ENERGY DATA CHALLENGES IN THE ARAB COUNTRIES

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Energy Balances 13-14 December 2018
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• VERY IMPORTANT SECTOR IN THE ARAB REGION

• ENERGY STATISTICS IS NOT COLLECTED, PRODUCED AND USED WITH THE QUALITY, COVERAGE, PERIODICITY AND TIMELINESS GRANULARITY REQUIRED

• DATA GAP IS DATA THAT IS NOT ACCESSIBLE IN THE PUBLIC DOMAIN IN A CONVENIENT FORM FOR POLICY MAKING AND PROGRAM MONITORING,

• CHALLENGES EXIST IN MANY AREAS
  × INSTITUTIONAL USERS-PRODUCERS
  × LACK OF RESOURCES
  × INEFFICIENT USE OF DATA SOURCES
  × METADATA
  × TECHNICAL PROBLEMS
SECONDARY DATA SOURCES

KAPSARC NOV 2018 OPEC OIL PRODUCTION DATA SECONDARY SOURCES

• MOST SOURCES ON OIL DATA PRODUCTION WHICH ARE KEY TO UNDERSTANDING INTERNATIONAL OIL MARKET COME FROM SECONDARY SOURCES,

• HISTORICALLY, MOST OPEC OIL PRODUCTION FIGURES ARE CONFIDENTIAL AND NOT PUBLISHED OR PUBLISHED AS UNRELIABLE NUMBERS

Energy Data Gaps:

SUPPLY SIDE

• PUBLIC SECTOR ENTITIES SUCH AS OIL AND NATURAL GAS CORPORATION, GAS AUTHORITY

• PRIVATE SECTOR

• PETROLEUM & NATURAL GAS

• ELECTRICITY: DATA ON POWER SUPPLY QUALITY AND RELIABILITY IS NOT PUBLISHED. VOLTAGE AND OUTAGE DATA SHOULD BE PUBLISHED AT THE FEEDER LEVEL IN ADDITION TO TECHNICAL AND COMMERCIAL LOSSES AT TRANSFORMER AND FEEDER LEVEL
Energy Data Gaps:

USE SIDE

• ENERGY CONSUMPTION CAN VARY OVER THE DURATION OF A YEAR BASED ON FACTORS SUCH AS SEASONAL CLIMATIC VARIATIONS. HENCE, IT IS IMPORTANT TO CAPTURE CONSUMPTION DATA AT DIFFERENT TIMES DURING THE YEAR.

• SURVEYS ADMINISTERED AT THE CONSUMER END PROVIDE VALUABLE DISAGGREGATED DATA THAT IS EXTREMELY USEFUL FOR FORMULATING POLICIES, ANALYZING POLICY IMPACT AND FOR UNDERSTANDING CONSUMER BEHAVIOUR.

• SALES SURVEYS DONE AT PRODUCERS AND DEALERS ARE ALSO VERY USEFUL AND PLAY A COMPLEMENTARY ROLE IN AUGMENTING QUALITY OF DATA FROM CONSUMPTION SURVEYS.
INSTITUTIONAL

• STRUCTURAL: IN MOST ARAB NSOS, ENERGY STATISTICS IS WITH INDUSTRY (EGYPT, IRAQ, QATAR,…) OR ENVIRONMENT (UAE) OR NA (TUNISIA) EXCEPT IN PALESTINE

• LACK OF COORDINATION: DIFFERENT GOVERNMENT ENTITIES PRODUCING/PUBLISHING ENERGY DATA

• REPORTING:
  - IN OIL EXPORTING ARAB COUNTRIES, OIL & GAS ARE OWNED & OPERATED BY NATIONAL OIL COMPANIES AND THERE ARE NO TAXES, THE DATA REPORTING STILL NOT FULLY DEVELOPED.
  - CUSTOMS DO NOT ADMINISTER TRADE OF OIL AND GAS. (MINISTRIES OF OIL, FINANCES AND CENTRAL BANKS).
  - CONFIDENTIALITY ON PRODUCTION AND EXPORTS DATA (IF ONLY ONE COMPANY IS OPERATING)
  - DELAYS IN PRODUCING AND PUBLISHING ENERGY REPORTS
RESOURCES

