



الاسكوا
ESCWA

ENERGY STATISTICS CHALLENGES IN THE ARAB REGION

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Outline

- Importance of energy for the economy
- Importance of energy information for investments and financing in energy efficiency
- Frameworks for compilation of energy statistics
- ESCWA's work in capacity building
- Challenges for the Arab region and the other regions
- Recommendations
- Opportunities

Highlights of ESCWA region

17 countries: Jordan, Iraq, Kuwait, Bahrain, Qatar, UAE, Oman, Yemen and Saudi Arabia; Lebanon, Palestine Syria, Egypt and Sudan;
3 North African joined in 2012: Libya, Tunisia and Morocco



	Year	ESCWA 17
Surface area (millions sq km)		9,707
Population, total (thousand)	2011	316,150
Average Annual Population Growth Rate (%)	2006-11	2,51
Energy Reserves Oil (million barrels)	2013	705,637
Energy Reserves gas (billion cubic meters)	2013	49,766
Production of Oil and Others (000 barrels/day)	2013	26,544
CO ₂ emissions per capita (metric tons)	2010	4.9
Energy use per capita per year (Kg of oil equivalent)	2013	1,591
Electricity use per capita (KWH)	2013	2,522

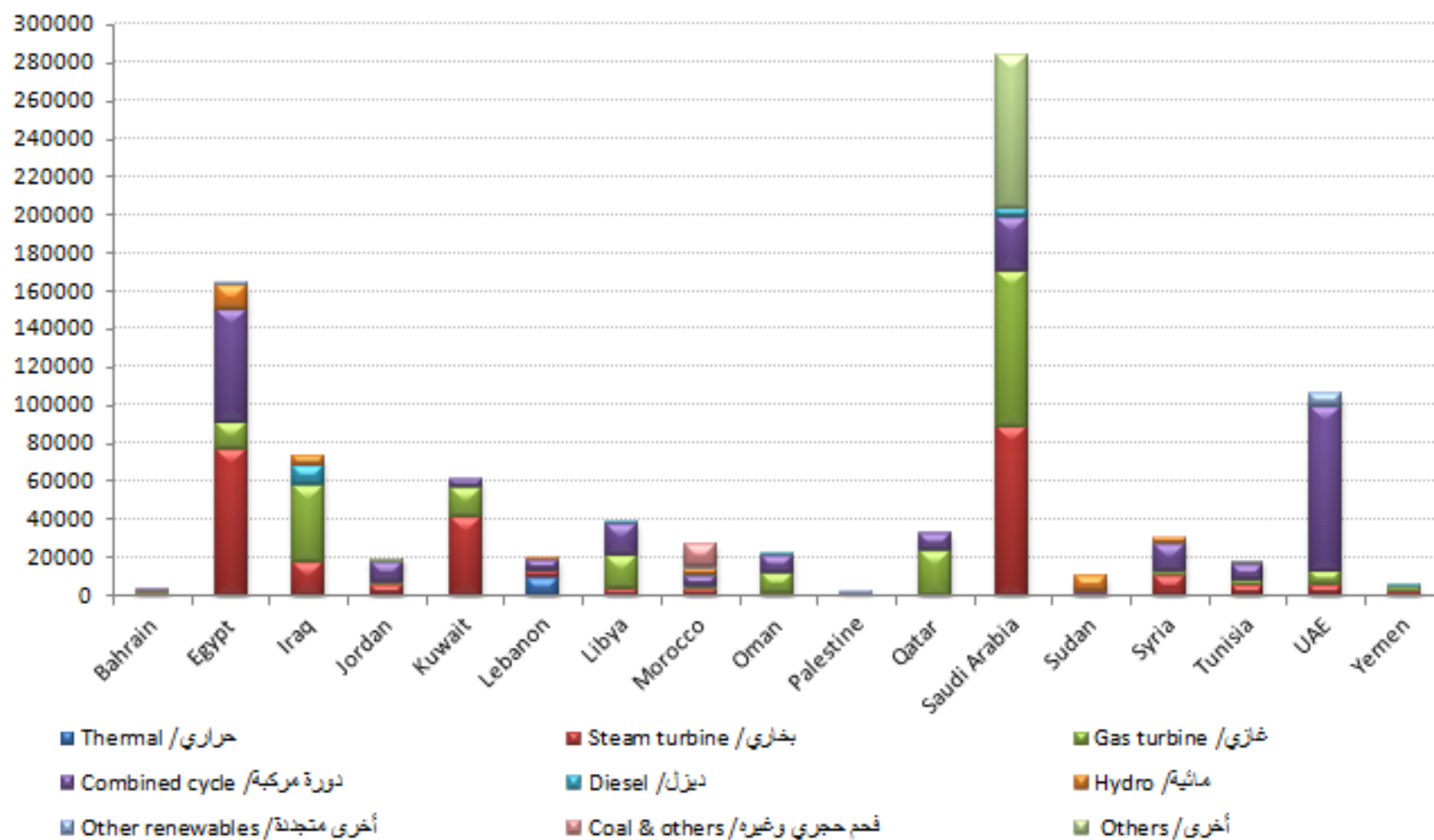
42% of
World

27% of
World

50% of
World

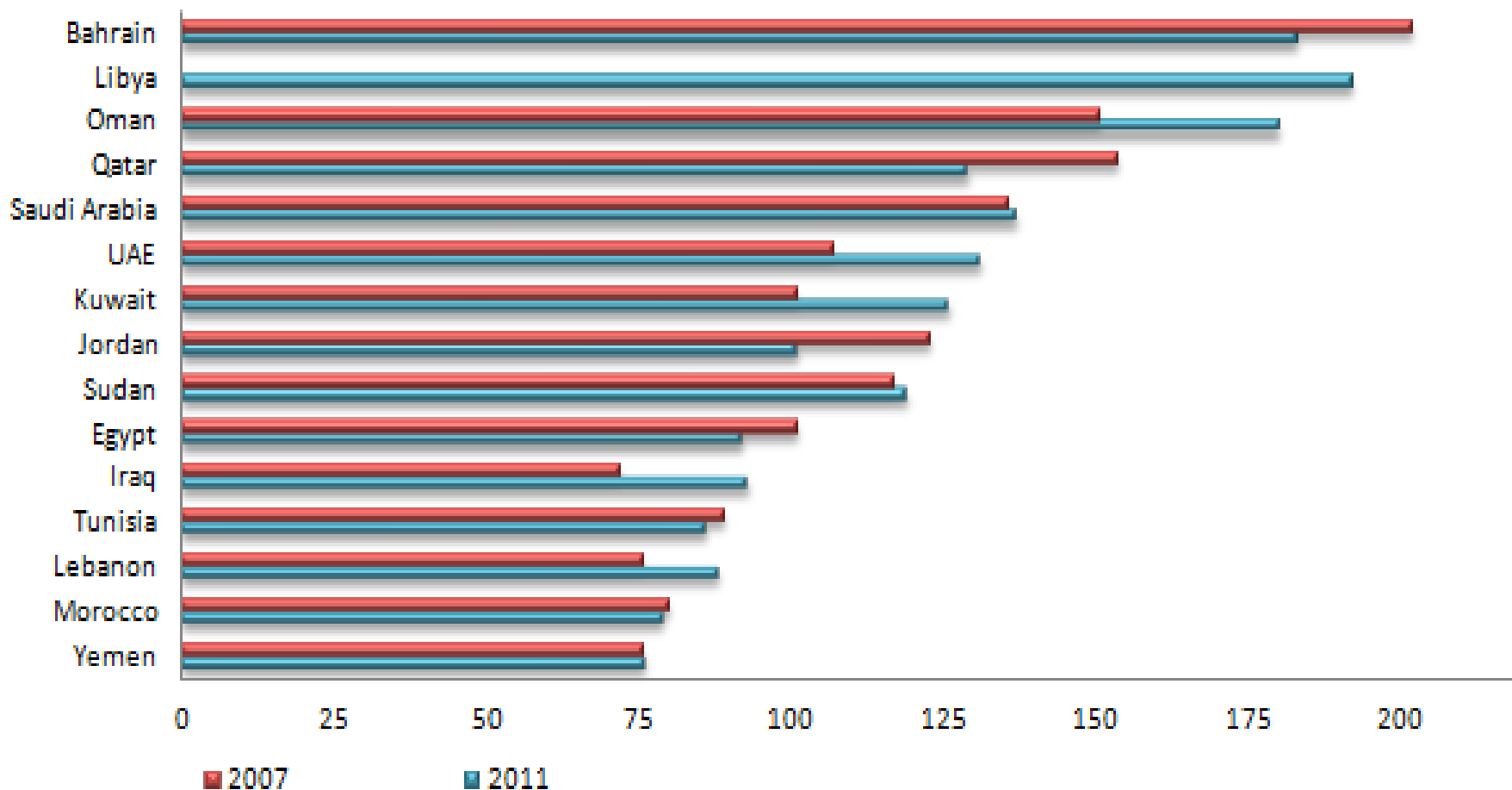
Electricity Generation by Type (GWh) in ESCWA Countries in 2013

