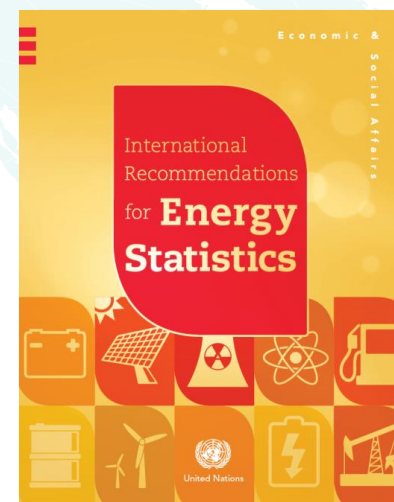


Increasing data transparency across all energy data collection

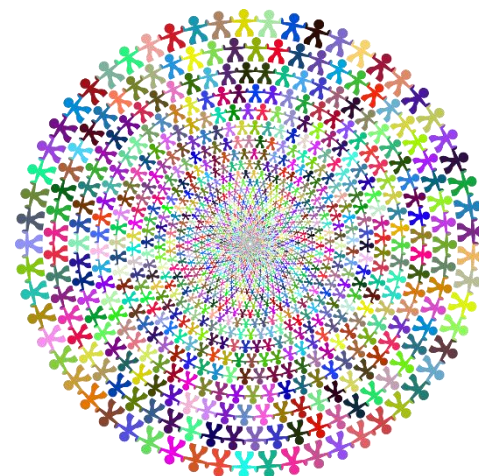
International recommendations for energy statistics (IRES)

Costanza Giovannelli
United Nations Statistics Division

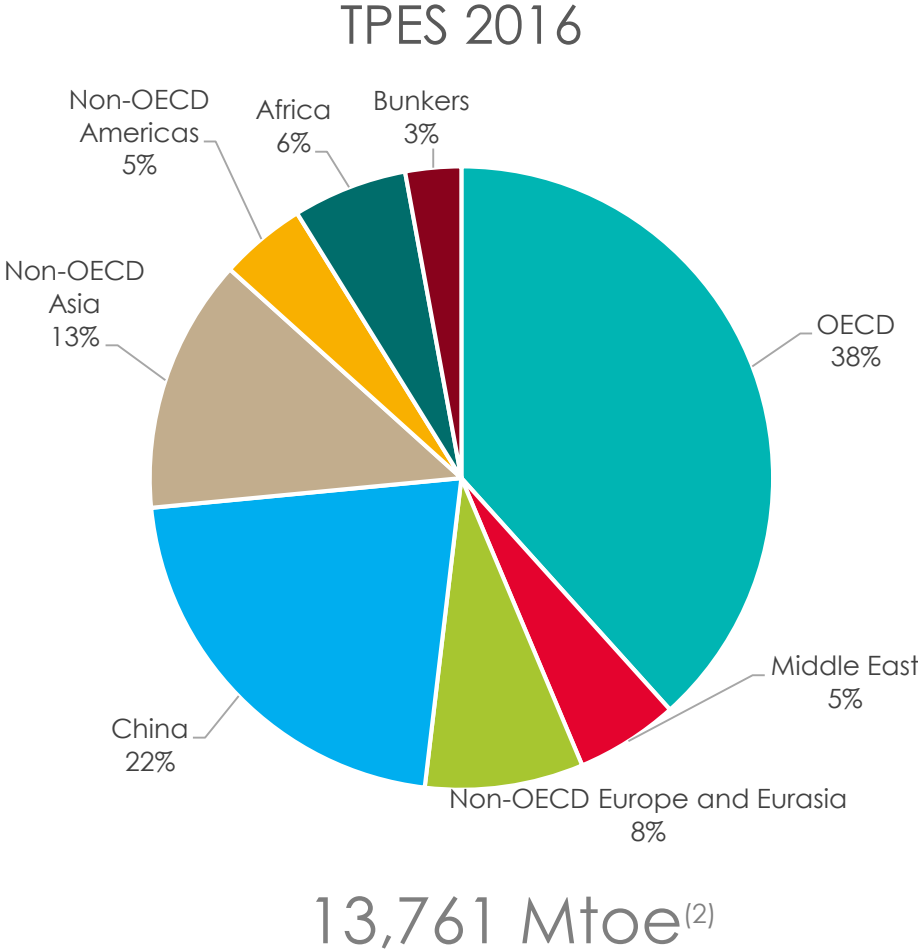
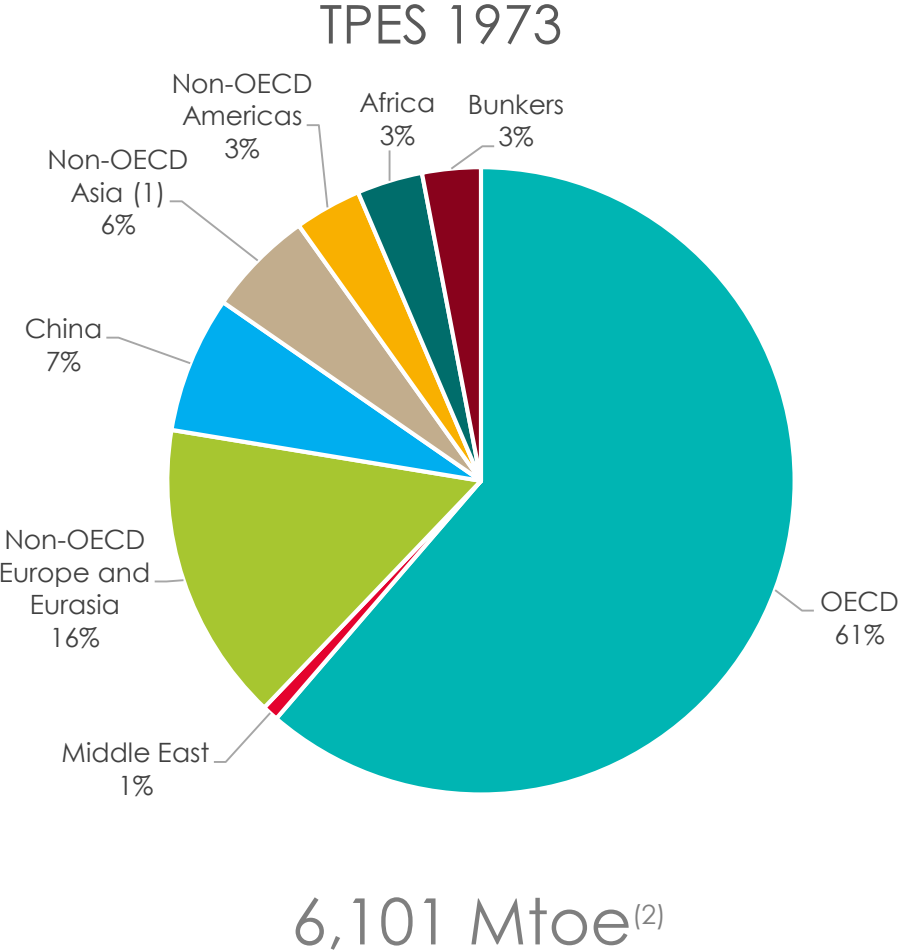


