



35
Years
Working with energy
1973 - 2008

olade

Organización Latinoamericana de Energía
Latin American Energy Organization
Organização Latino-Americana de Energia
Organisation Latino-américaine D'Energie

www.olade.org

A stylized world map in shades of blue, centered behind the text. The map shows the continents of North America, South America, Europe, Africa, and Australia. The text is overlaid on the map.

OLADE's energy statistical information systems



is an intergovernmental agency created through formalization of the LIMA CONVENTION on November 2, 1973, and ratified by 26 countries of Latin America and the Caribbean:

12 countries of South America: Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Guyana, Paraguay, Peru, Suriname, Uruguay, and Venezuela.

7 countries of the Caribbean: Barbados, Cuba, Dominican Republic, Grenada, Haiti, Jamaica, Trinidad & Tobago

6 countries of Central America: Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, and Panama

1 country of North America: Mexico, and

1 participant country: Algeria



Vision **olade**

Organización Latinoamericana de Energía

OLADE is the political and technical-support organization by means of which its Member States undertake common efforts to achieve integration and development in the regional energy sector.

Mission **olade**

Organización Latinoamericana de Energía

To contribute to the region's integration, sustainable development and energy security, advising and promoting cooperation and coordination among its member countries.







olade Quality Policy

Organización Latinoamericana de Energía

At the Latin American Energy Organization (OLADE), we are committed to work with quality to address the regional and sub-regional energy integration needs of its Member Countries, and to fulfill the objectives of the Lima Agreement and the decisions deriving from the Meeting of Ministers with motivated staff, team work, and continual improvement of defined processes.



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1. Economic-Energy Information System



What is it?

It is a statistical database from the energy sector that includes information from the Member Countries about crude oil, natural gas, coal, petroleum derivatives, renewable energies, electricity and others. It stores historical series since 1970.

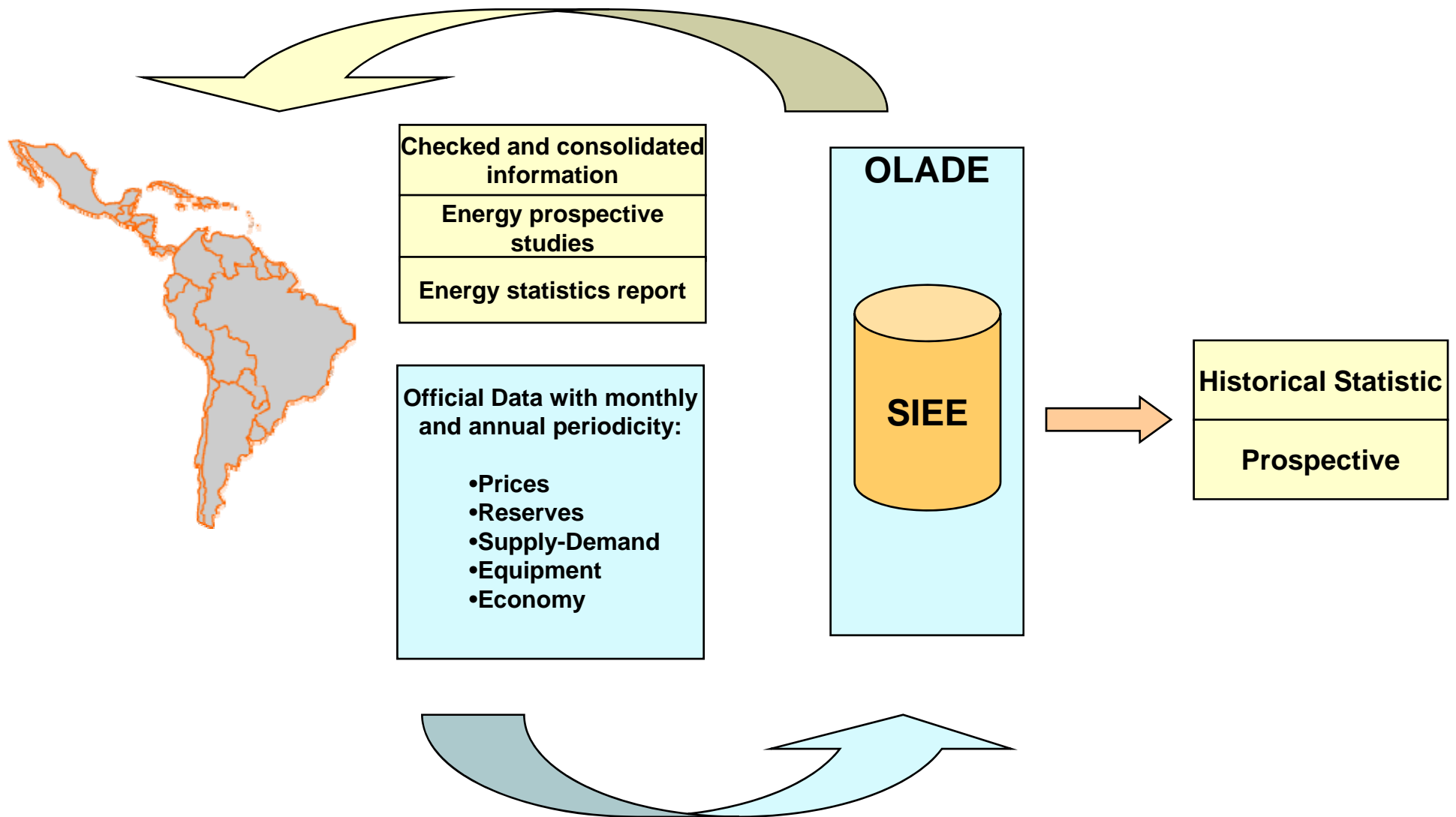
The statistical series are presented in modules such as prices, reserves, supply-demand, equipment, economy, environmental impact, economic-energy indicators and world-wide information.

Its Benefits

It provides a service of statistical information and indicators of the main energy and economical variables, in order to render studies and analysis of the countries, group of countries or sub regions.

It is used as a basis for the integral or indicative energy planning, facilitating the adoption of internal politics and providing elements for a greater regional integration.







2. National Energy Information System





2.1. General Features



What is it?

- It is a computer tool developed to manage and systematized the most important information from the energy sector according to its structure of each country.
- It provides the capacity of generating indicators, energy balances, management and technical reports of the energy sector.

Its Benefits:

It facilitates to the Ministries of Energy or equivalent organizations, the tasks of diagnosis, planning and definition of policies referred to the activities of this sector.