توليد الكهرباء في بلدان الاسكوا (ج.و.س) ٢٠١٣



Energy Use (KOE) per \$1,000 GDP (constant 2005 PPP \$)

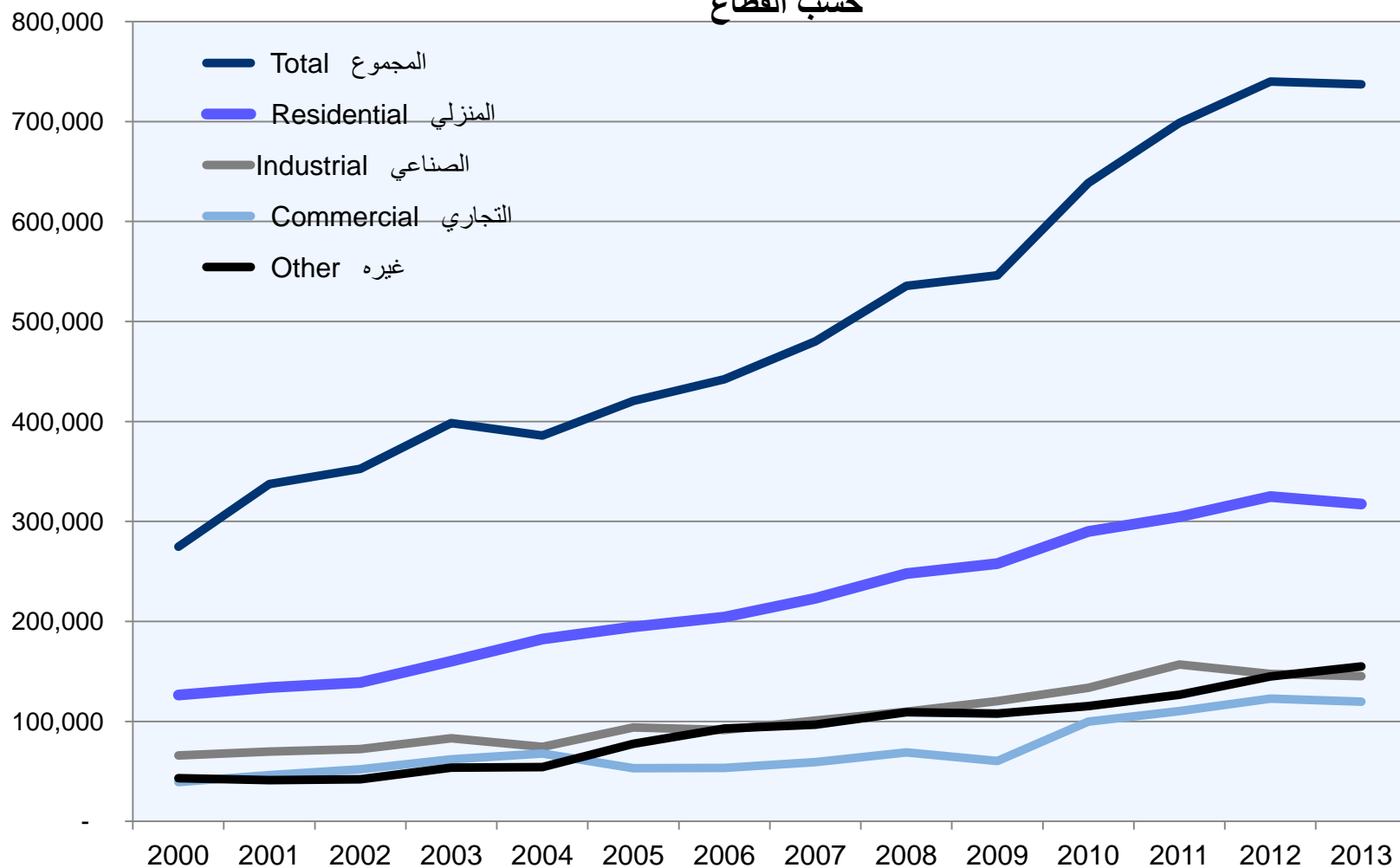
حصة الفرد من استهلاك الطاقة (ك.م.ن)



Electricity consumption by sector in ESCWA countries (GWh)

استهلاك الطاقة الكهربائية في القطاعات الاقتصادية لبلدان الإسكوا (ج.و.س)

