

PERU

Country Report

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OSINERGMIN is a public institution of the Peruvian State, which has functional autonomy, technical, administrative, economic and financial, whose functions are to regulate, supervise and control at the national level compliance with laws and technical in activities sectors of electricity, natural gas, oil and mining, as well as compliance with legal and technical rules concerning safety and environmental protection in the development of these activities.

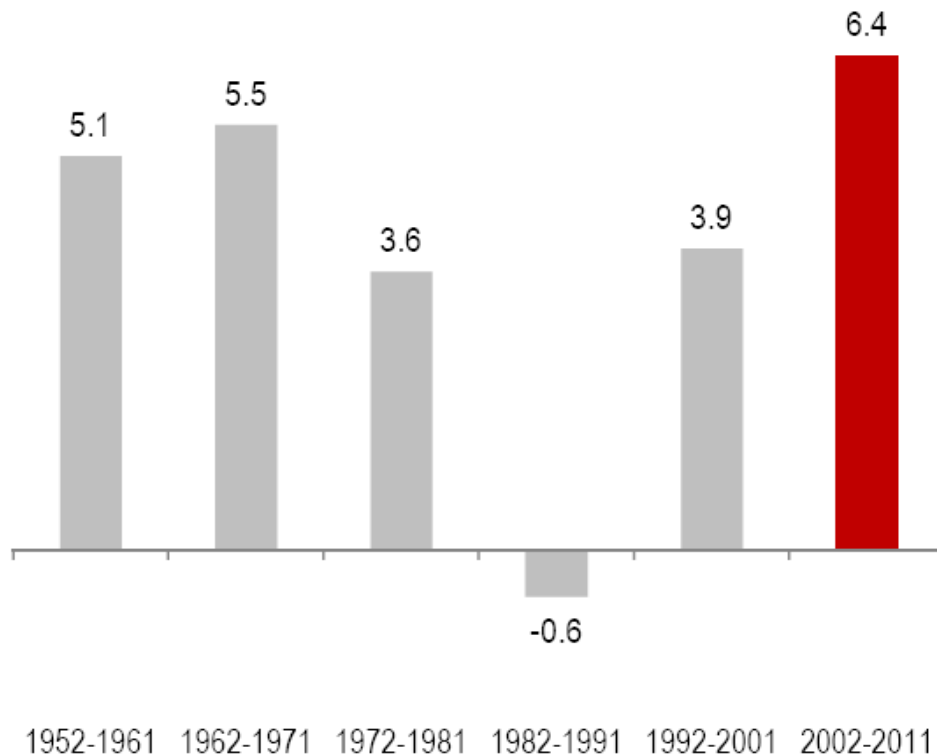
1. PERU: General Information



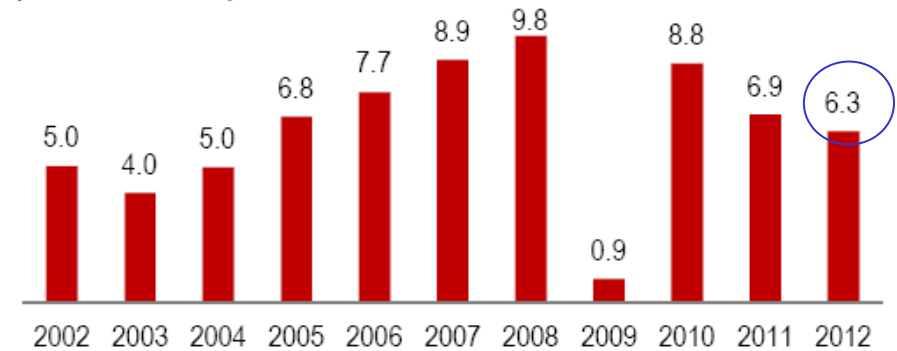
	PERU
AREA	1,29 Mill Km2
POPULATION	30,2 Mill
PIB P. CAP	10.0 K US\$