Contents

- *A changing world*
- *IRES: a very brief history*
- *Key IRES concepts*
- *IRES methodology for oil and gas*
- *ESCM concept*
- *Chapters of manual and examples*



A changing energy world



A changing energy world

- Trends of **energy balance** at the regional level: OECD versus Non-OECD.
- Energy markets are **more and more global**
- Increasing need for **more transparency** and **better coverage** of global energy data
- Need to **improve** energy data **quality**: both in OECD and non-OECD countries
- An increasing demand for more detailed information

IRES: a brief history

Energy was in the spotlight at the 36th Session of the UN Statistical Commission (2005)

- Ad-hoc Energy Group Meeting (23-25 May 2005, UN, New York)
- Recommendation to establish the **Oslo City Group** and an **Inter-Secretariat Working Group on Energy Statistics**

The Oslo Group

- **User needs** for energy statistics
- **Scope** of official energy statistics
- National **good practices**
- Selected **methodological and quality problems**
- Needs for **harmonization** of energy statistics systems
- Key content provider for International Recommendation for Energy Statistics (**IRES**) and Energy Statistics Compilers Manual (**ESCM**)
- Methods for improving **consistency** in different statistical systems and **reducing response burden**

InterEnerStat

International Energy Statistics initiative started by the IEA in 2005 gathering together 20+ organizations:

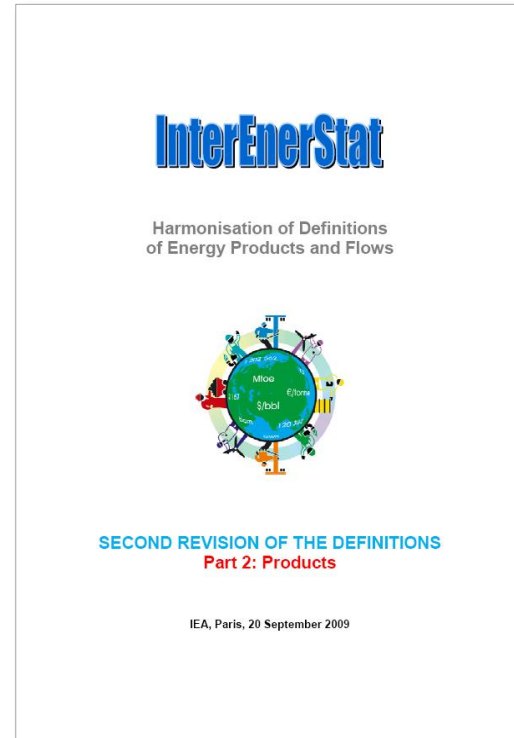
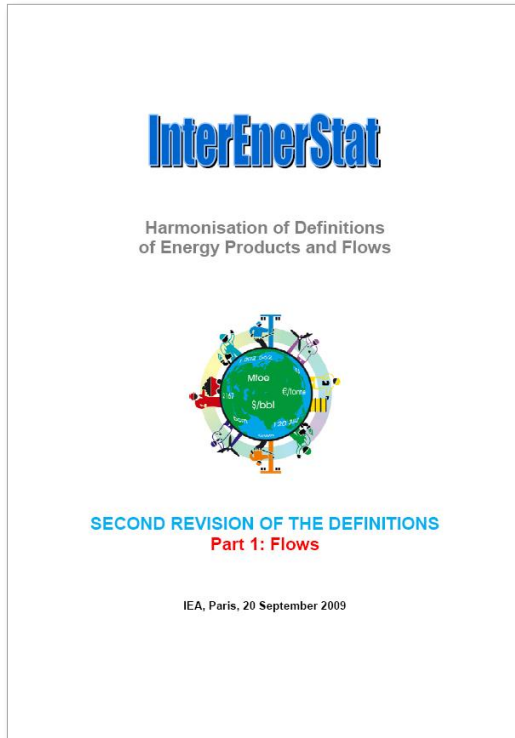
- Participants
 - 24 major regional and international organisations.
 - Both data providers (IEA, UNSD, OPEC, Eurostat, FAO) and users (WB, IMF, UNFCCC,...)
- Objective
 - To improve the overall **quality** of global energy statistics through a **stronger international cooperation**

InterEnerStat

Organizations involved in the process



Harmonised definitions



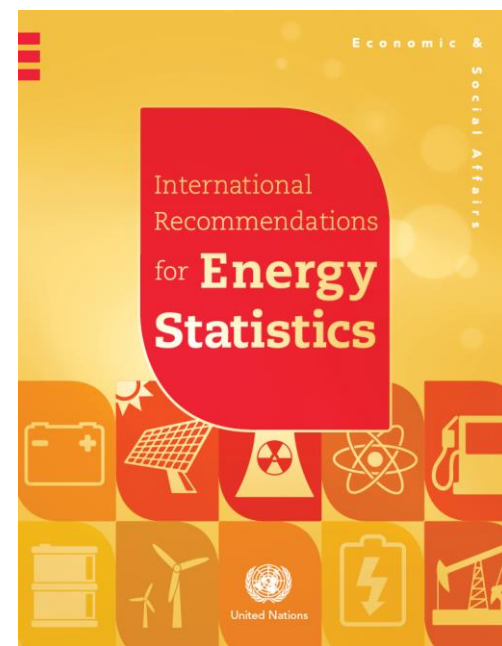
Agreed at the end of 2010 after 5 years of negotiations.
These definitions were incorporated in IRES and agreed upon by the
UN Statistical Commission in February 2011

IRES

The United Nations Statistical Commission, during its 42nd session (New York, February 2011), adopted the **International Recommendations for Energy Statistics (IRES)**.