حسب القطاع

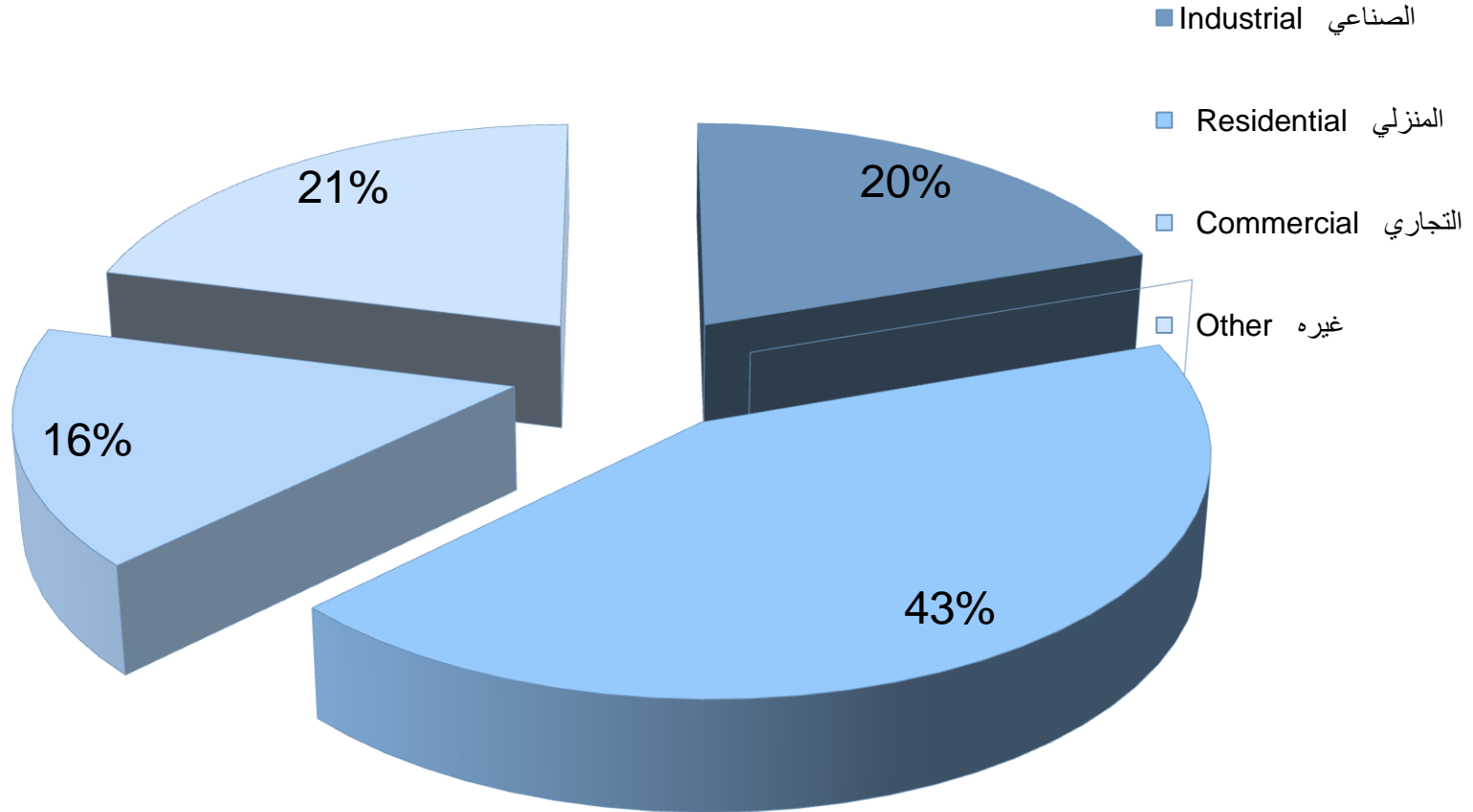


Electricity consumption by sector in ESCWA countries (GWh)

استهلاك الطاقة الكهربائية في القطاعات الاقتصادية لبلدان الإسكوا (ج.و.س)

حسب القطاع

% 2013





Importance of Energy

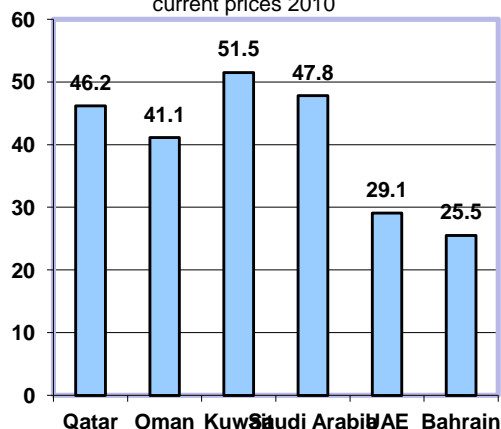
- Input for production processes
- Consumer commodity
- 50% of GDP in GCCs