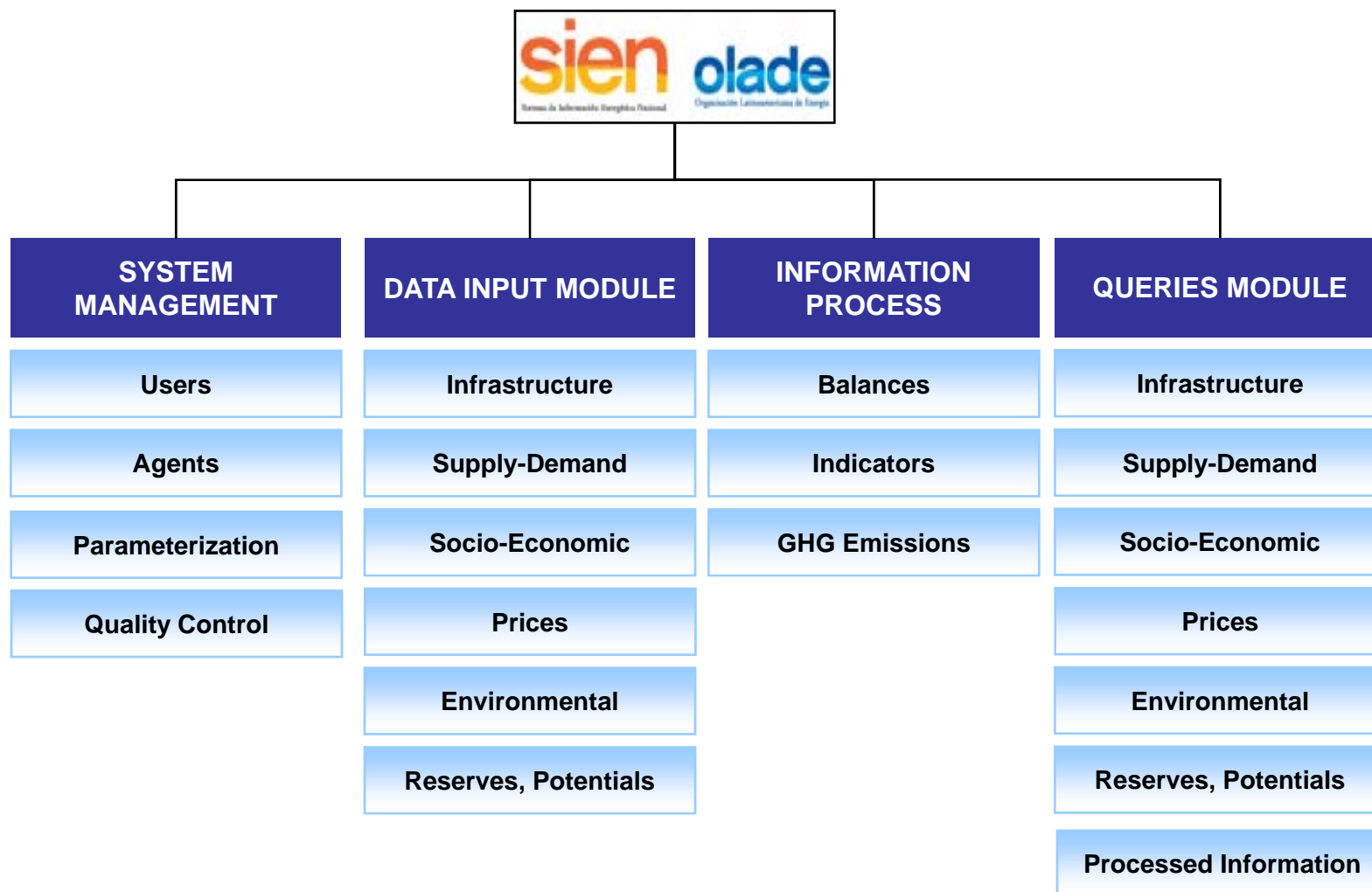


Main advantages

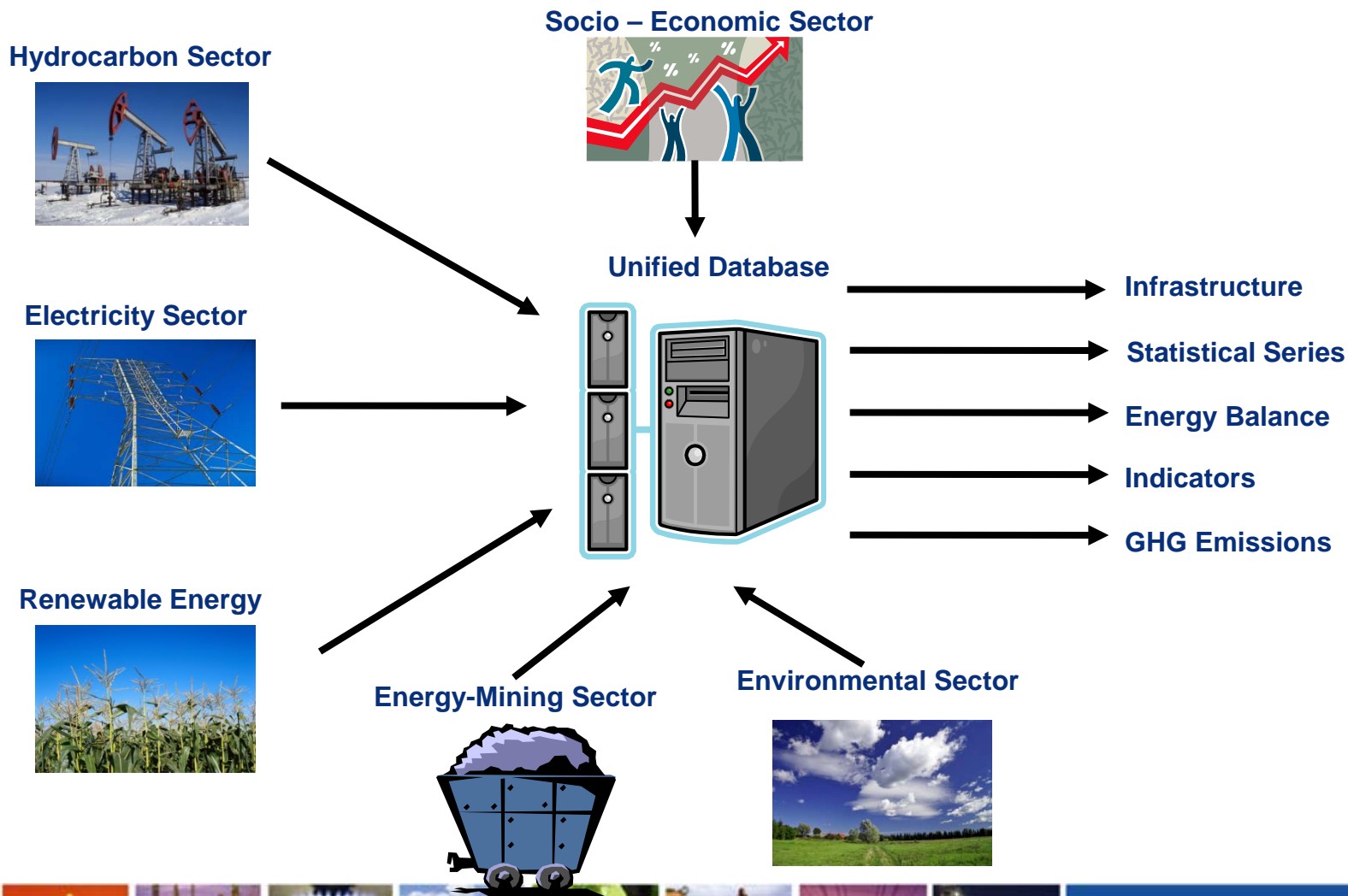
- It could be configured according with the energy structure of each country, by means of the parameters definition (Parameterization-Parameter settings).
- Interface and multi-user database for direct access through the Internet or Intranet.
- User access control for data input and queries modules according to the management policy of the system.
- Processing of the stored information in order to provide important results such as:
 - National Energy Balance
 - Energy-Economic Indicators
 - Greenhouse Gases Emission