Available at:

<https://unstats.un.org/unsd/energy/ires/>



IRES: main positive outcomes

IRES improves **comparability across products, flows and countries:**

- Countries **measure** the same thing, reducing systematic errors
- Countries publish data in **similar formats**, increasing **transparency**
- Data for different products are compiled in the same way, meaning **product comparisons** and **balances** are possible
- Data users understand what the statistics should represent

How IRES enhances transparency

- Use of shared, **publicly available methodology, classifications and standards** leads to more transparency and better trust from the public
- IRES encourages the agencies responsible for the dissemination of energy statistics to ensure that the public has **convenient access** to those statistics
- Among metadata, particular emphasis is given to the need of providing the **conversion factors** between original and presented units, whether they are on a gross or net calorific basis, and any use of default values

Basic data: scope of energy statistics

(2.3) The basic energy statistics refer to **statistics on energy stocks and flows**, energy infrastructure, performance of the energy industries, and the availability of energy resources within the national territory of a given country during a reference period.

(2.18) Data on the production of energy **outside energy industries** is also collected and included in total energy production.

For example, these products **need to be accounted for**:

- **Fuelwood** collected and used non-commercially;
- By-products used by industries for energy (e.g. **bagasse**, **black liquor**);
- Output from small teapot refineries



Basic data: definition of energy products

(2.9): “Energy products” refers to products exclusively or mainly used as a source of energy. Biomass and waste are included only when used for energy purposes

- Wood or ethanol are **excluded** from energy statistics when they are not used as an energy product
- Lubricants (fossil non-energy products) are **included** allowing refinery balance checks



IRES: oil and gas measurement units

Recommended **measurement units**

- OIL: Mass (thousand metric tons)
- NATURAL GAS: Energy units (terajoules)

JODI: Natural gas data should be provided in both **million cubic metres** under standard conditions and in **terajoules (TJ) on a gross calorific value (GCV) basis**

IRES: **net calorific values** should be used to compile **energy balances in terajoules**, since most current technologies are still not able to recover the latent heat (4.34)

IRES: definition of production of oil and gas

(5.10) Primary production is the capture or extraction of fuels or energy... within the national territory in a form suitable for use. **Inert matter removed from the extracted fuels and quantities reinjected, flared or vented are not included.**

Data for JODI oil and gas production should be **NET of reinjected, flared and vented quantities** (and water, sand etc.)



IRES: how to treat bunkers and non-energy use

- **Bunkers** (5.14): For the purposes of energy statistics, international marine and aviation bunkers are **not included** in exports and supply
- **Non-energy use** (5.5): consists of the use of energy products as raw materials for the manufacture of products outside the scope of SIEC. It has to be **reported separately** from the final energy consumption.

Both flows are important elements for an accurate estimation of GHG emission inventories (but not necessarily on a monthly basis)

Standard International Energy Product Classification (SIEC)

MAIN PURPOSE

To serve as a basis for developing or revising **national classification schemes** for energy products

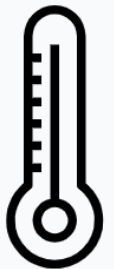
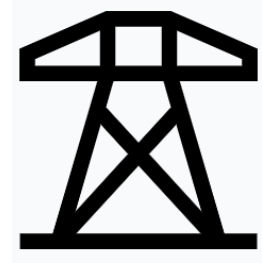
- make them **compatible with international standards**
- ensure significantly improved **cross-country comparability** of energy data
- facilitate and standardize the compilation and processing of energy data by providing a **uniform and hierarchical coding system**

Standard International Energy Product Classification (SIEC)

SCOPE OF SIEC

SIEC aims to cover all products necessary to provide a comprehensive picture of the production, transformation and consumption of energy

- **Fuels** that are produced/generated by an economic unit (including households), and are used or might be used as sources of energy
- **Electricity** that is generated by an economic unit (including households), and **heat** generated and sold to third parties by an economic unit



SIEC – general concept

Tree-structured framework for all energy products

SIEC Headings			Correspondences	
Section/ Division/ Group	Class	Title	CPC Ver.2	HS 2007
3		Natural gas		
30		Natural gas		
300	3000	Natural gas	12020	2711.11, 2711.21
4		Oil		
41		Conventional crude oil		
410	4100	Conventional crude oil	12010*	2709*
46		Oil products		
461	4610	Refinery gas	33420*	2711.29*
462	4620	Ethane	33420*	2711.19*, 2711.29*
463	4630	Liquefied petroleum gases (LPG)	33410	2711.12, 2711.13
464	4640	Naphtha	33330*	2710.11*
465		Gasolines		
	4651	Aviation gasoline	33310*	2710.11*
	4652	Motor gasoline	33310*	2710.11*
	4653	Gasoline-type jet fuel	33320	2710.11*