2. PERU: Macro economy

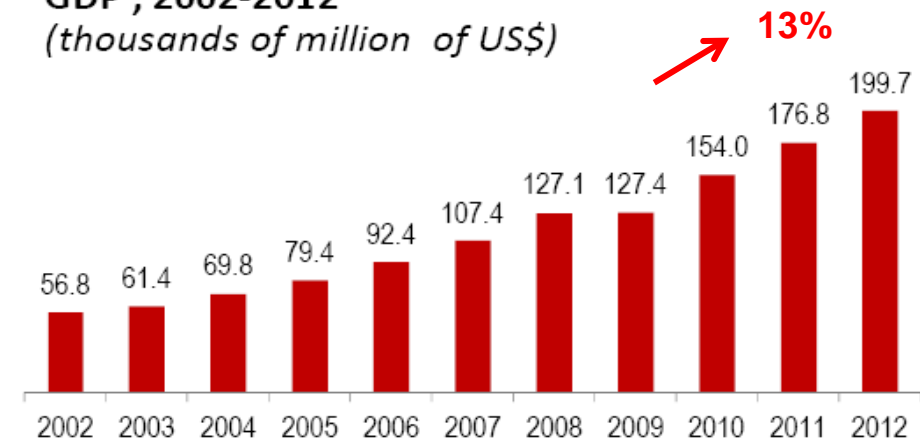
Real GDP 1952-2011
(aver annual var. %)



Real GDP, 2002-2012
(Variation %)



GDP, 2002-2012
(thousands of million of US\$)



Source: Central Reserve Bank of Peru, Ministry of Economy and Finances and IMF

Peru grew by about 13% in nominal dollar GDP in 2012 compared to 2011 and is due primarily to the real growth of 6.3% in the product

3. Current Energy Policy and measures

Long – Term Energy Policy
(D.S. 064-2010-EM)

View



An energy system which satisfies national demand in a **reliable** manner, **efficient** and **continuous**, which promotes sustainable development and to support the **planning** and continuous technological research and innovation..

3. Current Energy Policy and measures



¿What are the objectives of energy policy in Peru?

The State energy policy covers five main points:

1. Energy Security.
2. Conservation of energy resources.
3. Fair and stable prices.
4. Developments friendly environment.
5. Social Inclusion.

3. Current Energy Policy and measures



Energy Policy long –term (D.S. 064-2010-EM)

- Have a **diversified** energy mix with emphasis on renewable sources.
- Have a **competitive** energy supply.
- **Universal access** to energy supply.
- Have a **greater efficiency** in the supply chain and energy use.
- Achieve **self-sufficiency** in energy production.
- Develop an energy sector with minimal **environmental impact**.
- Develop the **natural gas** industry, and its use in home activities, transportation, trade and industry as well as efficient power generation.
- Strengthening of the **institutions** of the energy sector.
- **Integrate** with regional energy markets, allowing the achievement of long-term vision.

3. Current Energy Policy and measures



Measures for Energy Sector Development

1. Planning sector in the medium and long term based on the diversification of the energy matrix, ensuring coverage of demand.
2. Efficiency of the state as an agent planner and investment promoter, being a complementary agent for private participation in strategic projects.
3. Improved policy consistent with industry developments.
4. Establish mechanisms for the sustainable management of the sector with social responsibility, environmental conservation and communities prior consultation.

3. Current Energy Policy and measures

What are our tools?

1. **Transmission Planning (Law No. 28832)**
2. **Generation Planning (for instrument)**
3. **Bids for Transmission (Law No. 28832)**
4. **Bids for Generation (Law No. 28832, Proinversion)**
5. **Cold Reserve Tender (D. L. No. 1041)**
6. **Auctions for generation RER (D. L. No. 1002)**

The investment is the result of bidding on contracts awarded that guarantee set firm prices for energy or service offered. Long-term contracts up to 20 years (generation) and 30 years (transmission).

