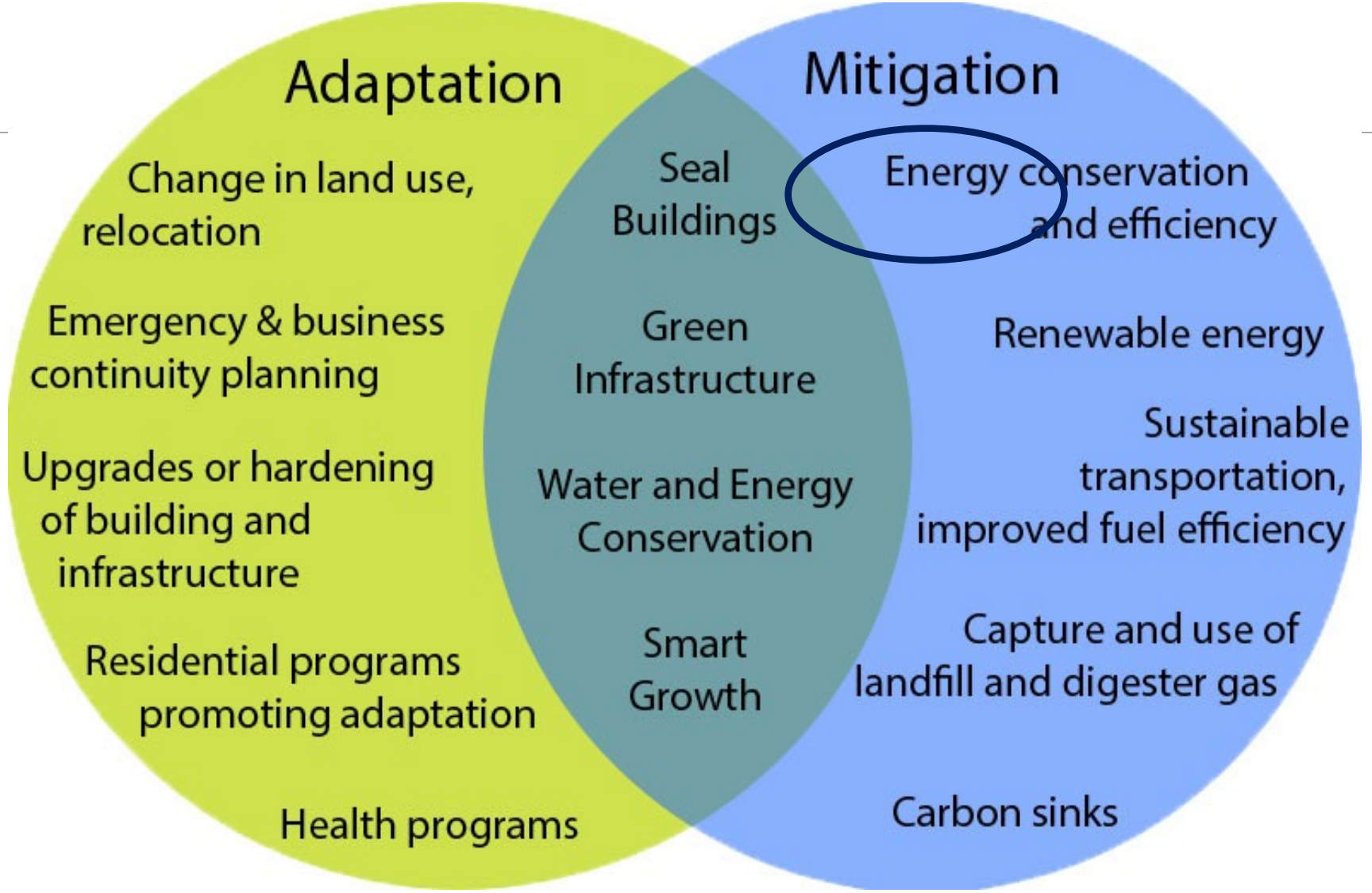
Indicators

The following indicators will be utilized to assess energy statistics:

- **Per capita primary energy and electricity consumption**
- **Domestic production of oil and gas**
- **Consumption of petroleum derivatives**
- **Total energy mix**
- **Primary energy usage by sector**
- **Exported and imported electricity**
- **Electricity generated by fuel type**
- **Fuel consumption in electricity generation by type**
- **Electricity consumption by activity classification (ISIC4)**
- **Renewable energy systems connected to the distribution network under the transit system**
- **Renewable energy systems connected to the distribution network under net metering**
- **Percentage of the population benefiting from electricity services**
- **Percentage of the population relying primarily on clean fuel and technology**
- **Share of renewable energy in total final energy consumption**
- **Energy intensity measured in terms of primary energy and GDP**

The following sections outline the methodology for collecting, categorizing, and comparing data to achieve comprehensive energy statistics at the national level and across various sectors.