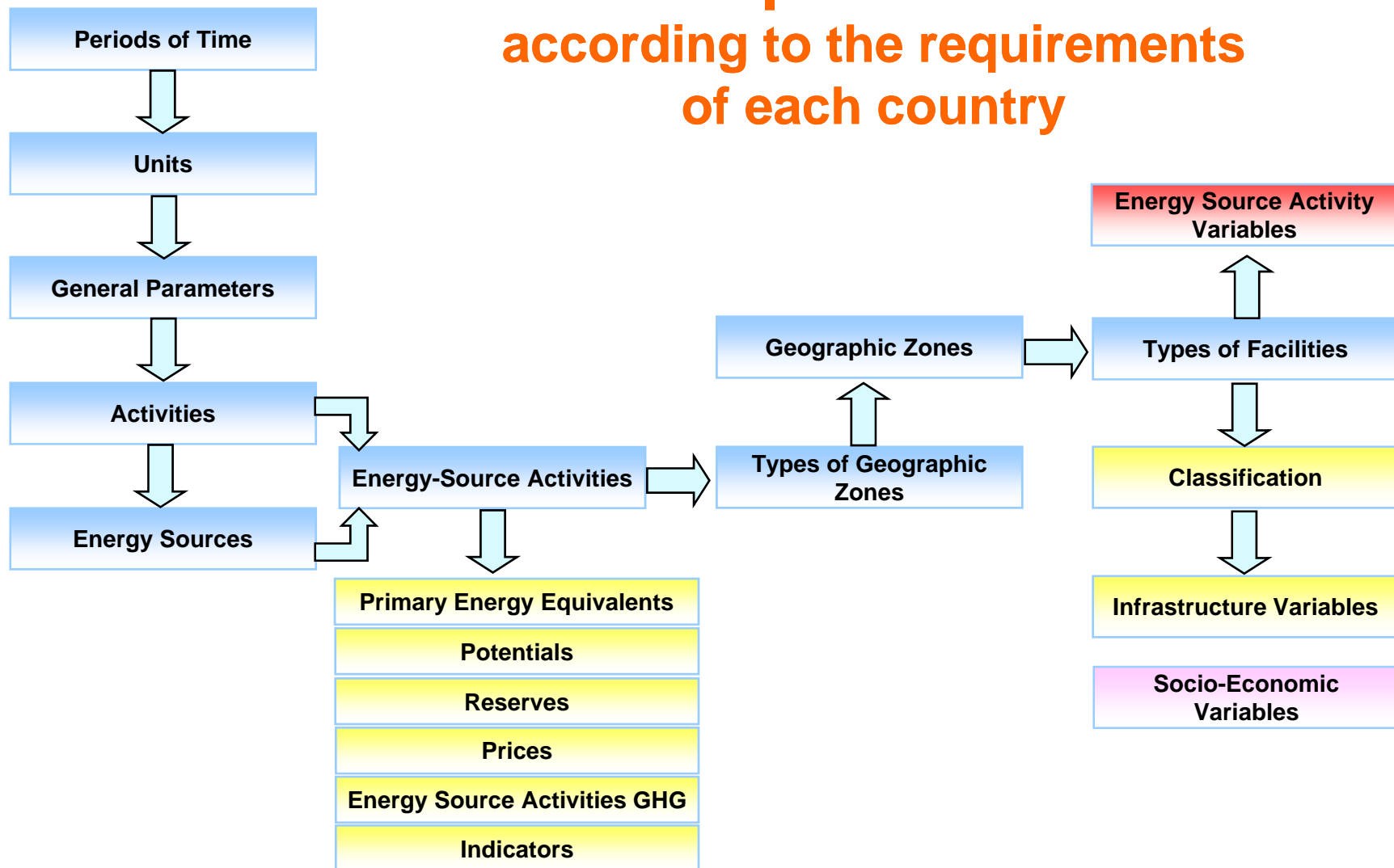
SIEN Structure



How it works?



Database parameterization according to the requirements of each country



Infrastructure Module

- It organizes the catalogue of the existing energy facilities of the country, classified according to the activity and the energy sources that they are involved in.
- It gathers the features of each energy facility. Each of them can be defined as fixed or periodic variables.

Refineries



- Processing capacity
- Start up date
- Storage capacity
- Etc.

Power Plants

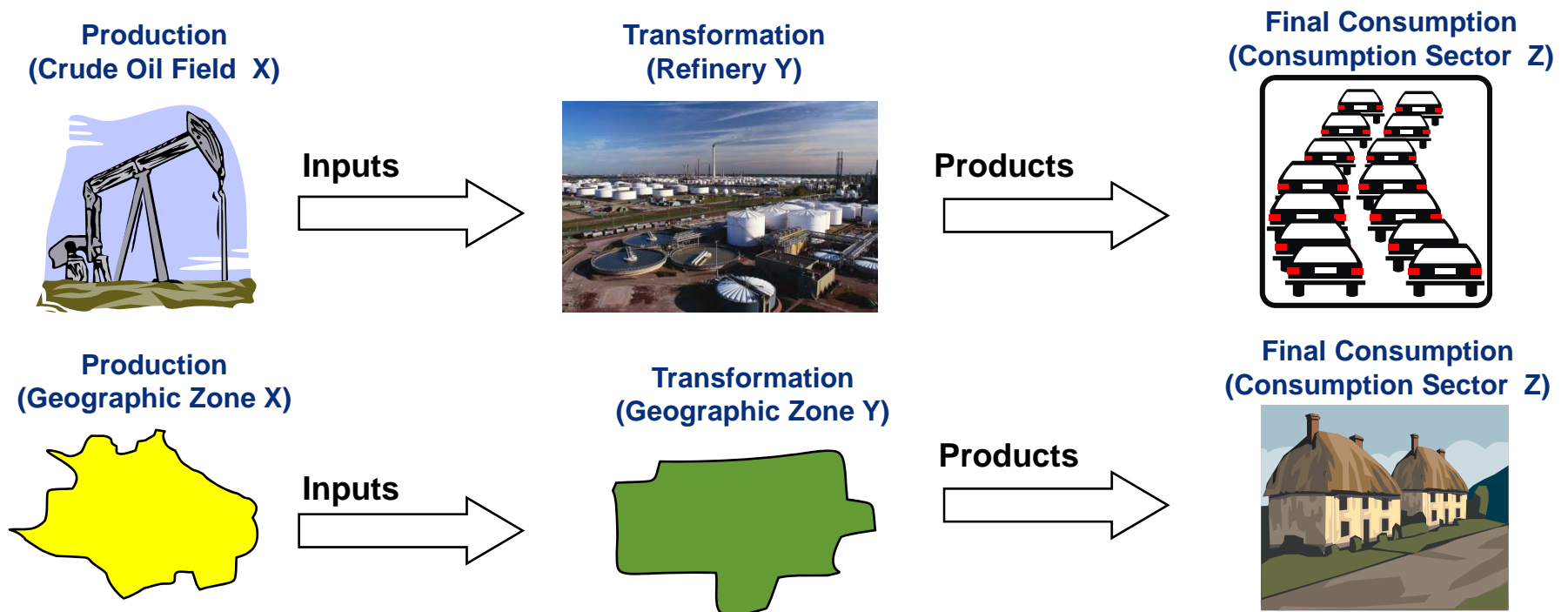


- Installed capacity
- Number of units
- Output voltage
- Inflow of design
- Volume of reservoir
- Etc.



Supply-Demand Module

- It manages the statistics of the energy flows through the energy chain.
- The information can be associated to the energy facilities defined in the infrastructure module or to the geographic zones that the country is divided in.



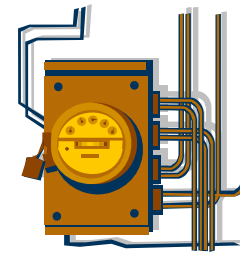
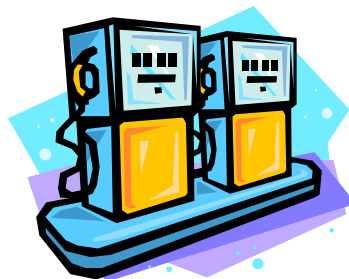
Socio-Economical Variables Module

- It allows to manage the economical and demographic variables that are useful for the formulation of the main energy-economic indicators, such as energy intensity, consumption elasticity, per capita consumption, etc.
- This module can manage variables such as:
 - Total GDP
 - Sectoral Net Value Added Tax
 - Total of Population
 - % Rural population
 - % Urban Population
 - Index of prices
 - Inflation rate
 - Others



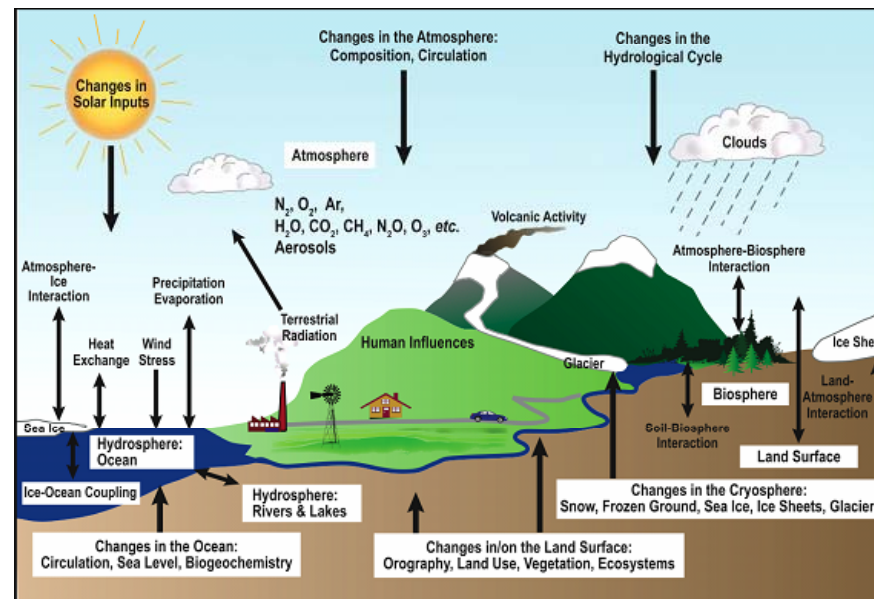
Prices Module

- It manages the information of the energy prices, as much for the **internal commerce**, as for the **external commerce**.
- The prices for the internal commerce are divided into prices **with taxes** (final consumer level) and **without taxes**.
- The prices for the external commerce are classified into **export prices (FOB)** and **import prices (CIF)**
- This module also includes the gathering of information from the exchange rate.