• INSUFFICIENT STAFF WORKING ON ENERGY STATISTICS
• LACK IN UNDERSTANDING THE ENERGY PROCESSES AND THE INFORMATION REQUIRED TO PRODUCE QUALITY ENERGY DATA;
• ABSENCE OF FUNDING FOR THE ESTABLISHMENT OF EFFECTIVE DATA COLLECTING, HANDLING, AND DISSEMINATING SYSTEMS
DATA SOURCES
SURVEYS

• ECONOMIC/BUSINESS /INDUSTRIAL SURVEYS: EXTRACTION, PRODUCTION, MANUFACTURING, TRANSPORTATION AND DISTRIBUTION, AND INTERMEDIATE AND FINAL CONSUMPTION OF FUELS AND ELECTRICITY (VALUES AND QUANTITIES), INVESTMENTS

• HOUSEHOLD FOR, ACCESS, EXPENDITURES

• AGRICULTURE

• TRANSPORT END USE
DATA SOURCES

BUSINESS REGISTERS

• ADMINISTRATIVE RECORDS:, OIL AND GAS AND ELECTRICITY COMPANIES REPORTS/GOVERNMENT AGENCIES, ON SUPPLY AND CONSUMPTION, PRICES, INVESTMENTS, ETC.

• CUSTOMS/OTHERS ON IMPORTS AND EXPORTS

• ENVIRONMENT SURVEY: EXPENDITURES ON ENVIRONMENTAL PROTECTION
METADATA

BUILDING METADATA AND ENSURING THE QUALITY AND EXHAUSTIVENESS OF ALREADY EXISTING STATISTICS FOR PETROLEUM, GAS AND ELECTRICITY.

BESIDES BEING INSTRUMENTAL FOR THE USERS, IT WILL HELP THE PRODUCERS OF THE STATISTICS TO ENSURE THE QUALITY AND COMPREHENSIVENESS OF THE DATA.
TECHNICAL ISSUES

• DIFFERENT METHODOLOGIES USED IN CALCULATIONS AND ESTIMATIONS OF ENERGY BALANCE NOT APPLYING INTERNATIONAL STANDARDS AND METHODOLOGIES

• UNITS AND CONVERSION FACTORS MASS/VOLUME TO ENERGY. (LOCAL FACTORS FROM PRODUCERS FOR EACH PRODUCT SHOULD BE USED)

REFERENCE TO THE INTERNATIONAL RECOMMENDATION ON ENERGY STATISTICS, IRES HTTP://UNSTATS.UN.ORG/UNSD/STATCOM/DOC11/BG-IRES.PDF AND THE IEA MANUALS ON ENERGY STATISTICS

• LACK OF IT TOOLS FOR ENERGY DATA COLLECTION AND MANAGEMENT AND EXCHANGE BETWEEN DATABASES FROM PRODUCERS AND USERS OF ENERGY DATA.
GAPS IN RENEWABLE ENERGY

- RENEWABLE ENERGY IS A FAST GROWING SECTOR IN THE REGION BUT IN MOST COUNTRIES IE. UAE, SO FAR NO STATISTICS ON RENEWABLE ENERGY IS PUBLISHED.
- DIFFICULTIES IN ESTIMATING RE (SMALL SCALE USE, BIOMASS, ETC..)
VALUES AND QUANTITIES

• INFORMATION ON ENERGY USE IS AVAILABLE FOR EITHER VALUES OR QUANTITIES. NEED TO CONVERT VALUES INTO QUANTITIES AND VICE VERSA. UNIT PRICES (I.E. VALUE PER PHYSICAL UNIT)

• UNIT PRICES ARE NOT ALWAYS READILY AVAILABLE, I.E. BECAUSE THE ENERGY GROUP IN QUESTION MAY BE TOO HETEROGENEOUS TO BE REPRESENTED BY A SINGLE ENERGY PRODUCT

• BASIC INFORMATION AT A SUFFICIENT DETAILED LEVEL AND FOR GROUPS, IDENTIFIABLE OR COMPARABLE WITH OTHER GROUPS.
TECHNOLOGY AND ENERGY DATA COLLECTION

