

EXPANSION OF NUCLEAR POWER IN MEXICO

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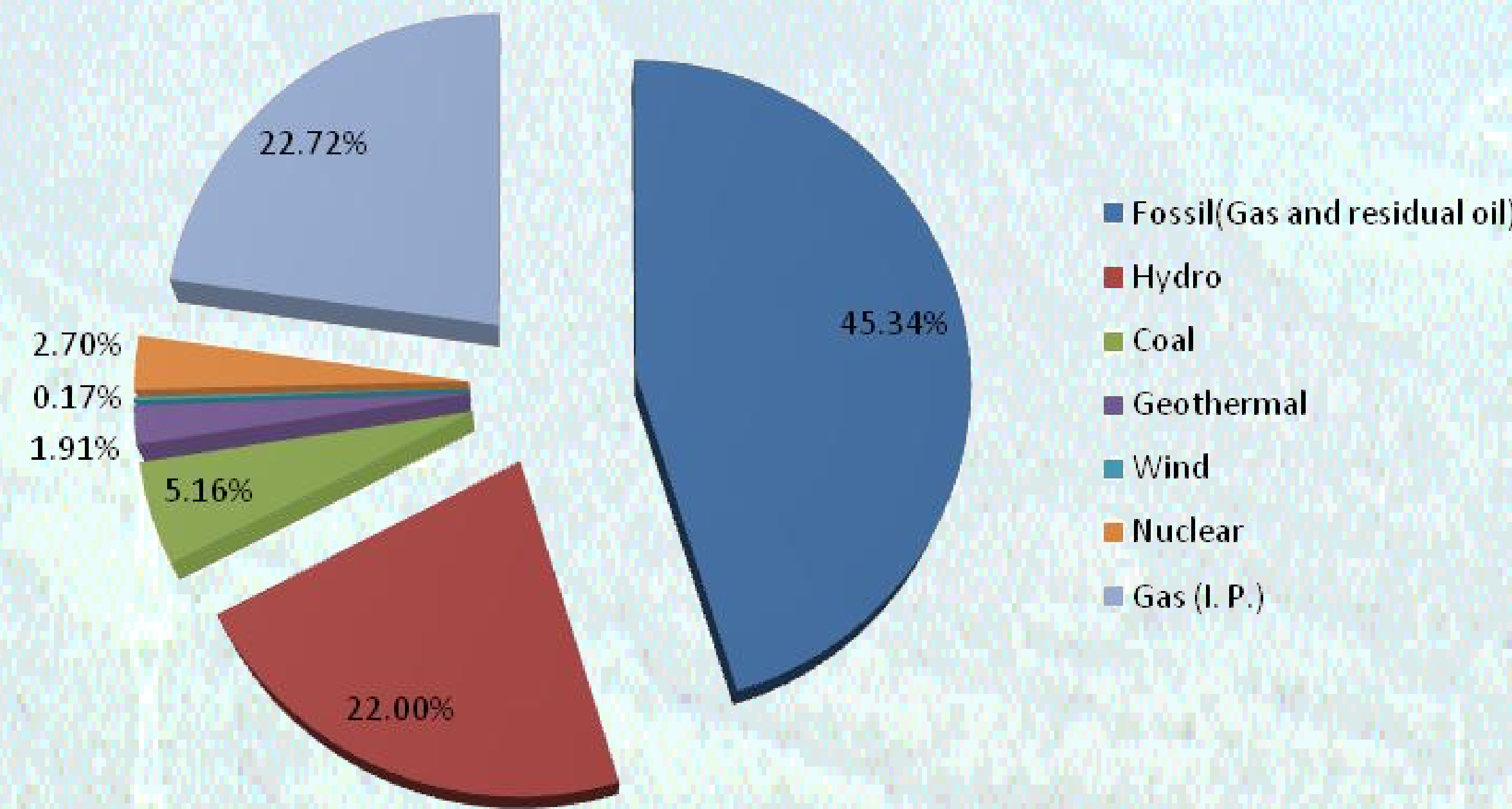