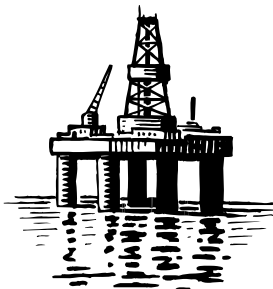
Environmental Information Module

- In this module, the emission factors and parameters are entered for the calculation of the greenhouse gases emissions; using the methodologies of reference and by technologies, formulated by the IPCC.



Reserve and Potential Modules

- This module includes information about the availability of the natural energy resources that exist in the country.
- Reserves refer to the fossil and mineral resources such as crude oil, natural gas, coal and uranium. They can be divided into proven, probable and possible reserves.
- Potentials refer to the renewable energies such as hydroelectricity, eolic energy, solar energy and biomass.
- In the case of the hydraulics, eolic and solar, the potential is measured based on the installed capacity of electricity generation from these sources.
- In the biomass case, the potential is measured as the production capacity of this type of source for energy aims.



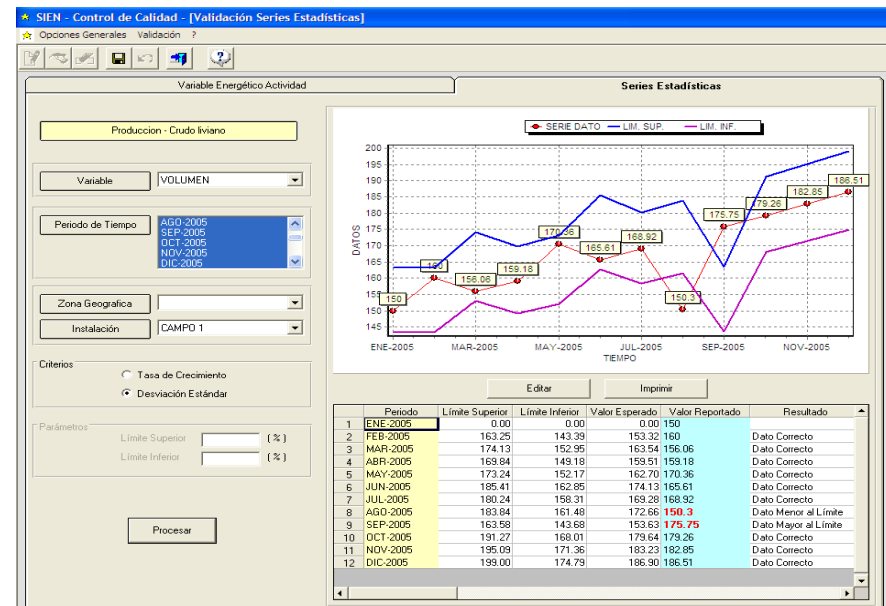
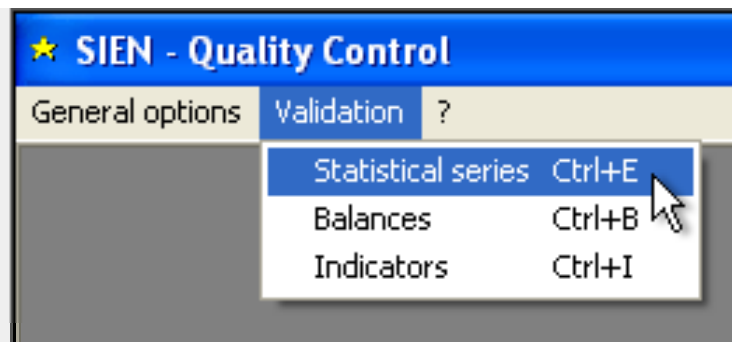
Processed Information

- SIEN provides 3 elements of processed information that are important for the analysis and planning of the Energy Sector.
 1. National Balance
 2. Indicators
 3. Green House Gases Emissions (GHG)
- The national balance is elaborated based on the OLADE's Methodology, with the application of some extended criteria.
- Indicators are called to the mathematical formula defined by the system administrator in the parameterization program.
- The GHG emissions are calculated by the application of the referential and technological methodologies, proposed by the IPCC (Intergovernmental Panel on Climate Change)



Quality Control

SIEN also has tool that allows to control the coherence of the statistical series, energy balances and indicators series; allowing to detect the possible mistaken data.

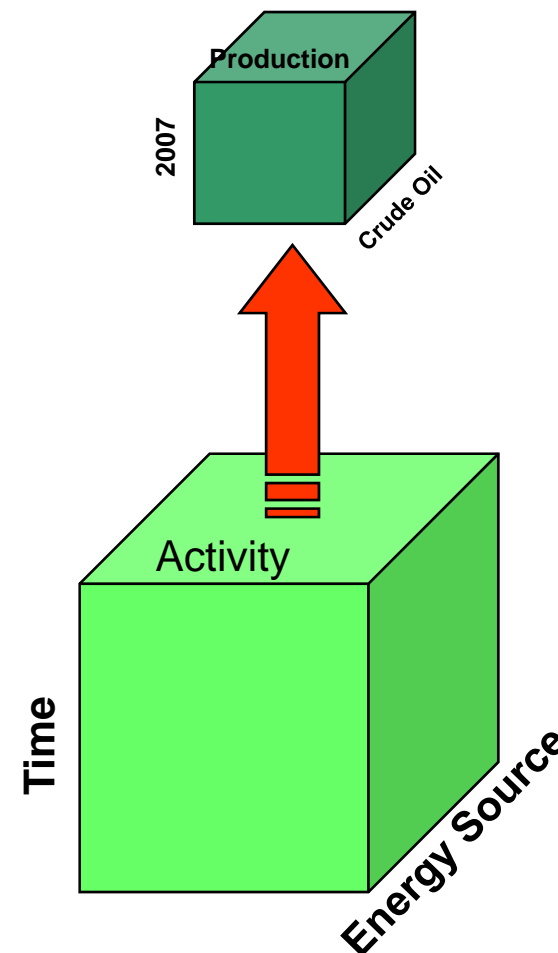
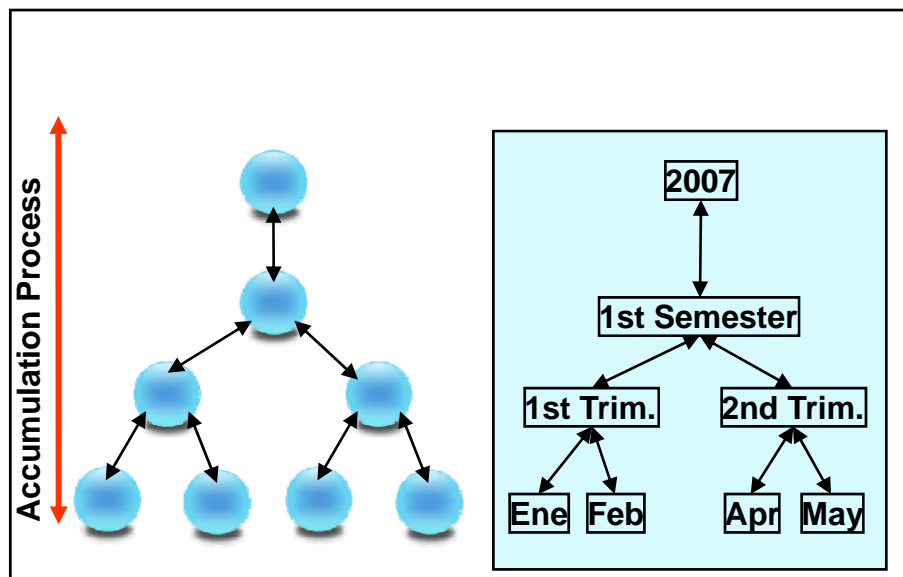
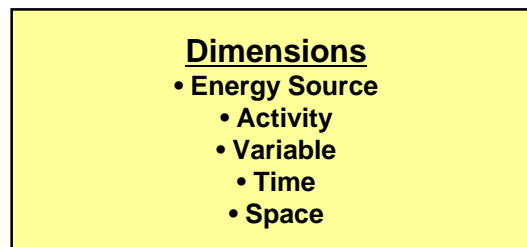