- Big Data
- Geospatial
- Primary and Secondary Data
- Official vs Private Data
- Digitization Key Factor in Energy Industry
- Mining Analysis and Dissemination
- Energy Mapping System
- Sensors Smart Meters
- Real-Time Track of Shipments from Producer to Port

• Big Data
• Geospatial
• Primary and Secondary Data
• Official vs Private Data
CHALLENGES AND SOLUTIONS: COMMON CHALLENGES FOR SURVEY IMPLEMENTATION

**Pros**
- Accuracy
- Consumer behavior

**Cons**
- Respondent imprecise estimation on amount of fuel consumed
- Seasonal variation in consumption differences
- Not cost effective
SPECIFIC ISSUES FOR GULF COUNTRIES

• FUEL FOR ELECTRICITY PRODUCTION AND DESALINATION

• HOW TO ALLOCATE THE INPUT OF NATURAL GAS BY ISIC ACTIVITIES FOR ELECTRICITY PRODUCTION AND DESALINATION.

• DISTRICT COOLING

• LOCAL SALES VERSUS EXPORTS (BETWEEN EMIRATES)
Energy is recognized as an integral part of the 2030 Agenda for Sustainable Development. Water and Sanitation are identified as a stand-alone Sustainable Development Goal (SDG 6) and as a central component of many of the 17 goals and 169 targets agreed in the agenda.
<table>
<thead>
<tr>
<th>Goals Number</th>
<th>Goals</th>
<th>Targets</th>
<th>Indicators</th>
<th>Tier</th>
<th>Indic. Number</th>
<th>Tier Number</th>
<th>Goal 7: Ensure access to affordable, reliable, sustainable and modern energy for all</th>
</tr>
</thead>
</table>
|              |       |         | **Target 7.1:** By 2030, ensure universal access to affordable, reliable and modern energy services | **Indicator 7.1.1:** Proportion of population with access to electricity | I | 7.1.1 | 1
|              |       |         | **Target 7.2:** By 2030, increase substantially the share of renewable energy in the global energy mix | **Indicator 7.2.1:** Renewable energy share in the total final energy consumption | I | 7.2.1 | 2
|              |       |         | **Target 7.3:** By 2030, double the global rate of improvement in energy efficiency | **Indicator 7.3.1:** Energy intensity measured in terms of primary energy and GDP | I | 7.3.1 | 3

**Goal 7:** By 2030, ensure universal access to affordable, reliable and modern energy services for all.
Access to basic services

Food Security Nutrition

Sustainable Agriculture

Health

Children Education

Knowledge of SD

Women's unpaid domestic care work

Reduce inequalities

Resource productivity

Infrastructure

Housing and basic services and slums

Water disasters

Efficient use of resources management of chemicals and wastes

Resilience and adaptive capacity to climate-

Participation of developing countries in the institutions of global governance

Technology and science

Ensure availability and sustainable management of water and sanitation for all
<table>
<thead>
<tr>
<th>Goals and Targets (from the 2030 Agenda)</th>
<th>Indicators</th>
<th>Tier</th>
<th>Custodian Agency(ies)</th>
<th>Other Agencies</th>
<th>Indicators (من خطة عام 2030)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>GOAL 7. ENSURE ACCESS TO AFFORDABLE, RELIABLE, SUSTAINABLE AND MODERN ENERGY FOR ALL</strong></td>
<td>7.1 By 2030, ensure universal access to affordable, reliable and modern energy services</td>
<td>7.1.1 Proportion of population with access to electricity</td>
<td>Tier I</td>
<td>World Bank</td>
<td>International Energy Agency, FAO, GACC</td>
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<td></td>
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<td>Tier I</td>
<td>WHO</td>
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<tr>
<td></td>
<td>7.1.2 Proportion of population with primary reliance on clean fuels and technology</td>
<td></td>
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<tr>
<td></td>
<td>7.2 By 2030, increase substantially the share of renewable energy in the global energy mix</td>
<td>7.2.1 Renewable energy share in the total final energy consumption</td>
<td>Tier I</td>
<td>World Bank, UNSD?</td>
<td>IEA, IRENA, OECD</td>
</tr>
<tr>
<td></td>
<td>7.3 By 2030, double the global rate of improvement in energy efficiency</td>
<td>7.3.1 Energy intensity measured in terms of primary energy and gross domestic product (GDP)</td>
<td>Tier I</td>
<td>World Bank, UNSD</td>
<td>IEA &amp; OECD</td>
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</tbody>
</table>
### Goal 7. Ensure access to affordable, reliable, sustainable and modern energy for all