Two options to respond to climate change



Drivers

Total greenhouse gas emissions	
	1. Total greenhouse gas emissions per year
	2. Total emissions of indirect greenhouse gases
	3. Greenhouse gas emissions from land use, land use change and forestry
	4. Total greenhouse gas emissions from the national economy
	5. Greenhouse gas emissions per capita
	6. Greenhouse gas emissions in gross fixed capital formation of direct investment
	7. Greenhouse gas emissions in value added of foreign-controlled multinational enterpris
	8. Carbon footprint
Atmospheric concentration of greenhouse gases	
	9. Global concentration of greenhouse gases
Energy production, supply and consumption	
	10. Total primary energy production from fossil fuels
	11. Total energy supply from fossil fuels
	12. Share of fossil fuels in total energy supply
	13. Final energy consumption per capita
	14. Energy intensity measured in terms of primary energy and gross domestic product
Fossil fuels	
	15. Fossil fuel dependency
	16. Amount of fossil-fuel subsidies (production and consumption) per unit of gross dom
Population	
	17. Population growth
	18. Urban population as a proportion of total population
Transport	
	19. Number of (fossil-driven) vehicles per capita
	20. Vehicle miles travelled per capita
Land and agriculture	
	21. Intensity of use of forest resources
	22. Deforested area as a proportion of total forest area
	23. Ratio of area of organic soils drained for agriculture to total area of organic soils
	24. Livestock units per agricultural area
	25. Use of nitrogen fertilizers per hectare of total agricultural area (cropland and pasture
	26. Growth in built-up area

Impacts

Hazardous events and disasters	
	39. Frequency of hazardous events and disasters
	40. Direct economic loss to all other damaged or destroyed productive assets attributed to disasters
	41. Direct economic loss in the housing sector attributed to disasters
	42. Number of deaths, missing persons and directly affected persons attributed to disasters per 100,000 population
	43. Number of climate refugees, climate migrants and persons displaced by climate change
Climate change and human health	
	44. Incidence of cases of climate-related diseases
	45. Incidence of heat- and cold-related illnesses or excess mortality
	46. Climate-induced air pollution
Climate change evidence	
	47. Sea level rise
	48. Reduction of sea ice cover
	49. Average marine acidity (pH) measured at agreed suite of representative sampling stations
	50. Reduction of lake and river ice cover
	51. Global mean surface temperature anomaly
	52. Mean surface temperature anomaly
	53. Temperature records
	54. Temperature-humidity index
	55. Mean sea surface temperature anomaly
	56. Ocean heat content
	57. Temperature of freshwater bodies
	58. Total rainfall anomaly
	59. Precipitation record
	60. Standardized precipitation index

Vulnerability

Water security, food security and agriculture	
	81. Prevalence of undernourishment
	82. Balance of food trade
	83. Customer price of drinking water
	84. Water production cost
	85. Area of biofuels (and other non-food crops) as a proportion of total agricultural area
	86. Population relying on subsistence and pastoral farming
Vulnerable species, ecosystems and their services	
	87. Vulnerable species
	88. Vulnerable or fragile ecosystems
	89. Vulnerable ecosystem services
	90. Ecosystem carbon stocks
Buildings and infrastructure vulnerable to climate change	
	91. Infrastructure vulnerable to climate change
	92. Buildings (settlements) vulnerable to climate change
Vulnerable population	
	93. Coverage of essential health services
	94. Net energy imports as a proportion of total energy supply
	95. Proportion of population with access to electricity
	96. Proportion of population served by municipal waste collection
	97. Proportion of population using (a) safely managed sanitation services and (b) a hand-washing facility with soap and water
	98. Proportion of population using safely managed drinking water services
	99. Proportion of population with access to heating/cooling
	100. Proportion of population living in coastal areas
	101. Proportion of the population living below the international poverty line by sex, age, employment status and geographic location (urban/rural)
	102. Proportion of population living in non-coastal hazard-prone areas
	103. Proportion of urban population living in slums, informal settlements or inadequate housing
	104. Indigenous population living in isolated areas
	105. Proportion of population with disability
Area of country vulnerable to climate change	
	106. Coastal area vulnerable to climate change
	107. Islands vulnerable to climate change