2.2 Version 3.0 Enhancements (in development)



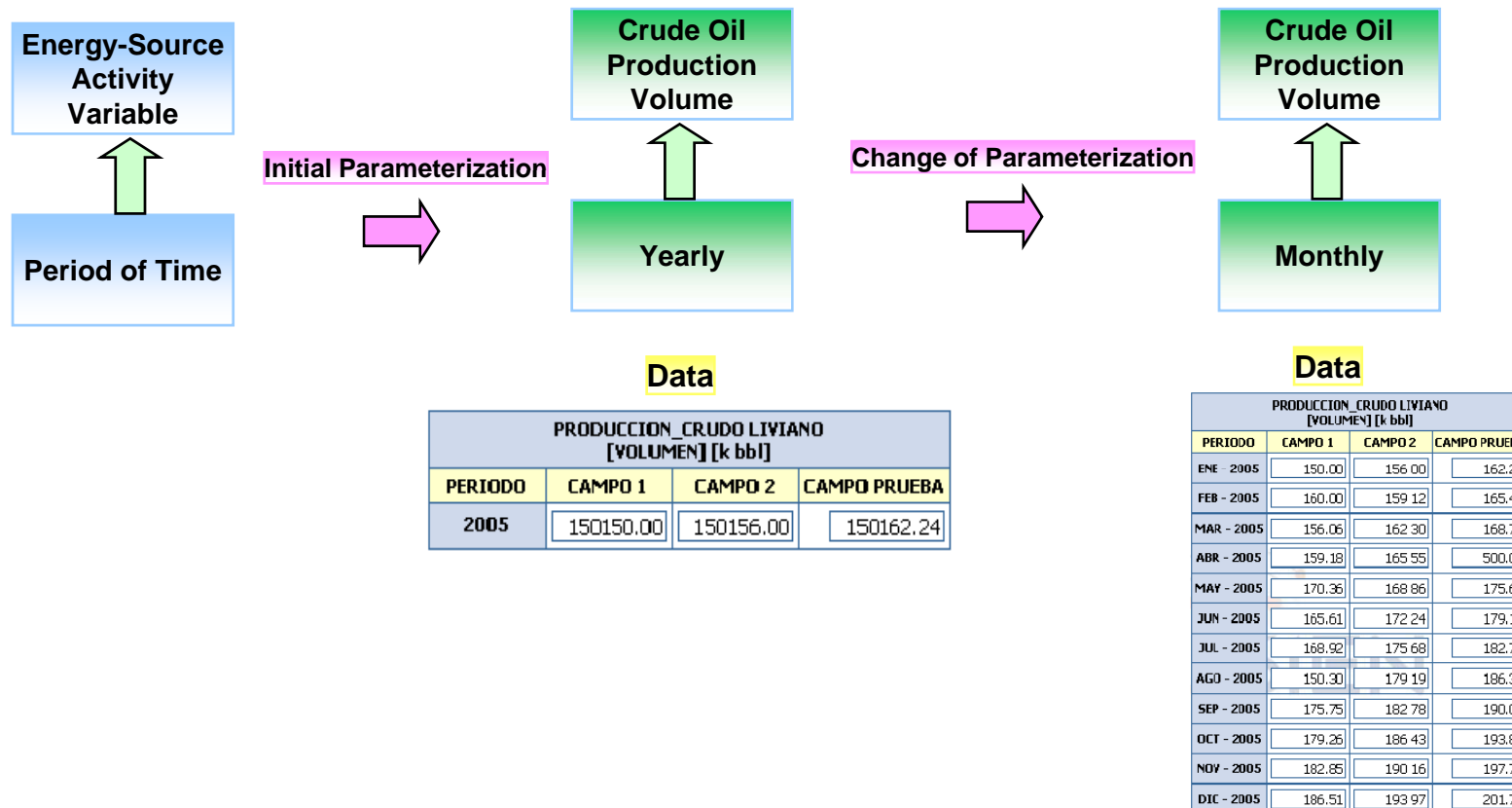
OLAP Cubes Technology

for faster and dynamic Queries



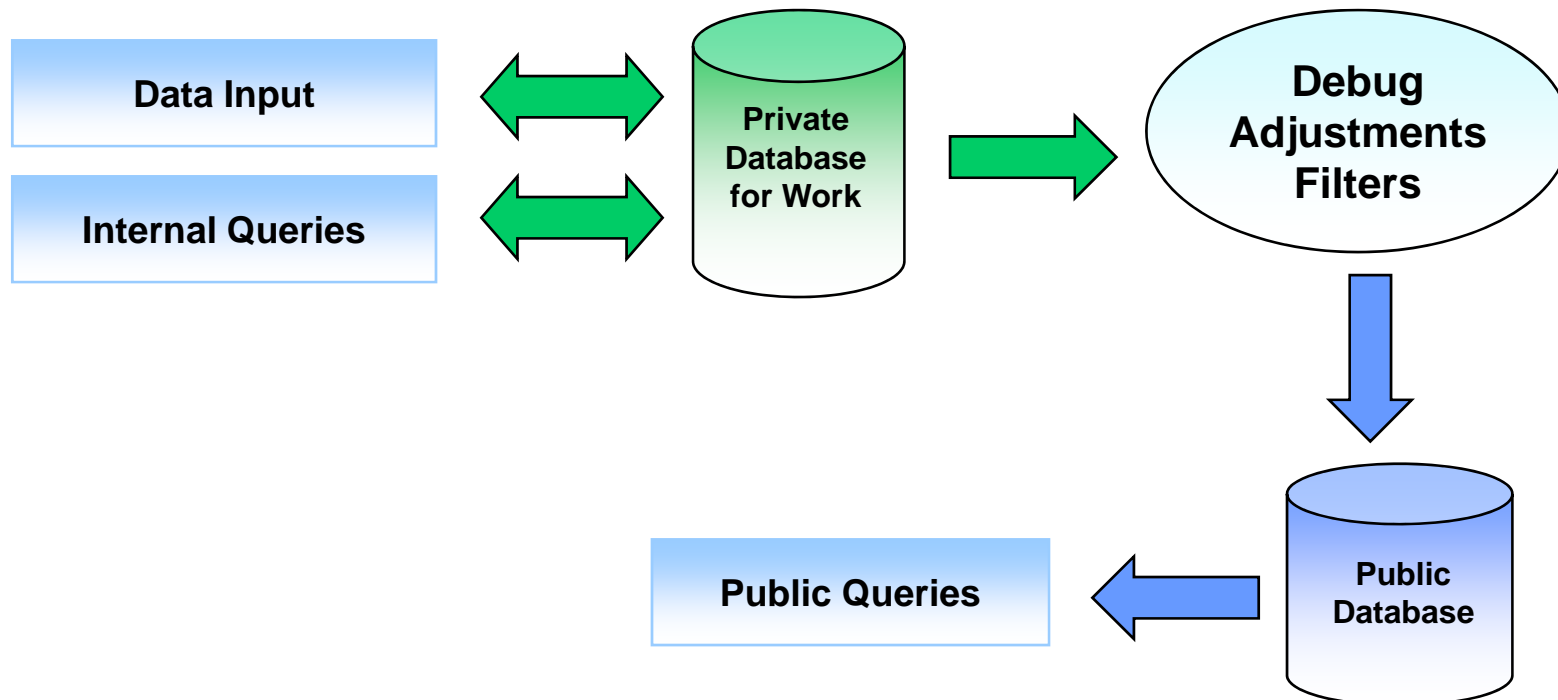
Time flexible parameterization

It allows to modify itself (even if data already exists) in order to input more detailed data.



