



IEA-NBS Energy Statistics Training  
Beijing, China

# Collecting renewable energy statistics in selected APEC economies

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# Outline of Presentation

## Background

- APEC/APERC
- EGEDA/ESTO
- Data collection

## Sample economies

- Chile
- Mexico
- Issues and Challenges



# Background

# APEC: Asia Pacific Economic Cooperation

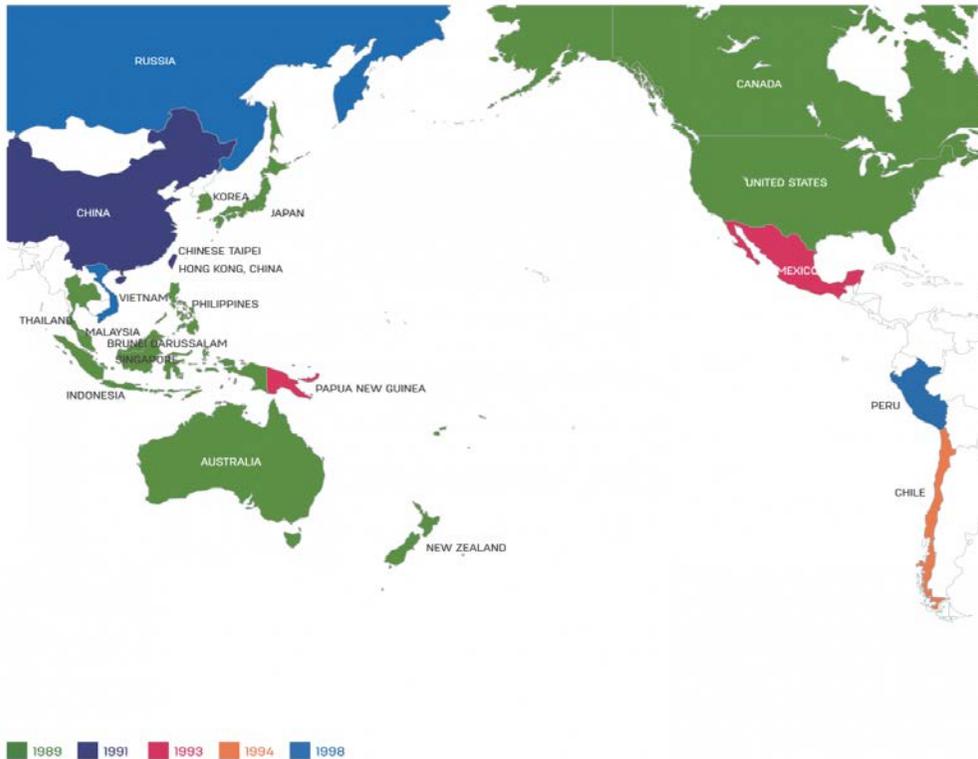