Mitigation

Renewable energy	
	109. Production of renewable energy as a proportion of total energy production
	110. Renewable energy share in the total final energy consumption
	111. Non-fossil fuel energy consumption as a proportion of final energy consumption
	112. Proportion of population with primary reliance on clean fuels and technology
	113. Rate of decrease of energy intensity
Climate change mitigation policies, strategies and plans	
	114. Low-carbon development strategies and plans
	115. Reforming or phasing out of government support for fossil fuels, by fuel type and type of support
	117. Share of energy- and transport-related taxes as a percentage of total taxes and social contributions
	118. Amounts provided and mobilized in United States dollars per year in relation to the continued existing collective mobilization goal of the $100 billion commitment through to 2025
	119. Average trading carbon price
Climate change mitigation technology and practice	
	120. Climate change mitigation technology
	121. Trade in low-carbon technology products
	122. Greenhouse gas intensity of the economy (including transport)
	123. Rate of decrease of greenhouse gas emissions per unit of gross domestic product
	124. Greenhouse gas removals (carbon sequestration)
	125. Increase in forest area
	126. Progress towards achieving the nationally determined contribution

Adaptation

Climate change adaptation policies, strategies and plans	
	127. Proportion of sectors planning, budgeting and implementing climate change adaptation actions
	128. Proportion of women in managerial positions
	129. Share of government adaptation expenditure in relation to gross domestic product
	130. Number of units dedicated to climate change in government structures
	131. National integrated coastal zone management
	132. Fisheries management measures in place and multilateral/bilateral fisheries management arrangements
Risk management, disaster forecasting and early warning systems	
	133. Proportion of local governments that adopt and implement local disaster risk reduction strategies in line with national disaster risk reduction strategies
	134. Coverage of disaster shelters per capita
	135. Climate change funds received
	136. Coverage of early warning systems
	137. Average increase of insurance premiums incurred due to climate change
Public awareness of and education on climate change	
	138. Proportion of population with access to climate information
	139. Extent to which (i) global citizenship education and (ii) education for sustainable development are mainstreamed in (a) national education policies; (b) curricula; (c) teacher education; and (d) student assessment
	140. Number of companies publishing sustainability reports
	141. Number of reports on climate change statistics and indicators
Area-based adaptation to climate change	
	142. Adaptation at coastal zones or river basins
	143. Nature-based adaptation
	144. Proportion of important sites for terrestrial and freshwater biodiversity that are covered by protected areas, by ecosystem type
	145. Share of green urban areas in the total area of cities
	146. Proportion of degraded area of ecosystems that has been restored
	147. Buildings adapted to climate change
	148. Proportion of agricultural area under productive and sustainable agriculture
	149. Progress towards sustainable forest management
Climate change monitoring	
	150. Biodiversity information monitoring index