Management of different Databases at the same time

There could be an internal private database and a public database just for doing searches.



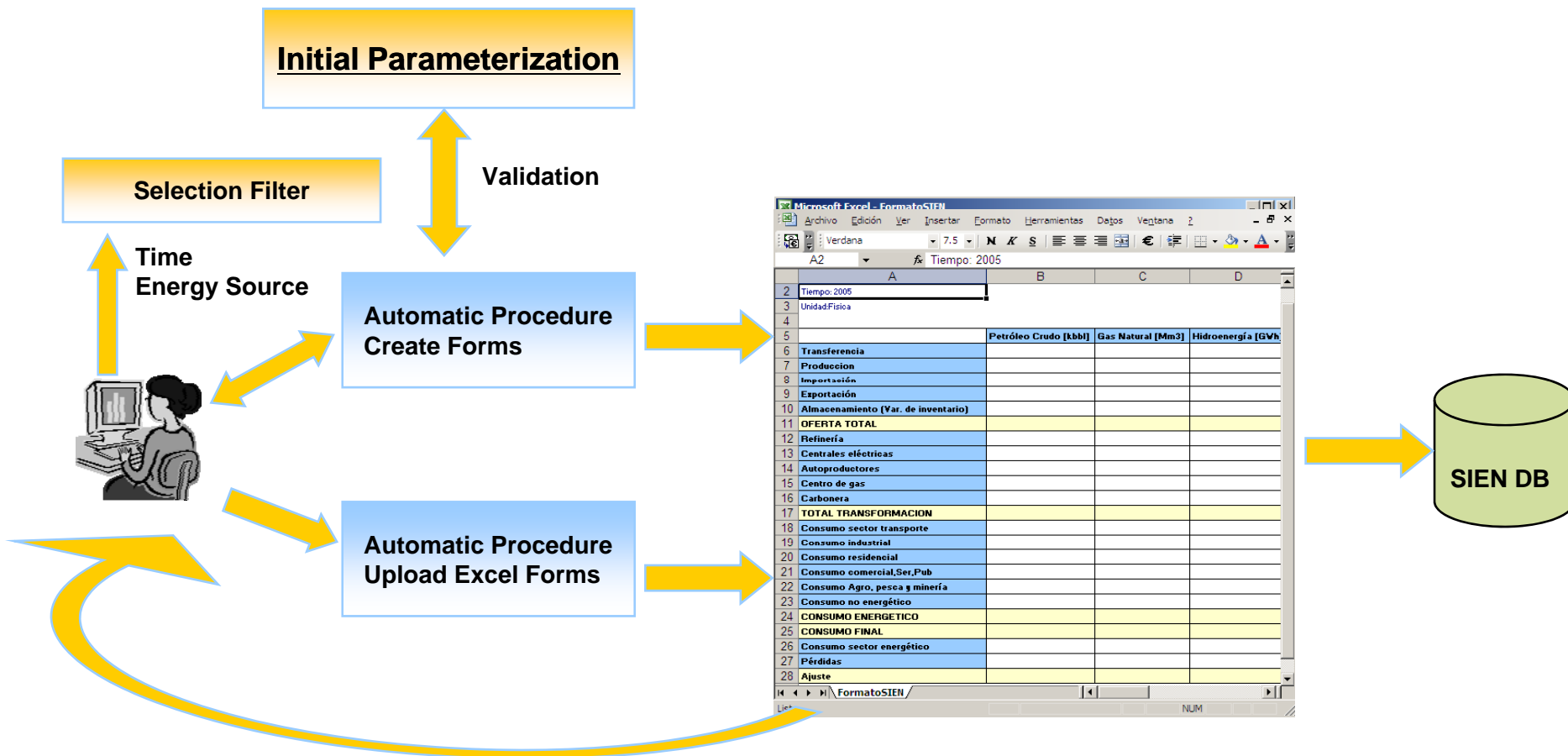
Friendly and Dynamic Interfaces

The screenshot displays the SIEN-3 web interface. At the top, it features the 'sien olade' logo, the text 'National Energy Information System Version 3.0', and a 'Sign Out' link. The main content area is titled 'Welcome to SIEN-3' and 'Infrastructure-Projects-Facilities'. A sidebar on the left contains a tree view with categories like System Management, Data Input, Queries, Hydrocarbons, Coal, Renewables, Electricity, Energy Flux, Prices, Indicators, Emissions, Infrastructure-Projects-Facilities (selected), Energy Balance, Nuclear, General, National Variables, and Executive Reports. The main panel shows a 'Facilities Query' form with the following fields: Activity (Termoeléctricas), Facility Type (CENTRAL ELECTRICA), Variables (Fecha de inicio operación, Capacidad instalada de generación, Tensión de salida), Type of Period (AÑO), and Period of Time (2005, 2006, 2007). There are 'Report' and 'Dynamic Query' buttons at the bottom. A 'Help' link is visible in the top right corner of the main panel.

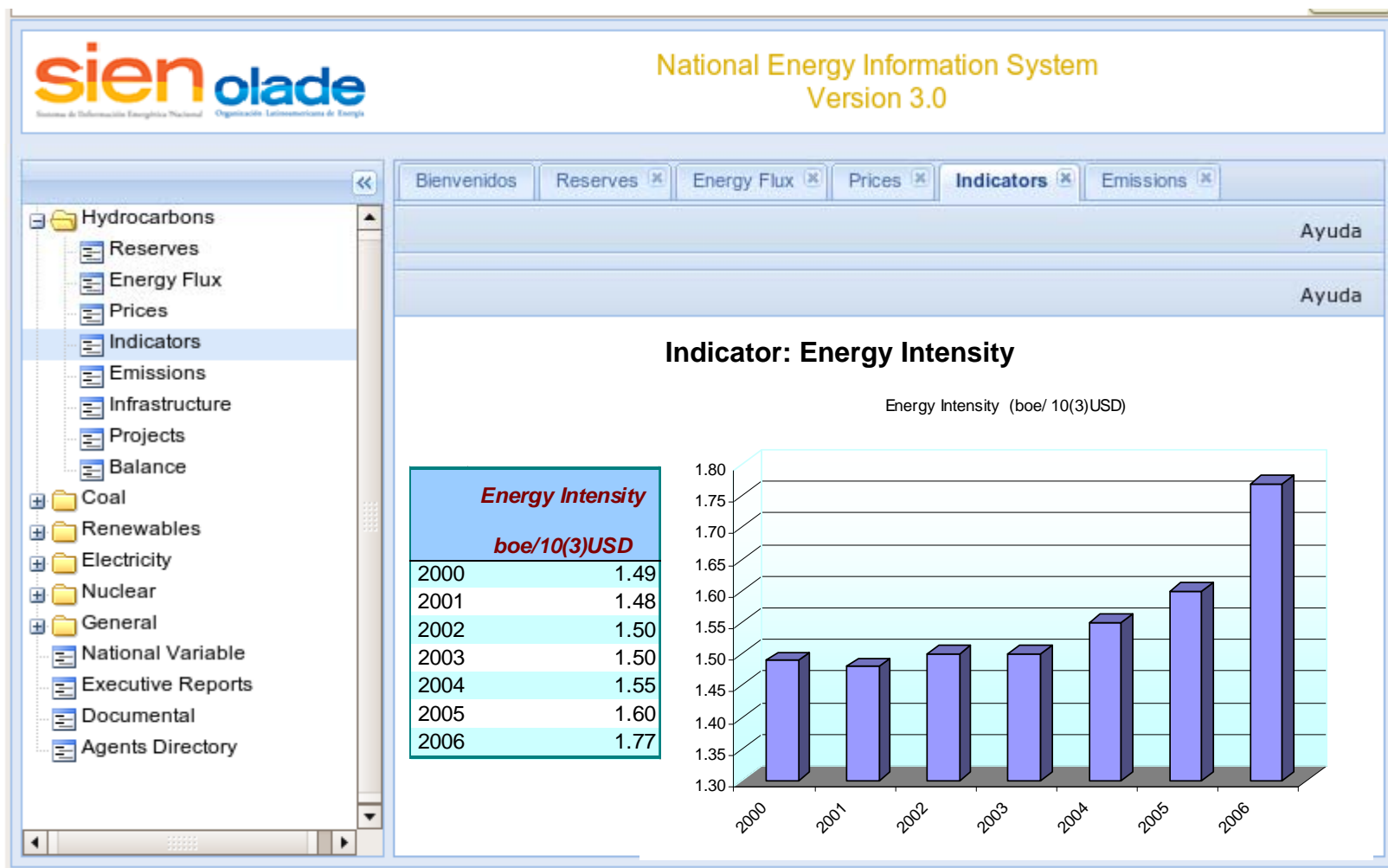
Redesign of the interfaces using the latest technology