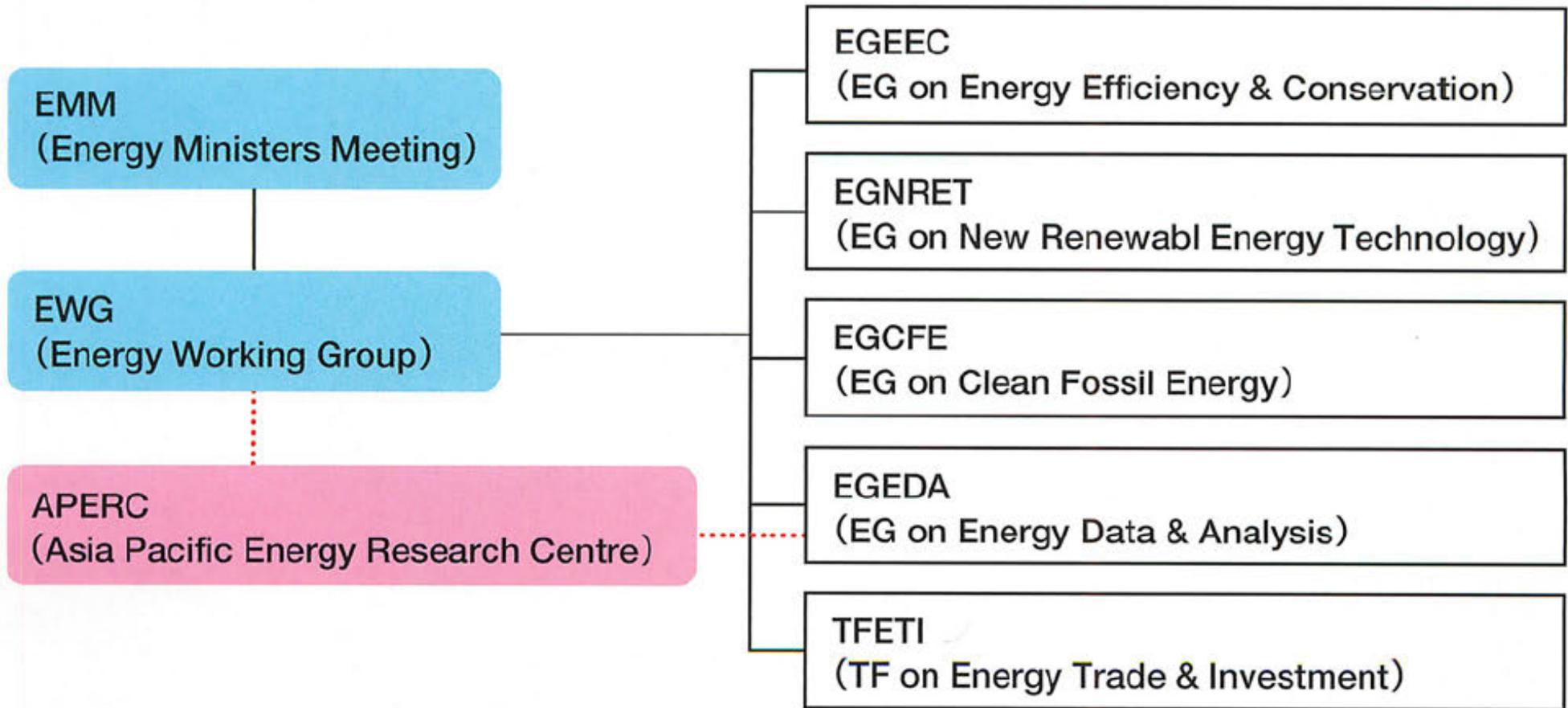
FIGURE 1. APEC Member Economies classified based on their year of membership.  
SOURCE: APEC at a Glance, 2012.

- An open framework for regional economic cooperation among 21 member economies
- Cooperative and voluntary basis
- Activities for trade and investment liberalization, business facilitation, and economic and technical cooperation