Investment and Financing in
Energy Efficiency

Decoupling economic and
social well-being from
resource use

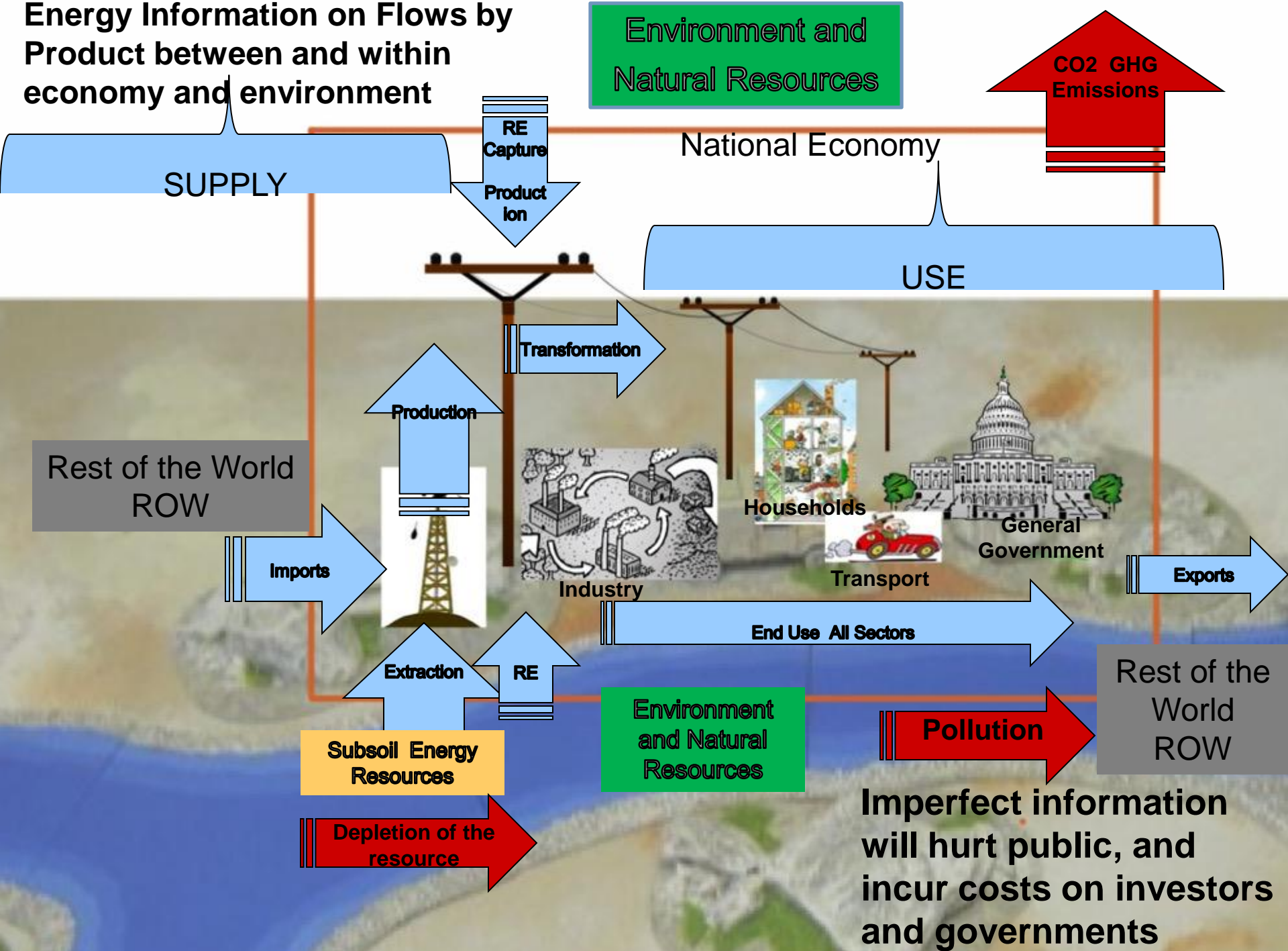
Improving energy
Information for public,
investors and government

% Mining & Quarrying of total GDP at
current prices 2010



- Stresses on natural environment
- CO₂ GHG Pollutants
- Resources Depletion

Energy Information on Flows by Product between and within economy and environment