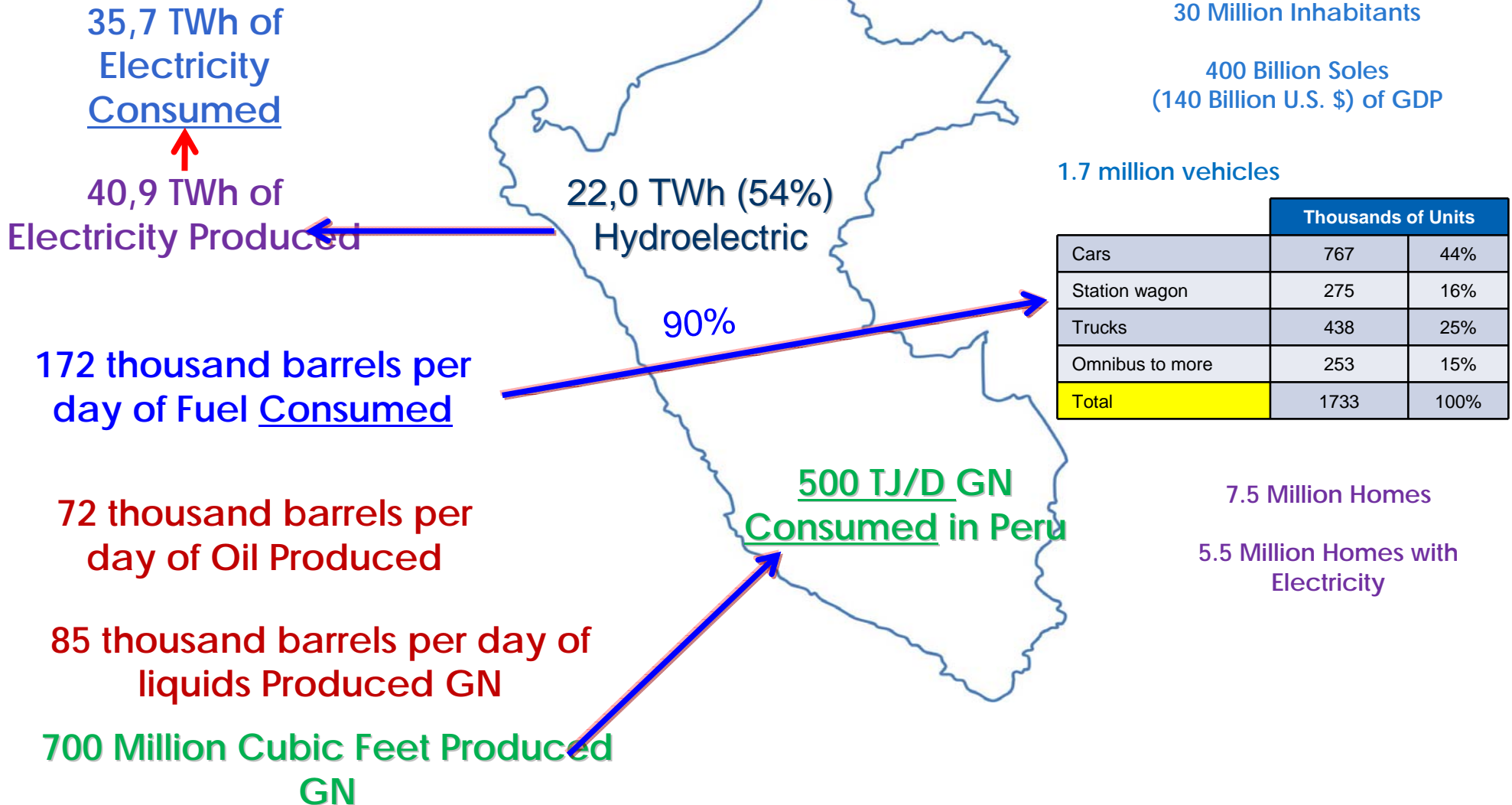
3. Current Energy Policy and measures

Short-Term Actions

- ❑ Schedule a tender cold reserve in southern Peru to enter into operation in 2016.
- ❑ The safest way to achieve hydroelectric capacity is required by 2016, an auction is by RER (for the short time remaining), which could be awarded 200 MW of small hydroelectric.
- ❑ Convene bids for Hydro, to come into operation on 03 stages (2017, 2018, and 2020).
- ❑ To ensure the capabilities required in the SEIN Hydro, is essential to ensure PPA for bids, so it is necessary to make adjustments to the Regulatory Framework.

4. Energy Demand and Supply (statistics)

Perú to 2012



4. Energy Demand and Supply (statistics)

Guarantee a timely and efficient supply of energy that demand the growth and socioeconomic development.