Different levels of detail are possible, depending on the country's needs

SIEC – correspondence with other classifications

- **HS 2710.12**: “Light oils and preparations”
- **CPC 33311, 33312 and 33320**: “Aviation gasoline”; “Motor gasoline” ; “Gasoline-type jet fuel”
- **SIEC 465**: “Gasolines”
- **JODI**: “Motor and aviation gasoline”



HS	2710.12*		
CPC	33312	33311	33320
SIEC	4651	4652	4653
JODI	Motor and aviation gasoline		

SIEC and JODI – oil products

JODI products are **aggregation** of SIEC products

SIEC		JODI
Refinery gas	4610	Other oil products
Ethane	4620	
Petroleum coke	4694	
Lubricants	4692	
White spirit	4691	
Bitumen	4695	
Paraffin waxes	4693	
Other oil products	4699	
Motor gasoline	4652	Motor and aviation gasoline
Aviation gasoline	4651	

SIEC and JODI definitions

SIEC definition

“LPG refers to liquefied propane (C₃H₈) and butane (C₄H₁₀) or mixtures of both. Commercial grades are usually mixtures of the gases with small amounts of propylene, butylene, isobutene and isobutylene stored under pressure in containers.”

Exhaustive, relevant for accurate annual data, or when deriving energy data from CPC or HS data

JODI (short) definition

“LPG comprises Propane and Butane”

Simple and clear, ideal for a monthly data collection

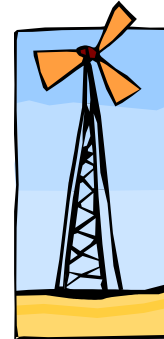
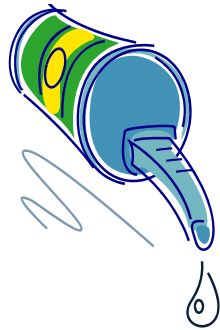
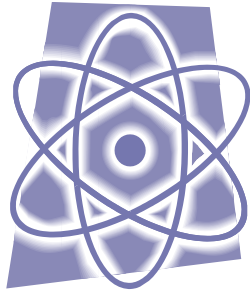
SIEC and JODI definitions

SIEC flows	JODI terminology
Final consumption	Demand
Energy industries own use	
International bunkers	
Transformation	

This difference reflects both the oil-specific nature of JODI, and that some data (bunkers, own use) are difficult to obtain or are less relevant on a monthly basis.

Moving forward...

IRES provides useful definitions of flows/products.
But...



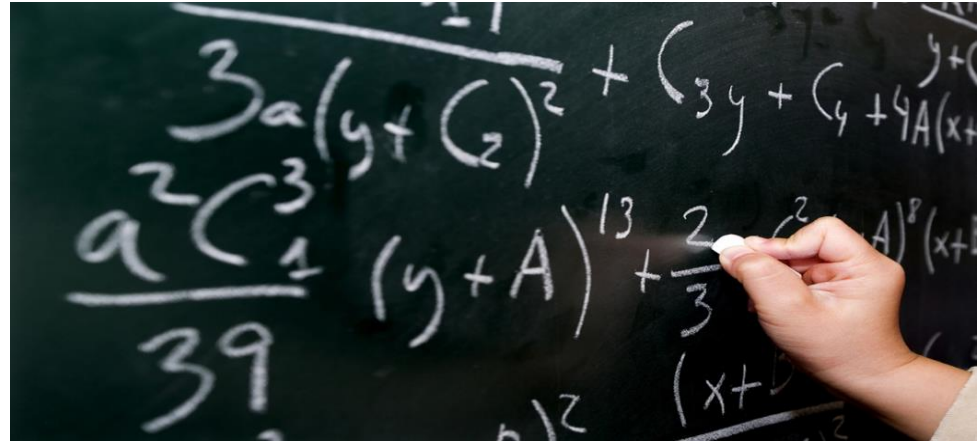
- Can I see some examples of **other countries' practices**?
- How should I **compile metadata**, or handle **confidentiality**?
- How do these recommendations **relate to MY country**?