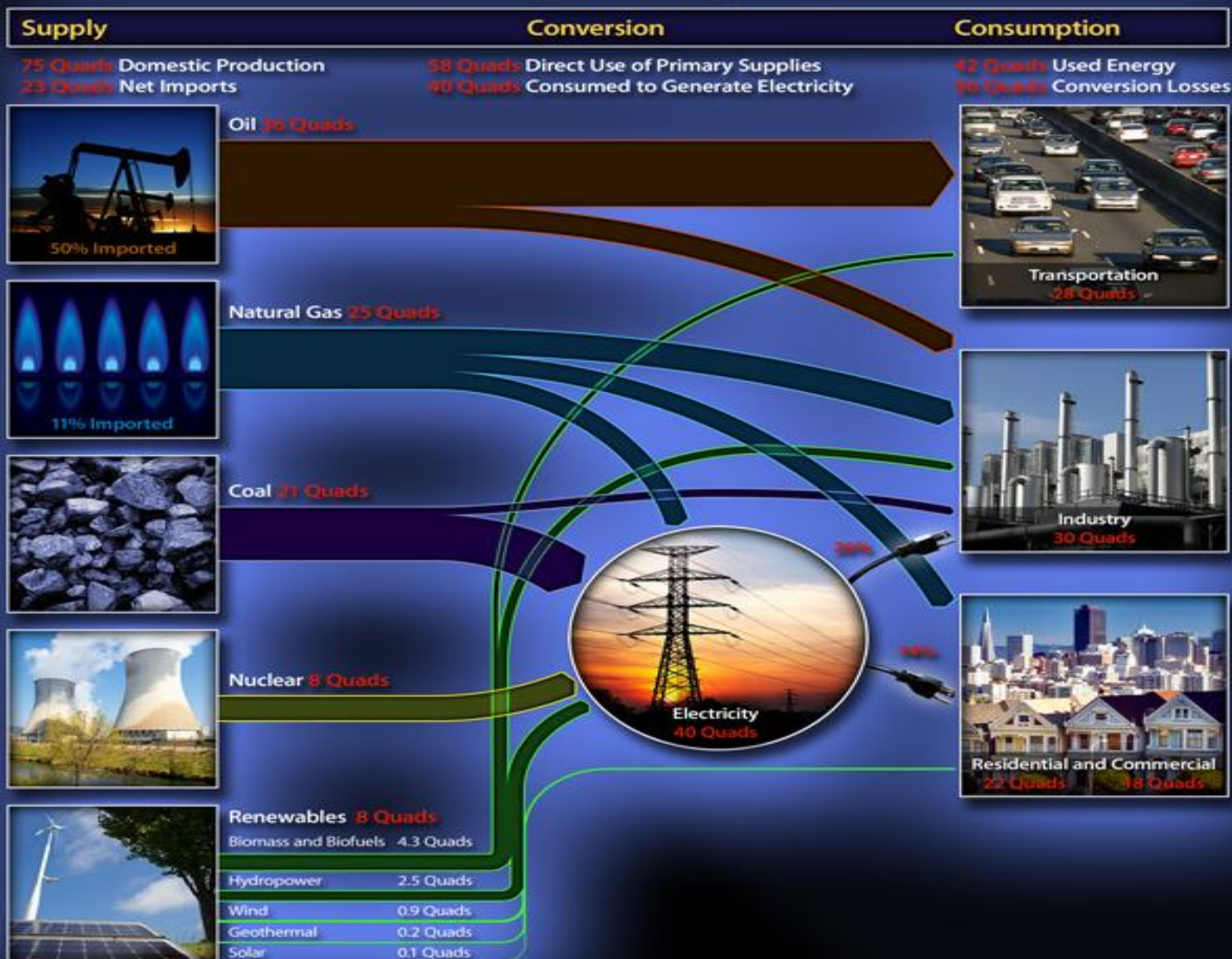


Framework for Compilation

To further develop the energy statistics in an efficient manner it is suggested that the energy statistics should be embedded in and formed by the framework of an *energy balance and energy accounts*.