#### 7.a By 2030, enhance international cooperation to facilitate access to clean energy research and technology, including renewable energy, energy efficiency and advanced and cleaner fossil-fuel technology, and promote investment in energy infrastructure and clean energy technology.

<table>
<thead>
<tr>
<th>Tier III</th>
<th>OECD</th>
<th>UNFCCC, UNEP</th>
</tr>
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<tbody>
<tr>
<td>7.a.1 Mobilized amount of United States dollar per year starting in 2020 accountable towards the $100 billion commitment</td>
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</tbody>
</table>

7.a.1 Mobilized amount of United States dollar per year starting in 2020 accountable towards the $100 billion commitment

#### 7.b By 2030, expand infrastructure and upgrade technology for supplying modern and sustainable energy services for all in developing countries, in particular least developed countries, small island developing States and landlocked developing countries, in accordance with their respective programmes of support.

<table>
<thead>
<tr>
<th>Tier III</th>
<th>IEA</th>
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<tbody>
<tr>
<td>7.b.1 Investments in energy efficiency as a proportion of GDP and the amount of foreign direct investment in financial transfer for infrastructure and technology to sustainable development services</td>
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</table>

7.b.1 Investments in energy efficiency as a proportion of GDP and the amount of foreign direct investment in financial transfer for infrastructure and technology to sustainable development services
UNSC and the Inter-Agency and Expert Group on Sustainable Development Goal Indicators classified proposed indicators

1. Methodologically sound (internationally agreed definition)
2. Measurable
3. Accessible and easy to interpret
4. Relevant
5. Timely
6. Regularly produced over time

for global indicators:
   Internationally comparable

Tier 1: Satisfy all criteria
Tier 2: Satisfy most criteria but data coverage is insufficient
Tier 3: Methodology still being developed
Total Number of Data Points per SDG Environmental Goal

إجمالي عدد نقاط البيانات حسب الأهداف البيئية

<table>
<thead>
<tr>
<th>SDG Goal</th>
<th>Data Points</th>
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<tbody>
<tr>
<td>3</td>
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<tr>
<td>6</td>
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<tr>
<td>13</td>
<td>1970</td>
</tr>
<tr>
<td>14</td>
<td>710</td>
</tr>
<tr>
<td>15</td>
<td>3425</td>
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اهداف التنمية المستدامة البيئية
Domestic material consumption, domestic material consumption per capita, and domestic material consumption per GDP by type of indicator:

- Domestic material consumption
- Domestic material consumption per capita
- Domestic material consumption per GDP

Number of deaths, missing persons and directly affected persons attributed to disasters per 100,000 population:

Direct economic loss in relation to global GDP, damage to critical infrastructure and number of disruptions to basic services:

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Total Number of Data Points per Indicator

Number of deaths, missing persons and directly affected persons attributed to disasters per 100,000 population.

Direct economic loss in relation to global GDP, damage to critical infrastructure and number of disruptions to basic services.
AT A GLOBAL LEVEL

- DATA AVAILABILITY AND QUALITY: BASIC DATA IS NOT AVAILABLE. ESTIMATION AND CALCULATION IS NOT EASY
- COORDINATION IS NOT STABLE: WITHIN THE COUNTRY IT IS NOT A CLEAR HOW DATA IS COORDINATED
- SOME COUNTRIES REPLY AFTER SEVERAL REMINDERS AND SEND PARTIAL DATA
- ENERGY BALANCE HELPS TO HAVE QUALITY CHECKS
- THE UNSD QUESTIONNAIRE IS LONG
- USE OF COMMON CLASSIFICATIONS AND DEFINITIONS
- USES OF ADMIN DATA
- BIG DATA
- COST OF DATA COLLECTION