Source: <http://apec2015.ph/about-apec/primer/>

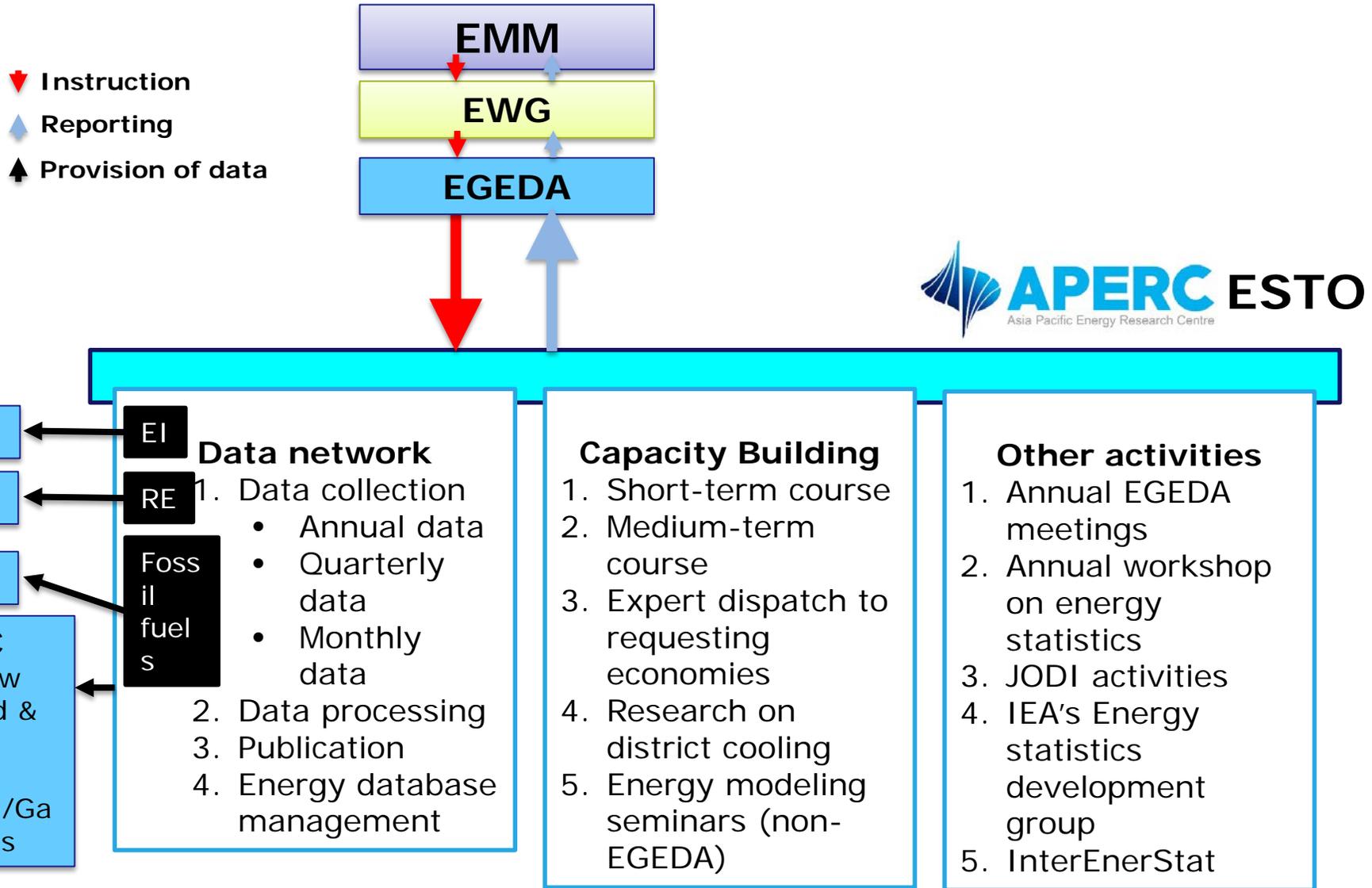
Source: APERC Brochure (June 2015)

# Expert Group on Energy Data and Analysis



Source: APERC Brochure (June 2015)

# ESTO activities



# Collection of energy data (1)

1992: EGEDA through the coordinating agency conducted the 1<sup>st</sup> trial data collection for 1990 annual data

- Biomass energy for power generation was collected (termed commercial biomass)
- Biomass consumed in the residential sector (termed non-commercial biomass) was also collected but just as supplemental information
- Table for non-commercial biomass was not even a part of the main data collection table
- Most economies do not report non-commercial biomass

2005: Revised questionnaires are applied for 2004 annual data

- 5 questionnaires (Coal, Oil, Gas, Electricity & Heat, New and Renewables)
- Non-commercial biomass were included in the renewable energy questionnaires



# Collection of energy data (2)



ESTO collects data from Non-OECD APEC members, including China; downloads OECD from IEA

Developments during the last decades necessitates more revisions to the questionnaire

- Inclusion of more biofuel products;
- Finalization of the UN IRES
- Harmonization with IEA energy statistics
- Harmonization with IRENA statistics

# Contents of NRE questionnaire

## APEC NRE questionnaire consists of 5 tables

- Table 1a: Supply sector
- Table 1b: Imports by origin/Exports by destination
- Table 2 Transformation and energy sectors
- Table 3 : Final consumption sector
- Table 4: Conversion factors (calorific values)