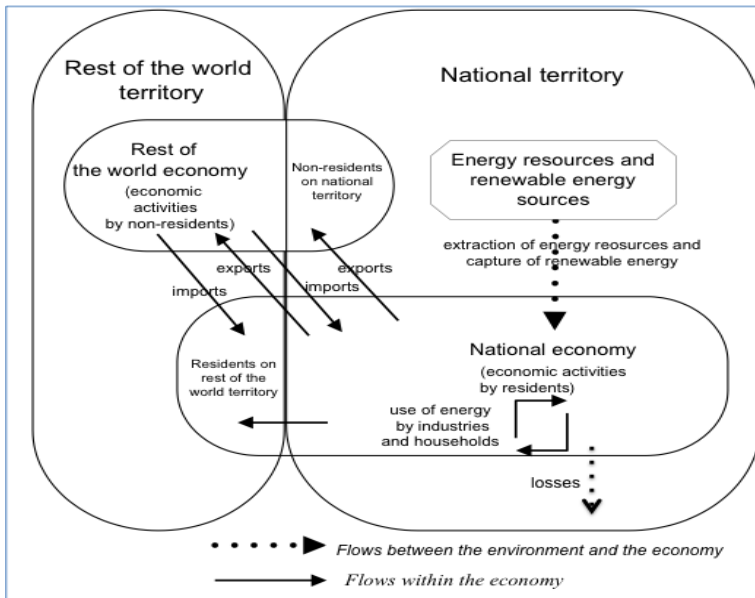
World
BALANCE (2012)

Tracking U.S. Energy Flow



Energy Accounts Framework (SEEA-CF)

Flows (Monetary and Physical) between Natural Resources and Economy based on SNA and International Classifications and Recommendations (ISIC, IRES) Supply of primary energy and imports, stocks, transformation and end use of energy



Use															Total use by the economy	To the environment: Losses and re-turns	Total use incl. losses and returns
Intermediate Consumption, Industries by ISIC							Final consumption, inventories and exports										
A	B	C	D	H	E-G, I-J	Total	Consumption by households	Changes in inventories	Exports		Total final consumption, inventories and exports						
Agriculture, forestry and fishing	Mining and quarrying	Manufacturing	Electricity, gas steam and air conditioning supply	Transportation and storage	Other industries	Industries			Total	of which sold to non-residents on national territory							
TeraJoule																	
1. Coal, coke, gas work gas and peat						243	1	- 21	1,9		- 19	225	2	227			
a) Coal, coke and peat	2	0,1	18	223		0,1	0,4				0,4	0,5	0	0,5			
b) Gas work gas			0,0		0,0												
2. Oil	34	2	382	16	621	49	1 104	102	- 3	801	31	900	2 004,5	6	2 011		
3. Natural Gas	2	30	39	452	0	12	535	28	2	201		232	767	40	806		
Own use			28				28					28		28			
Reinjection														32	32		
Flaring and venting														7	7		
Distribution	2	2	39	452	0	12	507	28	2	201		232	739		739		
4. Electricity	7	0,3	34	33	6	35	115	39		49		88	204	8	212		
5. Heat	2	0	7	2	1	29	41	63				63	104	26	130		
6. Renewable fuels and waste																	
a) Solid biomass and wastes	3	0,1	4	68		1	75	33	0,3	1		34	110	1	111		
b) Liquid biofuels and biogas	0,3		0,2	1,5			1,9					1,9			2		
Total use of energy	50	32	484	795	628	127	2 116	267	- 22	1 055	31	1 300	3 415	83	3 498		

ESCWA Priorities in Statistics

Mandate from Countries:

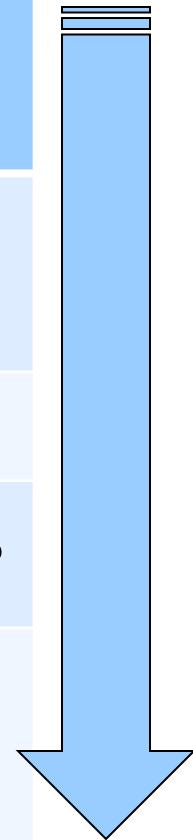
Recommendations from EGMs and IGMs

Field Work: Needs Assessment of Statistical Systems at member countries

Technical Assistance requests

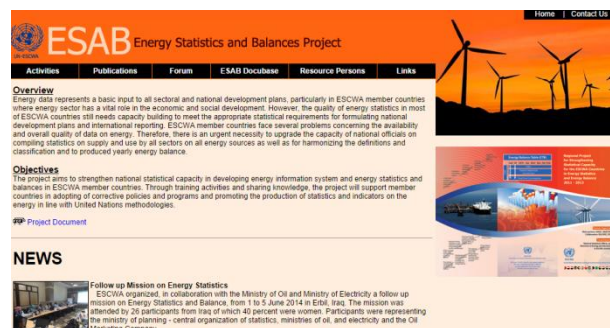
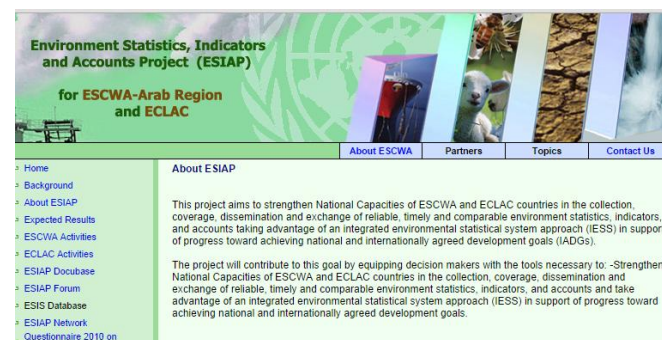
Normative Work: ESCWA studies and reports