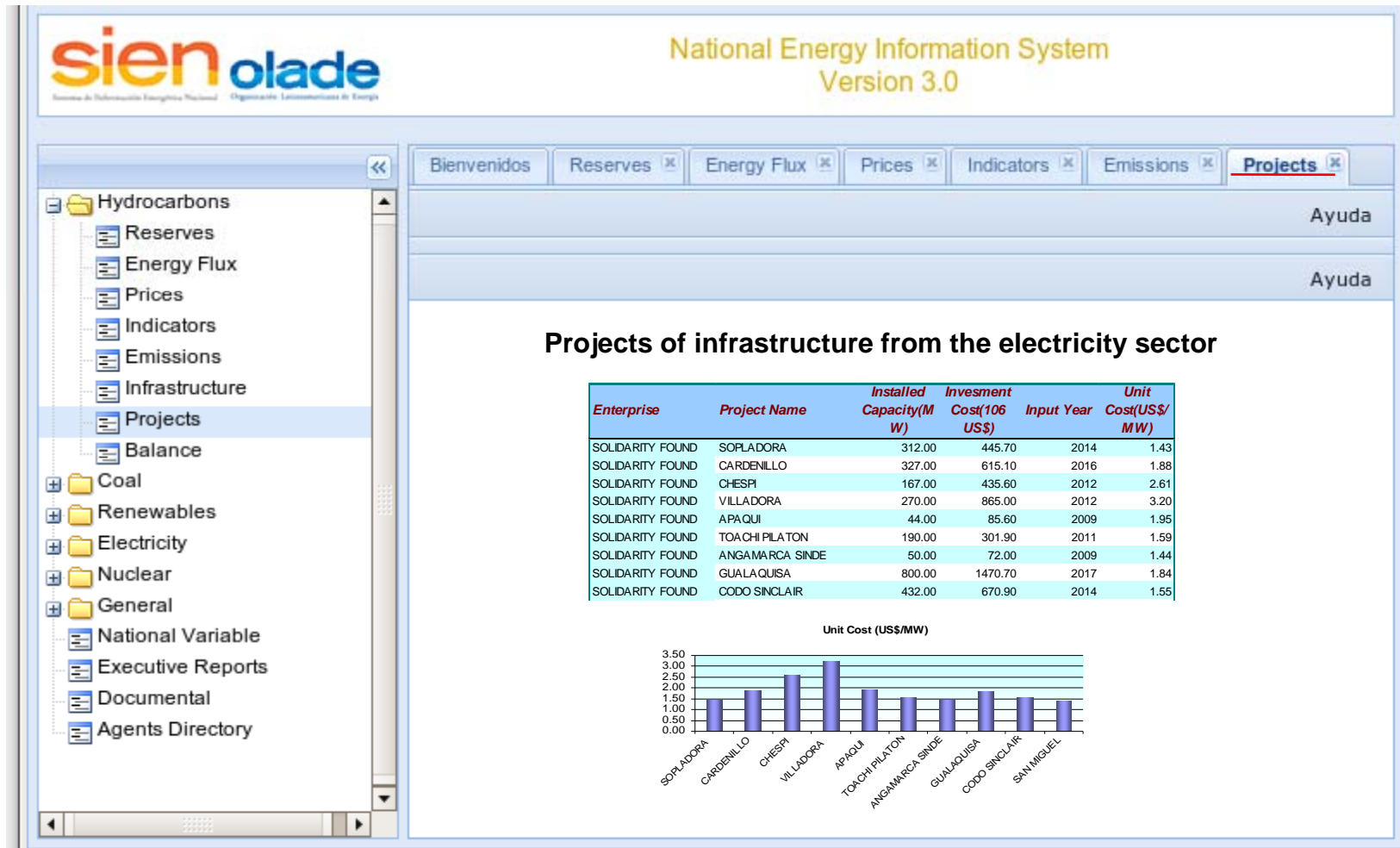
Data input from Excel files



Generation of indicators



Information related to Energy Infrastructure Projects



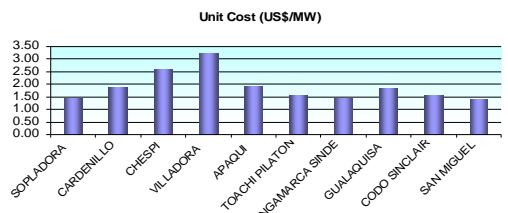
**National Energy Information System
 Version 3.0**

Navigation tabs: Bienvenidos, Reserves, Energy Flux, Prices, Indicators, Emissions, **Projects**

Projects of infrastructure from the electricity sector

Enterprise	Project Name	Installed Capacity(MW)	Investment Cost(106 US\$)	Input Year	Unit Cost(US\$/MW)
SOLIDARITY FOUND	SOPLADORA	312.00	445.70	2014	1.43
SOLIDARITY FOUND	CARDENILLO	327.00	615.10	2016	1.88
SOLIDARITY FOUND	CHESPI	167.00	435.60	2012	2.61
SOLIDARITY FOUND	VILLADORA	270.00	865.00	2012	3.20
SOLIDARITY FOUND	APAQUI	44.00	85.60	2009	1.95
SOLIDARITY FOUND	TOACHI PILATON	190.00	301.90	2011	1.59
SOLIDARITY FOUND	ANGAMARCA SINDE	50.00	72.00	2009	1.44
SOLIDARITY FOUND	GUALAQUISA	800.00	1470.70	2017	1.84
SOLIDARITY FOUND	CODO SINCLAIR	432.00	670.90	2014	1.55

Unit Cost (US\$/MW)




Executive Reports

sien olade
 Sistema de Información Energética Nacional Organización Latinoamericana de Energía

National Energy Information System
 Version 3.0

Bienvendidos **Executive Reports**

Ayuda

Ayuda

Installed Capacity for type of plant (MW)

	2000	2001	2002	2003	2004	2005	2006	2007
Hydraulics	2500	2550	2700	2700	2700	2800	2800	2920
Geothermal	150	150	180	180	180	180	200	200
Steam Turbine	500	520	520	500	550	500	450	400
Open Cycle Gas Turbine	350	300	280	280	300	320	350	370
Combine Cycle Gas Turbine	320	350	380	450	500	550	600	650
Internal Combustion Engine	200	180	170	160	100	80	60	40
Eolic	20	30	30	35	35	40	40	40
Photovoltaic	5	5	5	5	5	5	5	5
Total	4045	4085	4265	4310	4370	4475	4505	4625

Installed Capacity for Electricity Generation(MW)

Legend:

- Hidráulica
- Eólica
- Geotérmica
- Turbo Gas Ciclo Abierto
- Turbo Gas Ciclo Combinado
- Turbo Vapor
- Motores Combustión Interna
- Fotovoltaica



Energy Balances

- To reduce the time of waiting for the arrival of the response from the server using OLAP technology
- General balances and balances by area (Hydrocarbons, Electricity, Renewables, etc.)
- Support to current queries
- New options in order to export to other file formats