## RE products collected

- Fuelwood and wood waste
- Bagasse
- Charcoal
- Other biomass
- Biogas
- Municipal solid waste
- Liquid biofuels
- Hydro
- Geothermal
  - Electricity
  - Heat
- Solar
  - Photovoltaic
  - Thermal
  - Electricity
  - Heat
- Tide, wave and ocean
- Wind

# APEC data dissemination

- EGEDA website is the only platform to disclose member economies' data and activities to outside (and inside); which include **China**;
- The EGEDA website has been improved to show more information, visualisation and allows for online data submission and with new URL for consistency with other EWG expert groups

<http://www.egeda.ewg.apec.org>

The screenshot displays the EGEDA website interface. At the top, there is a navigation bar with links: HOME, DATABASE, ABOUT, MEETING, PUBLICATION, TRAINING, ANALYSIS. Below this is a line chart titled "Crude oil production by region (1000 kl)" showing data from April 2017 to March 2018. The chart includes a legend for regions: Other America, South-East Asia, Oceania, Other north-east Asia, China, and United States. Below the chart is a "Database" section with a grid of categories: Updating Information, Annual Data, Quarterly Data, Monthly Data, Environment, and Members Only. Further down are sections for "Database Information", "Processing Information", and "Standardisation". An "Updates" section lists recent events, and "Meeting Summary" and "Training" sections provide details on workshops and courses. At the bottom, there are sections for "ABOUT", "LINKAGES", and "Questionnaire".



# Case economies



# Chile



# Market structure



*The Ministry of Energy (Ministerio de Energía) as the main authority, oversees implementation of energy policies through dependent and independent institutions in Chile*

# Regulatory framework (1)

| Sector                 | Legislation   |  | Regulator   |
|------------------------|---|--|---|
|                        | Act   | Coverage   |   |
| Electricity Generation | General Law of Electric Services (LGSE–Ley General de Servicios Eléctricos) | Privatises the electricity industry, introduces competition into the generation sector and separates the industry’s generation, transmission and distribution segments.<br>Created the National Electric Coordinator (Coordinador Eléctrico Nacional, CEN), a unified independent system operator. | CNE “Comisión Nacional de Energía” (National Energy Commission) |
|                        | New Electricity Act on Energy Auctions (Law 20 805)                         | Establishes the process of open energy auctions, encouraging the entrance of new players and electricity generation technologies   |   |

# Regulatory framework (2)

| Sector           | Legislation         |   | Regulator   |
|------------------|---------------------|---|---|
|                  | Act                 | Coverage  |   |
| Renewable energy | Law NCRE (Ley ERNC) | Modifies the LGSE, establishing short- and long-term policy targets for the share of renewable energy in total electricity generation.<br>Increasing share of non-conventional renewable energy (NCRE) in total electricity generation by 0.5% annually from 2015 to reach 10% by 2024. | CNE “Comisión Nacional de Energía” (National Energy Commission) |

# Energy data collection framework

## ❖ The Ministry

- prepares the Energy Balance Table and other International Reports
- Conducts survey to energy supplier and large consumers

## ❖ CNE

- regulator and the key institution in data collection

| Authority   | Function  | Coverage   |
|---|---|--|
| SEC (Electricity and Fuels Superintendency)   | Oversees the sector and intermediates some conflicts among costumers and energy firms |  |
| Greater Northern Interconnected System (SING) and the Central Interconnected System (SIC) | Coordinate the north and central interconnected electricity systems of Chile          | Electricity generation data  |
| Project Management Unit   | Keeps track of current RE power plant projects under construction,                    | information about forthcoming power plants using renewable sources |
| University of Chile   | Collaborates with Ministry of Energy on solar and wind energy                         |  |