Indicated interest in Economic Statistics and National Accounts, **Energy** and Environment, Trade and Industry, Prices and Short-Term Indicators in relation to sustainable development



Extra Funding : ESCWA's Projects to Develop Statistical capacity of countries in specific areas

- DESA-UNSD project -Environment Statistics 2002-5
- Project on Environment Statistics and Accounts (ESIAP) 2007-2010 with ECLAC 800 k USD
- Project on Energy Statistics and Balance 2011-2014 in ESCWA 500 k USD
- TC project on 2008 SNA for 4 ESCWA pilot countries
- Project to fund 3 ESCWA countries to conduct survey in Islamic Bank and DFID 500k USD



Strengthening Statistical Capacity of Arab Countries in Producing Energy Statistics and Energy Consumption Surveys

ADMINISTERED BY IDB

ON

BEHALF OF THE DEPARTMENT FOR INTERNATIONAL DEVELOPMENT (DFID-UK)

Energy Statistics Challenges in the Arab Region

- Although very important sector in the Arab region, and in spite of many capacity building projects: (Medstat, ESCWA), energy statistics is still not collected, produced and used with the quality, coverage, periodicity and timeliness required
- Gaps, general and specific, exist in many areas
 - × Institutional
 - × Resources
 - × Data Sources and Metadata
 - × Technical
 - × Users -Producers

Institutional

- **Structural:** In most Arab NSOs, energy statistics is with industry (Egypt, 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

- Economic/business /industrial surveys: extraction, production, manufacturing, transportation and distribution, and intermediate and final consumption of fuels and electricity (values and quantities),
- Surveys: Household, Agriculture, Transport for end use
- Administrative records: Business registers, 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

- 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.

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)

Users -Producers

Maintaining good contacts to the producers of renewable energy are important in order to prepare energy statistics (including the production of renewable energy and nuclear energy).

Development of the energy statistics, balances and/or accounts

1

- Build a flow chart of all energy flows in the country

2

- Build metadata and documentation for the existing energy statistics.

3

- Specify organisational and dissemination strategy for the existing and future statistics

Development of the energy statistics, balances and/or accounts

4

- Start building an energy balance
 - a) Start with the existing data on production, imports and exports data.
 - b) Add information on the use of natural gas and petroleum products for the production of electricity and refined oil products.
 - c) Add information on the use of electricity and refined oil products by sectors (industries, transport and households, etc.).
 - d) Specify inconsistent and missing data to fill the complete balance. Establish estimates for the missing data

5

- Work on streamlining reporting templates and procedures for the energy suppliers (report once - use many times).

6

- Consult with users and data providers

7

- Adjust previous steps as appropriate

Recommendations

- a) Provide necessary and appropriate trainings for employees involved in the collection, analysis and dissemination of energy statistics;
- b) Invest in adequate information technology tools;
- c) Unify the methodologies, concepts in energy statistics;
- d) Establish a coordination mechanism between all energy related parties to avoid duplication of efforts and other unnecessary financial and technical implications that affect the quality of produced data;
- e) Raise awareness and advocating energy statistics and balances to get the attention and support from decision makers;
- f) Appoint one responsible agency, such as the National Statistical Office or energy observatory, to lead the process of data collection, analysis and dissemination of energy statistics and balances and link the databases of all related parties.



Opportunities for Arab Countries

At the Global Regional Country levels	Statistical Implications Links of Energy data
SDGs and Rio plus 20	Compilation of SDG Energy Indicators
Climate Change	CO2 and GHG Inventories
FDI and ODA for intra and inter Regional Integration	Energy Data in external Sector
Investments in Green Economy and Energy Efficiency	Integrated economic statistics- Environmental Economic Accounting; Links to employment and environment
Well being and Progress of societies	Link of investments in energy to people (Socio-demographic)
Data Revolution	Links to IT