**Balance Energético
Energilandia**
Tiempo: 2005
Unidad: T J

	Petróleo Crudo	Gas Natural	Total No Renovables	Hidroenergía	Eólica	Solar	Biomasa	Total Renovables	Total Primarias
Transferencia		20,848.37	20,848.37						20,848.37
Producción	42,415.32	49,930.67	92,346.00	13,499.54	539.98	267.18	7,584.14	21,890.84	114,236.84
Importación	5,809.77		5,809.77						5,809.77
Exportación	29,049.54		29,049.54						29,049.54
Almacenamiento (Var. de inventario)	-2,904.54		-2,904.54						-2,904.54
OFERTA TOTAL	16,271.02	70,779.05	87,050.07	13,499.54	539.98	267.18	7,584.14	21,890.84	108,940.91
Refinería	-31,954.77		-31,954.77						-31,954.77
Centrales eléctricas		-6,963.36	-6,963.36	-13,499.54	-539.98			-14,039.52	-21,002.87
Autoproducción						-78.84		-78.84	-78.84
Centro de gas		-27,811.73	-27,811.73						-27,811.73
Carbonera							-5,778.39	-5,778.39	-5,778.39
TOTAL TRANSFORMACION	-31,954.77	-34,775.08	-66,729.85	-13,499.54	-539.98	-78.84	-5,778.39	-19,896.75	-86,626.60
Consumo sector transporte									3,481.68
Consumo industrial									13,843.32
Consumo residencial						188.35	1,805.75	1,994.09	15,837.41
Consumo comercial, Ser, Pub									3,469.17
Consumo Agro, pesca y minería									
Consumo no energético									
CONSUMO ENERGÉTICO		20,794.17	20,794.17			188.35	1,805.75	1,994.09	22,788.26
CONSUMO FINAL		20,794.17	20,794.17			188.35	1,805.75	1,994.09	22,788.26
Consumo sector energético									
Pérdidas									
Ajuste	-15,683.75	15,209.80	-473.95			0	0	0	-473.95



SIEN-OLADE is focused to:

- Energy Ministries, or entities in charged of management the national energy statistics.
- Control and regulation organisms from different areas of the energy sector.
- In charged entities of the national energy planning.
- Operating enterprises from the energy sector.



Countries that have been participating in this project since the first phase of implantation.

SIEN in the Countries

No.	COUNTRY
1	Bolivia
2	Brazil
3	Colombia
4	Cuba
5	Ecuador
6	El Salvador
7	Guatemala
8	Guyana
9	Haití
10	Honduras
11	Jamaica
12	Nicaragua
13	Paraguay
14	Trinidad & Tobago
15	Uruguay
16	Venezuela



Countries that have not participate in the first phase of implantation, but that show interest in the project.

No.	COUNTRY
17	Chile
18	Costa Rica
19	Panamá
20	Perú
21	Dominican Republic

22	Algeria
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Countries with other energy systems

- México
- Costa Rica
- Dominican Republic
- Colombia
- Argentina
- Chile



3. PROJECT:

Regional Energy Information System



Background

On October 2007, OLADE with 16 of its 26 Member Countries, presented to the Inter-American Development Bank – IDB, a project for developing a new regional energy information system for Latin America and Caribbean, according with the current needs of information of the countries.

The IDB accepted the project inside its program of Regional Public Good (RPG), offering its financial support for the execution of the project.

OLADE has been assigned to be the executor organism of the project, and the participant countries have agreed to share their support in the technical area, from the design stage to the development of the system, and a continuous feedback once the project is started up.



Objective

To develop a **Regional Energy Information System** for:

Establishing a communication channel and technical cooperation between the countries through consolidated handling of the regional energy information, contributing to the initiatives of integration, to the efficient energy planning and stimulating the transparency in the information of the sector.

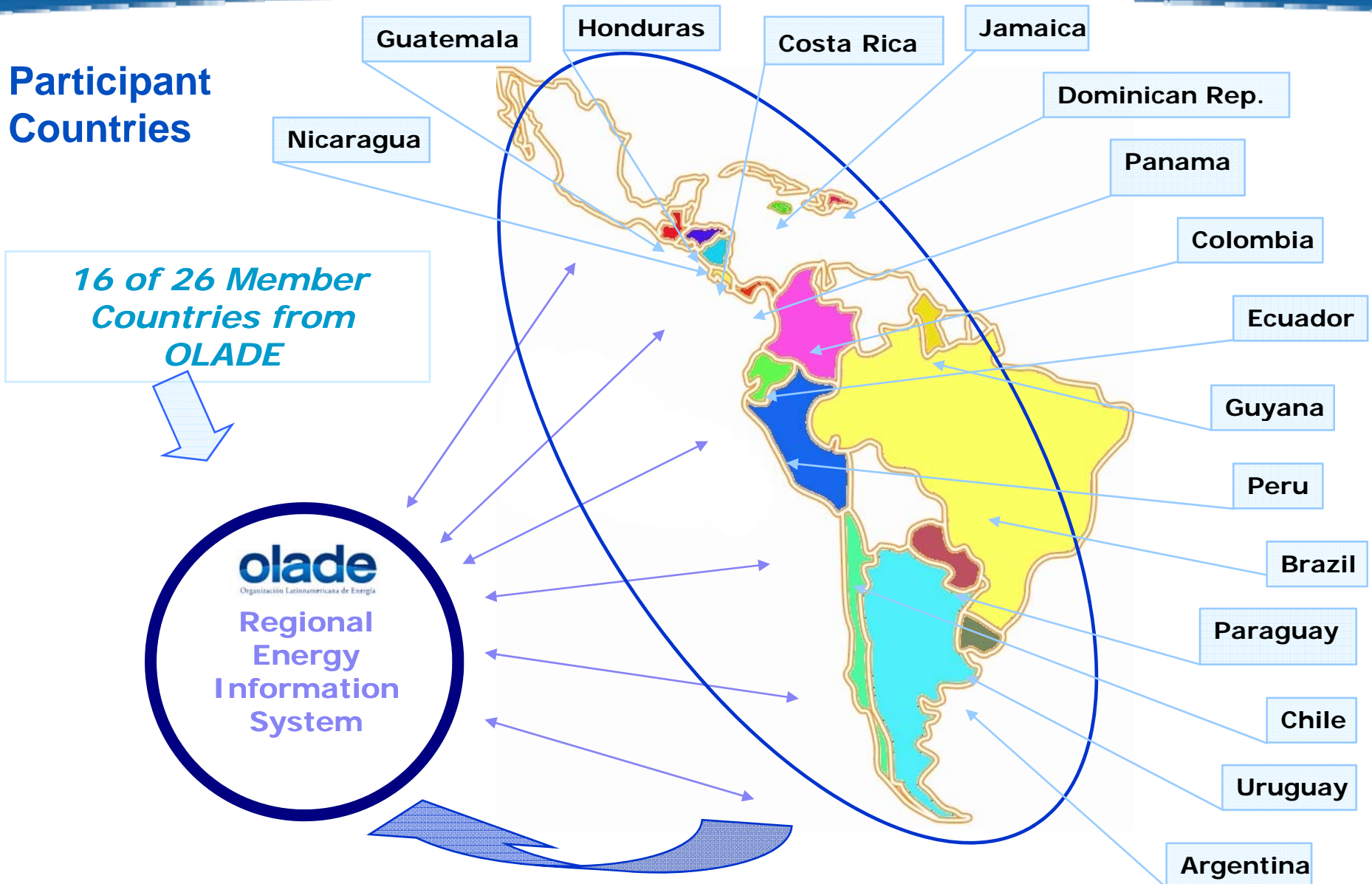


Components of the project

- **Component 1:** Diagnosis from the regional situation with respect to the energy information systems.
- **Component 2:** Design of the energy information system
- **Component 3:** Development of the system.
- **Component 4:** Training to the agents that generates the information and system administrators.
- **Component 5:** Strategy plan of awareness and pilot project.



Participant Countries



Current State of the project

- On November 12, 2008, during the Third Forum of Energy Integration of Latin America and the Caribbean, organized by OLADE in Buenos Aires, a **regional technical cooperation agreement had been signed** between IDB and OLADE within the Regional Public Good (RPG) program of the Bank.
- OLADE, in its quality of executor organism of the program, is elaborating the documentation demanded by the IDB as a previous requirement to the emission of the first economic payment in order to officially start up the project.