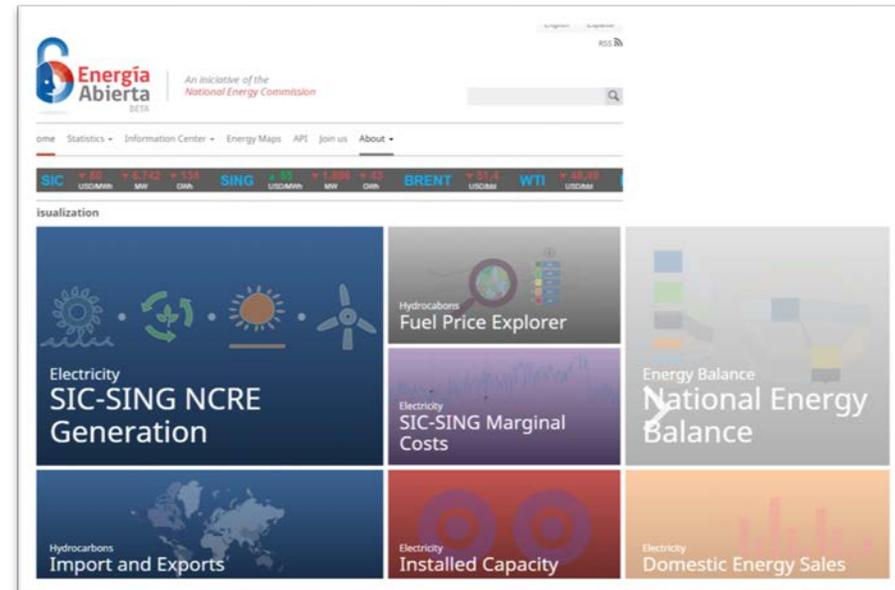
# Data processing, reporting and dissemination

## Types of data

- Daily electricity supply (by source)
- Installed capacity
  - Detailed information of each power plant
  - Classified by technologies
  - Location
- Potential Hydro and Biomass Installable Capacity
- Hydro and Biomass Energy Potential by District
- Distributed Generation Instalations (currently 5.8MW )
- Stored Energy in Hydro Reservoirs

- Open Energy (Energía Abierta)

- Web page where most of relevant energy statistics are gathered and uploaded
- Administered by CNE





# Mexico



# Market structure

## Industrial Activities

Licensees

Facilities

Oil, gas and electricity companies

Consumers

## Government agencies

**PEMEX**

Government oil company

**CFE**

Government electric company

**CNH**

National Hydrocarbons Commission

**CRE**

Energy Regulatory Commission

**CONUEE**

National Commission for the Efficient Use of Energy

**INEGI**

National Institute of Statistic and Geography

**CAMIMEX**

Mining Chamber of Mexico

**SAGARPA**

Mining Chamber of Mexico

**SENER**

**Collects**

**Integrates**

**Process**

**Disseminates**

## Products / Users

National

- NEB
- Monthly reports
- INEGI

International

- AIE
- APEC
- OLADE
- UN

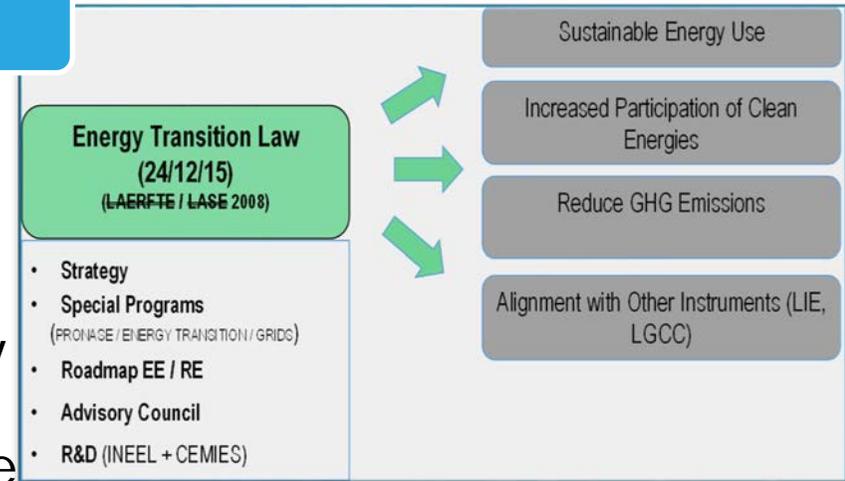
North American Energy Trade Statistics

*SENER (Ministry of Energy) is responsible for conducting Mexico's energy policy, within the current constitutional framework*

# Regulatory framework (1)

## Energy Transition Law (LTE) 2015

- legal basis to promote a transformation towards a sustainable energy and economic model in the long term;
- regulates the sustainable use of energy, as well as the obligations in clean energy and reduction of emissions of pollutants of the Electrical Industry, maintaining the competitiveness of productive sectors.