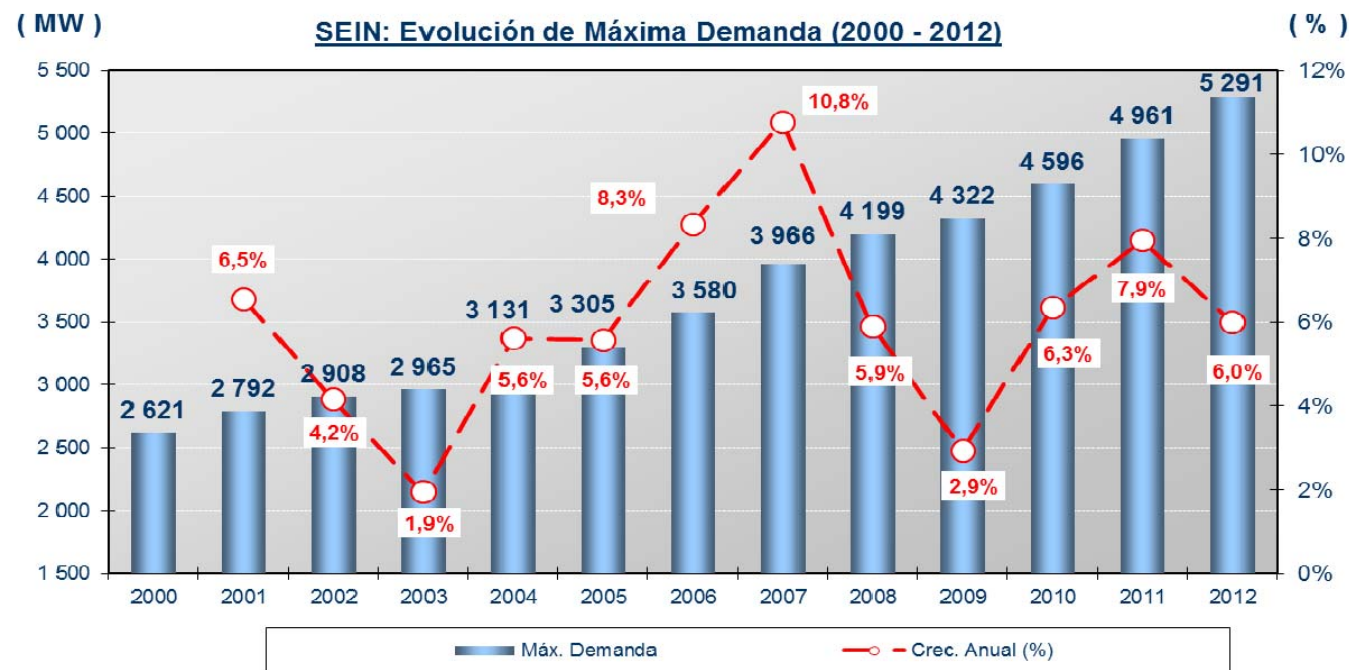
average annual growth

2000-2005: 4,7%

2006-2010: 6,8%

2011: 7,9%

2012: 6,0%

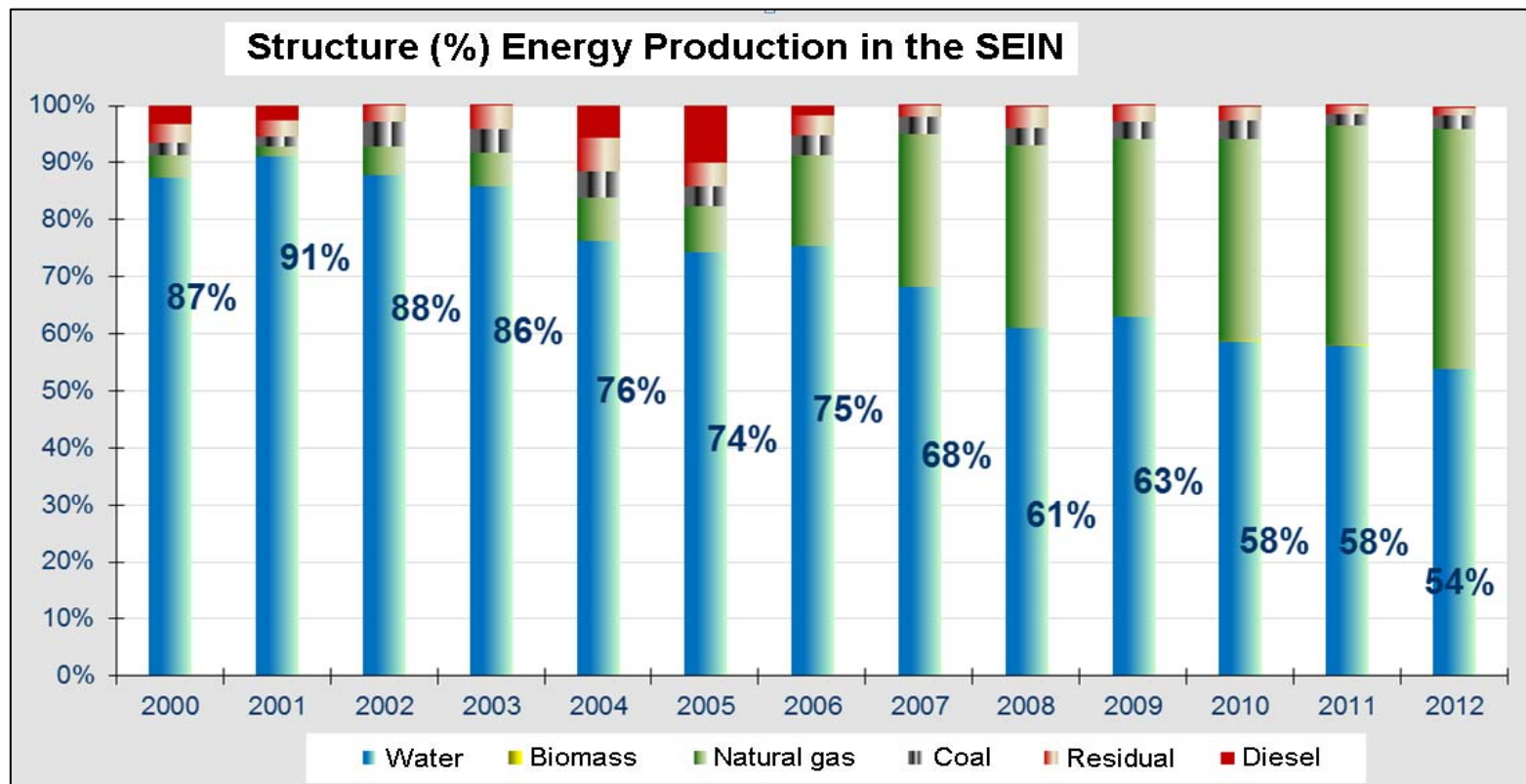


4. Energy Demand and Supply (statistics)

Supply growth basically Camisea Natural Gas concentrated in the center of the SEIN.

Growing demand, supply centralized insufficient transmission capacity; congestion

The production of electricity with water resources in 2012 accounted for only 54%, while the 2002 was 88% of total.



4. Energy Demand and Supply (statistics)

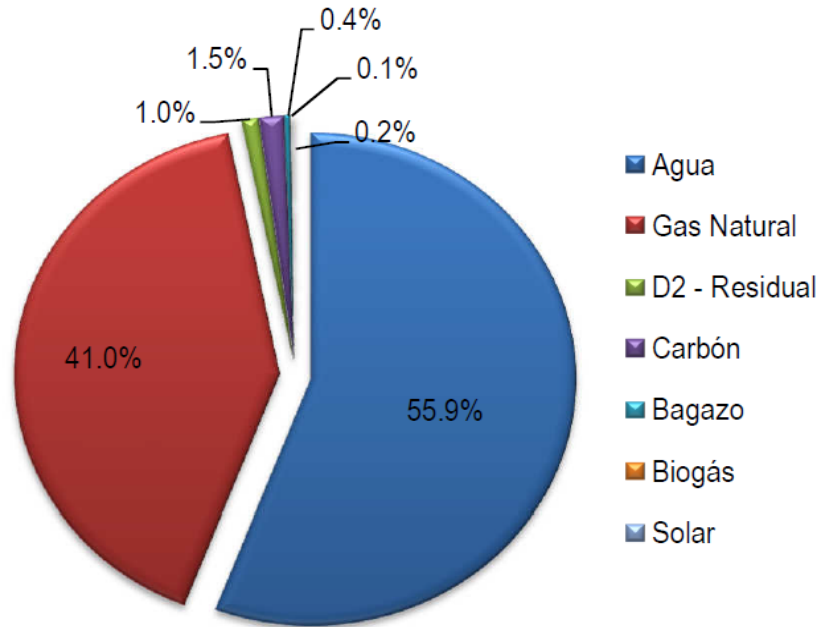
Energy Sector Characteristics

- ❖ **Great energy potential:** The wide availability of water resources and natural gas has enabled to meet the growing electricity demand in the country.
- ❖ In 2012, **87.2% of the population had access to electricity.**
- ❖ **The 2012 energy matrix, comes mostly from renewable energy (about 56% of energy production is hydroelectric, 43.5% is based on natural gas and 0.5% with other renewable sources).**
- ❖ **Resources to be discovered and exploited:** There are other renewable energy sources to be explored such as solar, wind, biomass and geothermal sources.
- ❖ Power **projects portfolio** to be invested is over **US\$ 6.000 billion until 2016.**
- ❖ The main economic groups of power generation are: Endesa, GDF Suez, IC Power and Duke Energy.