CC Indicators: Mitigation & Adaptation

	Variable 1
Production of renewable energy as a proportion of total energy production	Renewable energy production
Renewable energy share in the total final energy consumption	Renewable energy consumption
Non-fossil fuel energy consumption as a proportion of final energy consumption	Non-fossil fuel energy consumption
Rate of decrease of energy intensity	Intermediate consumption of energy products of total ISIC Industries (01-99) in TJ
Low-carbon development strategies and plans	List and description of strategies and plans
Average trading carbon price	Average price paid on the market for 1 ton CO2 equivalent during the reference year
Climate change mitigation technology	Number of hybrid and electric driven vehicles
Greenhouse gas intensity of the economy (including transport)	Total greenhouse gas emissions from production activities of industries, including services, of a national economy
Rate of decrease of greenhouse gas emissions per unit of gross domestic product	Total emissions of direct greenhouse gases (excluding LULUCF)
Greenhouse gas removals (carbon sequestration)	GHG removals (carbon sequestration) by ecosystems
Increase in forest area	Forest area: Total
Progress towards achieving the nationally determined contribution	Nationally determined contributions (NDCs) embody efforts by each country to reduce national GHG emissions and adapt to the impacts of climate change.
Share of government adaptation expenditure in relation to gross domestic product	Environmental protection expenditure
Number of units dedicated to climate change in government structures	List and description of units
National integrated coastal zone management	Areas covered by ICZM
Fisheries management measures in place and multilateral/bilateral fisheries management arrangements	This indicator measures the status of fisheries management by checking fisheries management measures prescribed in national legislation, policies or multilateral/ bilateral fisheries management arrangements
Proportion of local governments that adopt and implement local disaster risk reduction strategies in line with national disaster risk reduction strategies	Description of local disaster risk reduction strategies
Climate change funds received	report the funds received within their Biennial Update Reports
Coverage of early warning systems	Existence and number of early warning systems
Proportion of population with access to climate information	Number of households with timely access to climate information
Extent to which (i) global citizenship education and (ii) education for sustainable development are mainstreamed in (a) national education policies; (b) curricula; (c) teacher education; and (d) student assessment	Number of children deprived of education
Number of reports on climate change statistics and indicators	List and description of climate change statistical products
Adaptation at coastal zones or river basins	Area protected through storm surge infrastructure
Proportion of important sites for terrestrial and freshwater biodiversity that are covered by protected areas, by ecosystem type	Key biodiversity areas
Share of green urban areas in the total area of cities	Green urban area
Proportion of agricultural area under productive and sustainable agriculture	
Progress towards sustainable forest management	

Data set of Climate Change Indicators

Ref.
221.T2
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221.T2 & GDP
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V1: 515.T5/T6 V2:?
311.T1 & 4th National communication-Min Env
311.T1 & 4th National communication-Min Env
311.T & 4th National communication-Min Env
n.a
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Min. Env
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National Center For security & crisis management مركز ادارة الازمات
MOPEC
National Center For security & crisis management مركز ادارة الازمات
n.a
DOS/social
DOS/envir
ASEZA شرطة اقليم العقبة
Min. Env & DOS
LC FAO project 2022
tbc with Min Agriculture & DOS
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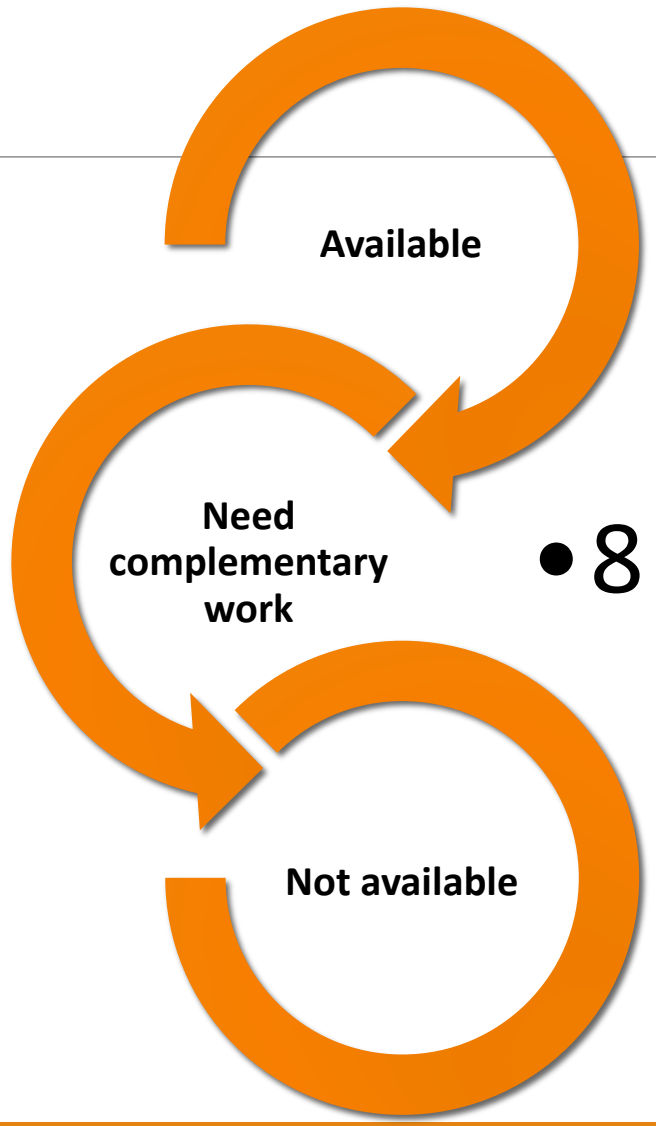