Source: CONUEE's Sergio Segura presentation during PREE in Mexico

| Sector      | Governing Laws                        | Coverage  |
|-------------|---------------------------------------|---|
| Electricity | Law of the Electricity Industry (LIE) | legal basis to increase the participation and regulation of clean energies in the electricity generation process. |

# Regulatory framework (2)

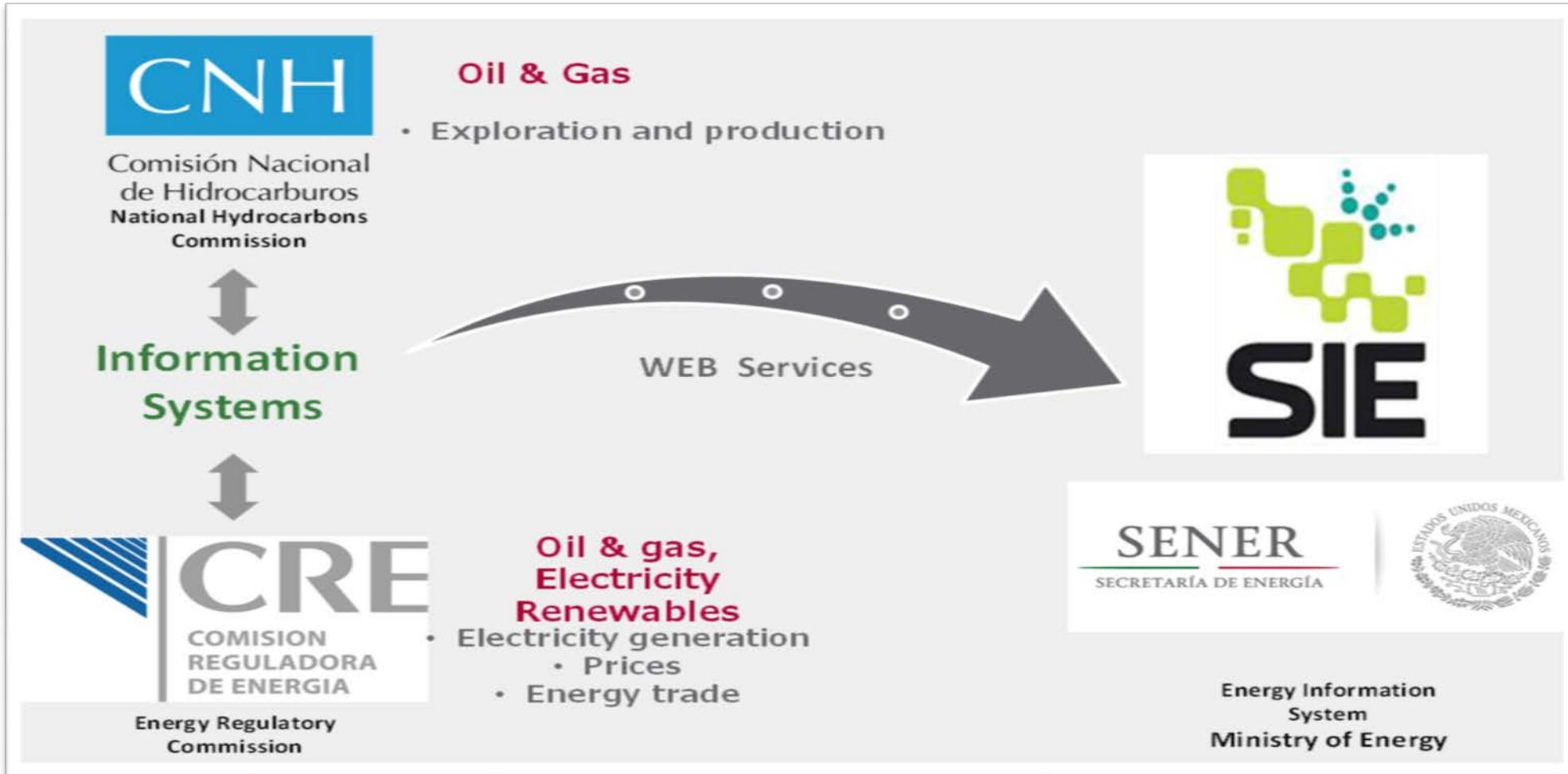
| Sector             | Governing Laws            | Coverage   |
|--------------------|---------------------------|--|
| Renewable energy   | LTE and 2008 related laws | share of economy-wide electricity generation, based on clean energy (renewables- 25% by 2018,  |
| Energy information | LTE (Article 24)          | Implement guidelines and criteria for official energy sector information and quality standards, including mechanisms for compiling, validating, processing, updating, safeguarding, publishing and public access, in coordination with the National Statistics and Geography Institute |