4. Energy Demand and Supply (statistics)

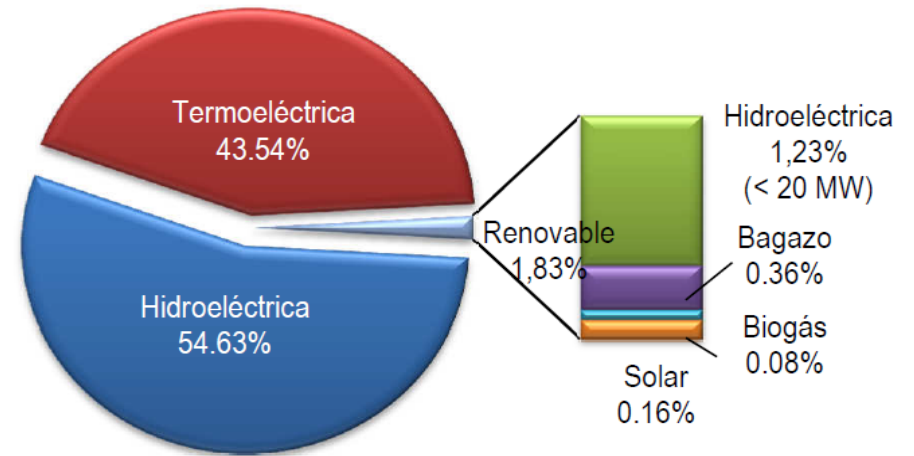
Energy Sector Characteristics

2012 Electricity production by type of energy source



Source: COES

2012 Electricity Production by type of generation



Source: COES

4. Energy Demand and Supply (statistics)

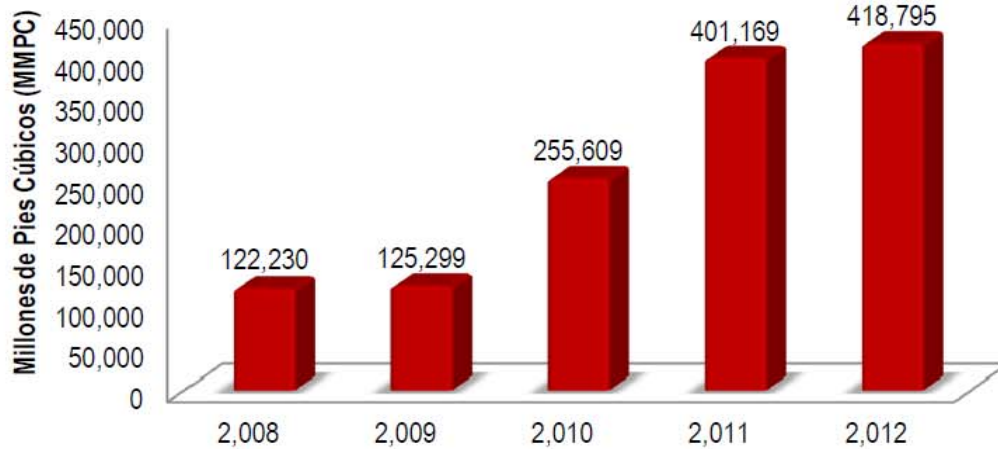
Energy Sector Characteristics

- ❖ In 2012, natural gas production totaled 418,795 million cubic feet, driven by growing demand from power plants, increased consumption of vehicular (VNG), domestic and commercial natural gas.
- ❖ Peru is the only sustainable source of natural gas in the South American Pacific area.
- ❖ Peru has oil fields that have not been explored (29.97 million ha), making it a potential petrochemical hub.
- ❖ The petrochemical industry integrates with the production of natural gas and other liquid hydrocarbons, giving it a significant added value.
- ❖ Among the products produced by the Final Petrochemical Industry are fertilizers, plastics and detergents.
- ❖ Investment opportunities for US\$ 8.650 billion for the construction of 3 ammonia plants, 2 ammonium nitrate plants, 2 urea plants and one ethylene plant.