The need for a Compilers Manual

- A Compilers Manual should be a more hands-on, example-heavy document, to **complement** IRES.
- It is NOT a set of recommendations or “best” practices, but a set of voluntary guidance and examples for countries to use **if they want to**
- *White-cover version is available at <https://unstats.un.org/unsd/energy/ESCM.htm>*

IRES and ESCM

IRES is about definitions of flows/products:
THEORETICAL



ESCM is about practical guidance and country examples:
PRACTICAL

Country practices



 United Nations Statistics Division

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▼ Energy Statistics February 2017

Description of Activities
International Recommendations for Energy Statistics (IRES)
Energy Statistics Compilers Manual (ESCM) **NEW!**
Country Practice Examples
Energy Yearbook
Energy Balances
Electricity Profiles
Energy Statistics Database
UNSD Annual Energy Questionnaire
Supporting developing countries measure progress towards achieving a Green Economy
Joint Organizations Data Initiative (JODI)
Oslo Group
Intersecretariat Working Group on Energy Statistics
Meetings and Workshops
Publications
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Country Practice Examples

As part of the preparation of the Energy Statistics Compilers Manual (ESCM), a country practice template was developed by the Oslo Group in cooperation with UNSD. The use of a common format facilitated the review and comparisons of country practices and has fed into the ESCM. As the ESCM is foreseen to be periodically reviewed and updated, national institutions responsible for energy statistics are encouraged to keep using this template to share their practices in the collection, compilation and dissemination of energy statistics. This way, future revisions of the ESCM will reflect new methodological developments and keep data compilers abreast of new country practices.

The Country Practice Template is available [here](#). It provides a common format for countries to report and share their practices in the collection, compilation and dissemination of energy statistics. The filled template can be submitted to UNSD at energy_stat@un.org.

Responses by Topic

[see responses by country](#)

Electricity

Chile	Electricity index
Czech Republic	Annual electricity statistics
Czech Republic	Electricity production
Hungary	Electricity production
Ireland	Electricity supply
Italy	Annual electricity statistics
Japan	Electricity production
Malaysia	Electricity supply
Rwanda	Electricity generation
Rwanda	Electricity use
Slovakia	Electricity generation

Energy Balances

Austria	Energy Balance
Azerbaijan	Energy Balance
Bosnia and Herzegovina	Energy Balance
Brazil	Energy Balance

 UNdata
A world of information

https://unstats.un.org/unsd/energy/escm/country_examples/responses_t.htm

ESCM Chapters

- **Legal Framework**
- **Classifications** and linking with other international standards (HS, CPC, ISIC)
- Generic Statistical **Business Process Model**
- **Data sources** (surveys and administrative data sources, estimation, modelling)
- How to compile **energy balances**
- **Data quality, data dissemination**

Highlights: Balance structure

Presentation of primary and secondary oil products in energy statistics versus energy balances

Commodity Balance			Energy Balance		
	Crude oil (kt)	Motor Gasoline (kt)		Crude oil (TJ)	Motor Gasoline (TJ)
Production	100	30	Production	4230	
Import			Import		
Export	10	24	Export	423	1063
Supply	90	6	Supply	3807	-1063
Oil Refineries	88		Oil Refineries	-3722	1329
Final Consumption	2	6	Final Consumption	85	266

Primary production = 0

Motor gasoline in kt x 44.3 TJ/kt = Motor gasoline in TJ

Crude oil in kt x 42.3 TJ/kt = Crude oil in TJ

Examples

Austria: Adding an energy module to Labor Force Survey increased the response rate and reduced costs

Bulgaria: NSO's metadata policy

Norway: lessons from publishing preliminary monthly statistics and balances

UK: Energy Efficiency Data framework measures the result of energy efficiency policies

Azerbaijan: producing full commodity balances for all products

South Africa: experience with social media and dissemination in a developing country

FAO guidance on fuelwood surveys

Confidentiality practices for many countries

...and many more!

Legal frameworks for many countries

IRES and ESCM - Conclusions

- IRES provides **methodology** to compile energy statistics that are comparable across products and countries, and consistent with other statistics
- ESCM provides guidance on **HOW**, with real examples
- This applies to JODI! JODI data agree with IRES definitions and concepts, and can be used to compile annual data for international organizations (UNSD, IEA, OPEC, AFREC...)
- ESCM contains guidance and examples that are relevant for JODI

General conclusions

- The efforts toward an increased **transparency** in energy statistics rely on the capacity to adopt shared methodology and classification
- **Harmonization** does not happen overnight. It needs time, effort, resources and commitment.
- Results obtained
 - agreement on product and flow definitions (InterEnerStat and IRES/ESCM)
 - Several joint initiatives: JODI Oil and JODI Gas
 - Joint training and capacity building
- Underlying principle: evolution not revolution. The main objective is to **support energy policy** and **energy analysis**.
- Further cooperation includes joint training material (open university) with on-the-shelf training material (experience of OLADE in on-line training very valuable)



www.jodidata.org