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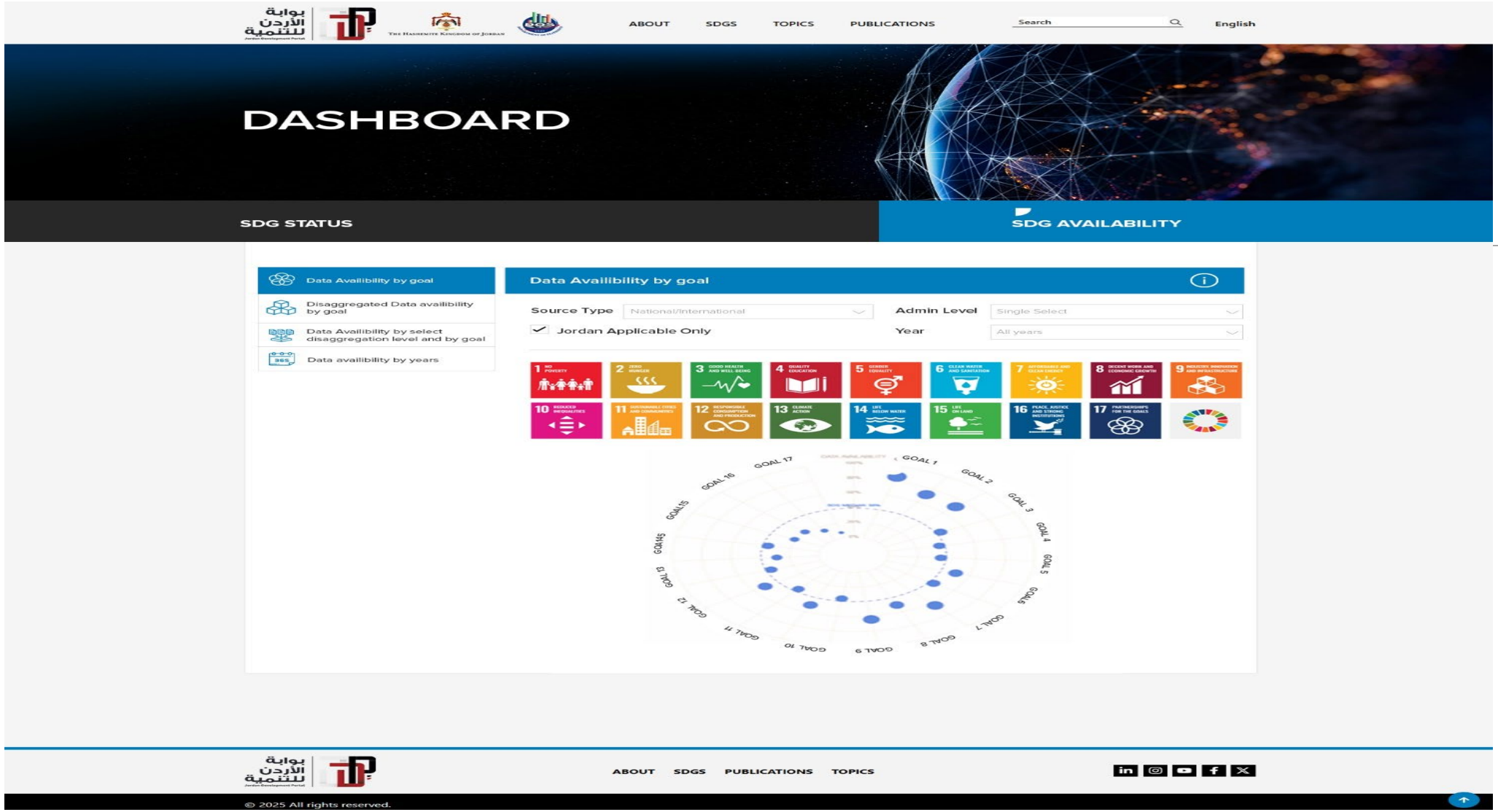
(Not available)
Average trading carbon price

قاعدة البيانات التفاعلية

Interactive Database

https://jorinfo.dos.gov.jo/Databank/pxweb/en/Environment/Environment__Disasters__disasters/



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Thank you!!