4. Energy Demand and Supply (statistics)

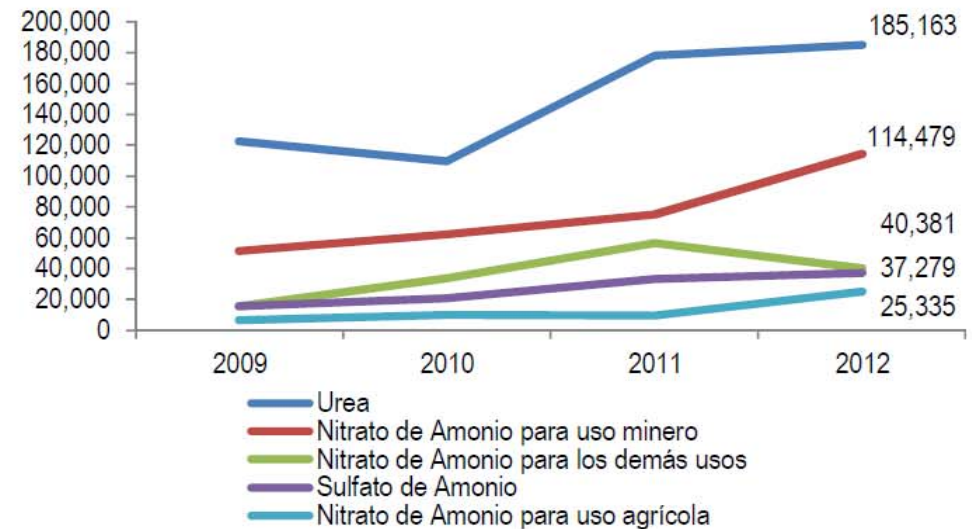
Energy Sector Characteristics

Controlled Natural Gas Production, 2008-2012



Source: Petroperu

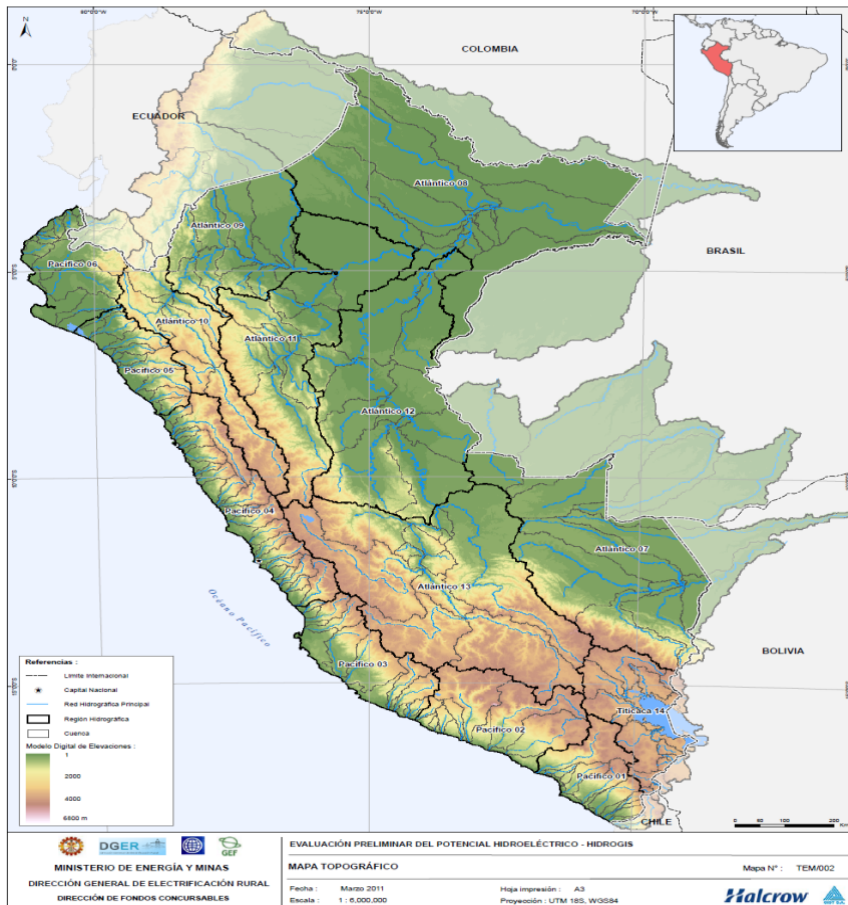
Imported products derived from Methane (CIF Thousand US\$)



