National Energy Plan.
Its Context and Evolution in UPME

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Agenda

1. The older Plans
2. Current work

Through the ages

- National Energy Study 1982
- CNE/UPME Plan – 1994 2008
- Sustainable and indigenous supply -1997-2010
- Energy Futures
- Integral Energy Strategy 2003 – 2020
- Strategy and Context - 2006-2025

NEP 1994-2008

- Objectives, goals, strategies, actions
- Demand Management. Energy Efficiency
- Efficient and full supply
- Energy export optimization
- Rural áreas energization. Regional development
- Environmental quality
- I&D
- Institutional reform

PEN 1994-2008

- Guajira´s Natural GasEl gas de la Guajira
- Electricity NG sustitution
- Gasoline for cooking
- NatGas pipeline system
- Coal production and trade support (El Hoyo – San Miguel)
- More generators, less water
- Flexible espansion plan
- PPA's
- Renewable energy: leveling the field
- Royalties law and rural energization
- Commercial fuelwood suistitution. Energy forests
- National Mining and Energy Research Plan
- Institutional reforms (Comité Asesor del Carbón, Consejo Ambiental Interinstitucional Energético, Consejo Nacional URE, Rediseño MME, Ian→INEA, ECOGAS)

Sustainable indigenous supply

- Same objetives of the previous plan
- Change in priorities
- Cambio inn oil extraction rules
- Boost to refining and petrochemical activitises
- Coal Infrastructure
- International power lines
- NG in cities LPG inrural áreas
- Clean transport through nat gas
- Integral pricing policy
- Research networks
- Research lines

Energy Futures

- Análisis de escenarios
- De “Que va a pasar” a “Que puede pasar”
- Altamente participativo
- N0 es una metodología “dura”
- Combina diferentes metodologías
- Cuatro escenarios diferentes
  - El Mago de Oz
  - En Busca del Tiempo Perdido
  - El Titanic
  - La Guerra y la Paz
- Cuantificación problemática
- Insumo para el siguiente Plan

Integral Energy Strategy Drivers

- Minimizing State prarticipation in productive activities
- Market mechanisms in all energy carriers
- Policy integralitys
- Assignative Efficiency (*marginal benefit = marginal cost)*
- Energy sufficiency
- Sustainabilty
- R&D

Integral Energy Strategy Objectives

- Guareantee the support to the Balance of Trade
- Consolidation of market mechanisms
- Gas massification plan: depening
- Enhance the internal supply with efficient prices and high quality of service
- Local and regional development
- R&D: New sources, new technologies
- Energy Efficiency
- Environmental aspects

Integral Energy Strategy

- Ecopetrol in exploration and production
- ANH
- Oil reserves increase
- Transportation
- Diesel/Gasoiline: international prices
- Ethanol/Biodiesel|
- Nat Gas to Venezuela and Panamá
- Cusiana Catalina
- Andean electricity market
- Long term signals
- Spliting of MEM/CND (market/operation) from ISA (transmission)
- BANCOLDEX energy efficiency credit line
- Market barriers in eficiency

Current works

Sustainable Energy Systems

WEC – Energy Trilemma

1. Diversification and security of supply
   - Reliability. Quality
   - Dermand supply balance
2. Accesibility - Affordability
   - Service for all
   - Energy prices
3. Environmental Mitigation
   - Energy efficiency
   - Renewable Energy
   - Clean sources

Objectives for the next NEP

1. Supply: Diversification and security
2. Demand: energy and electricity for all, at fair prices
3. Demand: Energy efficiency, clean energy, efficiency inTransportation and industry
4. International energy trade: adding value4 to our commodities
5. Environnmental and social issues
6. Institutionalism

Supply: diversification and security

1. Energy basket diversification in the power sector. Vulnberabilty issues. Power gen. With liquids vs. Productive efficency. Hydraulic risk . New sustainable infrastructure. Realiable NatGas. Small Nukes? Distributed generation. Non-dedicated generation agents
2. Local generation vs. Transmission., Environmental and social restrictions. Land use and availability.
3. Transportation fuels diversification. Biofuels. Electricity. Hydrogen.
4. Security of supply (international interconections in gas and electricity) Vulnerbilty reduction costs. Power fgeneration diversification. El caudal ecológico y el manejo de cuencas
5. How to deal with a blackout-averse society. How to include it in the price formation prcess
6. Shale gas and oil. Clean Coal. Barriers in Colombia. LPG

DEMANDA: Universalidad del servicio

1. Possible vs expected demnand. Growth possibilities for ilocal industires. Assdociated transportation and trade
2. Deepening of the market mechanisms. Prosumers. Smart grids.
3. Energy for all as a State objective. For levering the social development. Peace transition. Land use, agriculutral forntiers, biorefineries
4. Pricing policy and competitivity between sources. Affordability of the energy services

DEMAND: Energy Efficiency, Clean Energy, Efficiency in Transportation and Industry

1. Energy efficiency in all chains, as a driver for all the objectives and strategies
2. Clean Transportation, change in modes, change in fuel. Impact in competitiveness. Impact in energy balance
3. Effiency in industry, through price structure and additional signals
4. Energy efficiency barriers. The EE Law diagnosis. Institutional designe for EE

ENERGY TRADE

1. Electricity interconections. Regulated markets in LA
2. NatGas internatioanalization, besides Venezuela. Pipelines to perú, and Ecuador. Bilateral agreements. Regasification compression plant
3. Shared value in production processes. Cluster creation. Increase in the added value

AMBIENTAL Y SOCIAL

1. Priorities in environmental regulation
2. Energy systems sustinability. Clean energys. Water value. Environmental value as a society asset
3. Distiributed generation, Smart grids and its ability to mitigate environmental impact
4. Consumption efficency through price signals. Smart meters (AMD). The user as a prosumer. Regulation adaptation to the new market model. Barriers for entrance
5. Externalities and its inclusión in the pricing schemes. Green taxes. Green markets. Emmisions certificates.
6. Social impacts. Shared value
7. Renewables as main energy carriers in the long term
8. Transportation and its impact in the environment
9. Biorefineries as an added value generator. Peace programs impact. Land use. Rural peasants as energy producers

INSTITUCIONALIDAD DEL SECTOR ENERGÉTICO

1. Electricity market adaptation
2. Eenergy efficiency
3. Water and energy
4. Biofuels, renewables
5. Energy management

20 años
upme
Unidad de Planeacion Minero Energetica
unidad de planeación minero energética

Conseguir metas sociales a largo plazo en el sector energético requiere un pensamiento innovador y enfoques creativos sobre la propiedad de los activos y la arquitectura de la inversión.

Tim Jackson, Prosperity Without Growth

Gracias

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PROSPERIDAD PARA TODOS