# Data collection structure (1)

| Sector           | Providers   | Coverage  |
|------------------|---|---|
| Electricity      | CRE   | Capacity and electricity generation data<br>Transmission and distribution<br>International trade, Consumption |
|                  | CEBACE, CFE, CENACE,<br>CONUEE, INEGI (Surveys),<br>IPPs        | Other electricity data, electric market, etc  |
| Renewable energy | CeMIE Sol<br>(Mexican Center for<br>Innovation in Solar Energy) | National Inventory of Photovoltaic<br>Systems: Energy Generation, photovoltaic<br>capacity                    |
|                  | ANES<br>(Solar Energy National<br>Association)                  | National Inventory of Flatted Solar<br>Heaters: Area in use and energy<br>generation                          |
|                  | IPPs  | Monthly Report: Energy generation, energy<br>consumption and statistics                                       |

**Note:** CRE: Energy Regulatory Commission; CONUEE: National Commission for the Efficient Use of Energy; CFE: Federal Electricity Commission (utility); CENACE: National Centre for Energy Control

# Data collection structure (2)



# Data processing, reporting and dissemination

All information are posted in the Ministry's **Energy Information System (SIE)**,

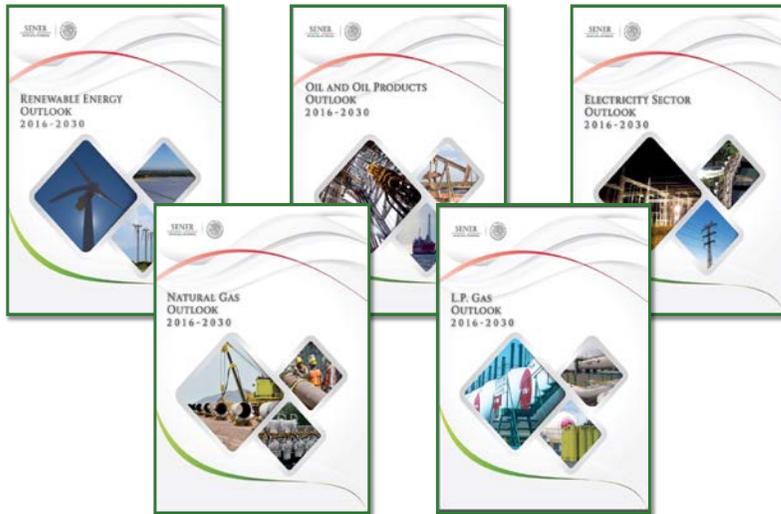


- National**
- NEB
  - Monthly reports
  - INEGI

## International

- AIE
- APEC
- OLADE
- UN

North American Energy Trade Statistics



**SENER** prepares energy related publications



# Challenges

# Collection of data entails great challenges

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Completeness and disaggregation of demand data is still a major challenge.

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Despite existence of laws, availability of energy demand and supply data is still an issue. This challenge goes along with the issue of confidentiality or maybe absence of incentives for stakeholders; hence, some industries or companies are not inclined to give information.

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Need for strong cooperation from other government institutions to validate data and collect data other than energy.

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Need for strong advocacy on the proper use of energy statistics in government and private businesses for planning and decision-making.

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Lack of budget to conduct surveys.



**Thank you for your kind attention**

<http://aperc.ieej.or.jp/>