Source: Adex Data Trade

4. Energy Demand and Supply (statistics)

Renewable Energy Potential // "Objective: Strategic Exploitation"



Hydroelectric Potential
69 445 MW ⁽¹⁾

Wind Potential
22 450 MW ⁽²⁾

Geothermal Potential
3 000 MW ⁽³⁾

Solar Potential ⁽⁴⁾
Highlands: 5.5 – 6.5 kWh/m²
Coast: 5.0 – 6.0 kWh/m²
jungle: 4.5 – 5.0 kWh/m²

(1) Atlas del Potencial Hidroeléctrico del Perú – (DGER-MINEM, BM y GEF), Marzo 2011

(2) Atlas del Potencial Eólico del Perú – (<http://www.foner.gob.pe/atlaseolicolibro.asp>)

(3) Battocletti, Lawrence, B& Associates, Inc (1999) "Geothermal Resources in Peru"

(4) Plan Maestro de Electrificación Rural con Energía Renovable en el Perú (DGER-MINEM)

The main renewable energy resource Peru, is the hydro.

There is significant potential for wind and solar resources, however electricity generation based on these resources do not provide the continuity and reliability of service that is required to strengthen security of supply in the interconnected electrical system nations - SEIN.

4. Major Difficulties and bottlenecks currently faced in formulating energy policies



In Peru there are two risks:

- 1) Pipeline rupture Camisea gas supply, the same which means less in 2700 MW thermal plant operating area and can last up to 30 days..
- 2) Landslide dam CH 5 of the Mantaro, which would leave 850 MW hydro permanently. This event is classified as low-probability, high severity..

Then, it is required to have a sufficient reserve margin to mitigate major contingencies.

That is, to restore at least 30% this referred margin.

Also, when the failure happens gas pipeline, almost doubles the consumption of liquid fuels for power plants operating in dual mode (the normal operating condition of these turbo gas is natural gas), and the rest of inefficient thermal plants operating with diesel fuel. Therefore, security is required timely supply with adequate reserve margins.

4. Major Difficulties and bottlenecks currently faced in formulating energy policies

Major Obstacles:

- In our country for over three decades was not an explicit long-term energy policy .
- At present, we have an energy policy that promoted the participation of clean energy that is minimal (energies that impact the environment). The one that appears on the cake is solar energy with 0.05% interest, practically nothing compared to diesel which covers 28.84%.
- Lack develops long-term Energy Policy, that is, we develop hydropower and wind power. The challenge presented is that its construction takes longer than five years and the question is who is going to open? Does this government?.
- Lack diversifies energy sources, despite the investment cost can mean, as it has made other countries like the U.S., where it comprehensively addressed problem, whereas in our country need much qualification, respect for rules and research technology.
- Lack develop geothermal and insurmountable obstacle at the moment is that we should be able to dig at least 6 miles deep, where we have temperatures of 300 degrees and use the heat of the Earth. In Peru do not have the infrastructure and technology necessary.
- Do not have a plan to invest resources efficiently. We believe that before delivering energy in rural zones, you have to promote a process of change in the sense that must be exploited its productive use of electricity to generate wealth. We must not only deliver energy, instead of it we should think its use to productive purposes.
- In March this year, through a letter to the Peruvian government, the Committee on the Elimination of Racial Discrimination UN requested immediate suspension of plans for expansion of the Camisea project in the Nahua - Nanti (Cuzco), because it "threatens the physical and cultural survival of indigenous peoples who live there".

Subjects I would like to study:



Priority	Subject	Reason
Very Important	Electric Demand Management (EDM)	<p>EDM can bring benefits on many levels, could help my country to reduce oil consumption and carbon emissions.</p> <p>It could also help to increase energy security, and leverage the opportunities of the regional electricity market. Also allow better integration of new technologies such as electric vehicles and also reduce the need for expansion of the power system.</p> <p>Moreover, MDE strategy would force utilities to become more efficient and reduce generation costs and consumers could pay less for electric service. In summary, work to solve the energy problem</p>
Mildly Important	Load Rejection	<p>To prevent collapse of the electrical systems is restored allowing generation-load balance to an appropriate rate and improve the reliability of electric supply</p>
Important	Smart Grids	<p>To ensure the efficiency and sustainability of power systems with low losses and high levels of quality, safety and reliability of electric service.</p>



THANKS

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