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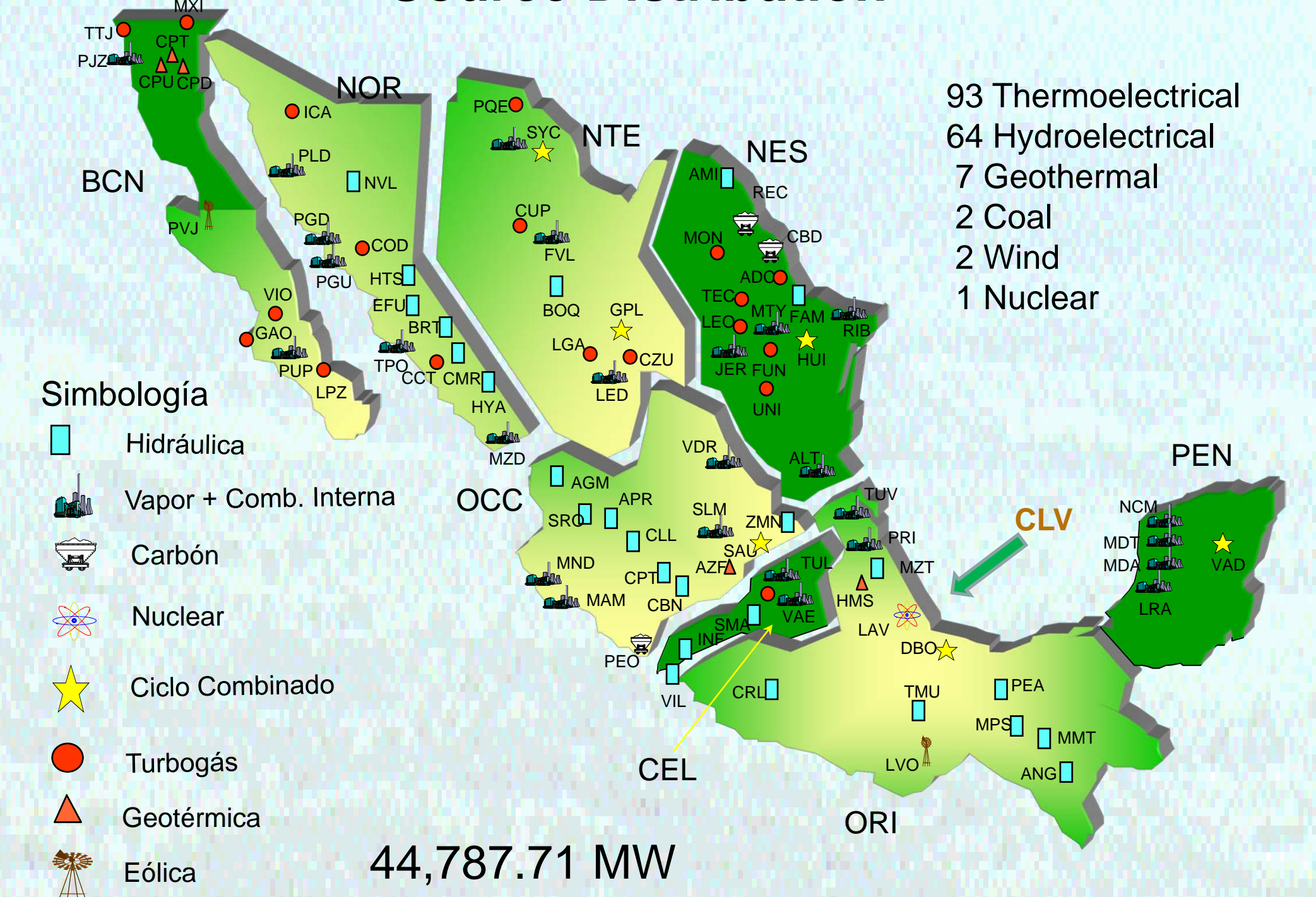
Evolution of Electricity in Mexico

Year	Installed Capacity (MW)			Generation (GWh)		
	CFE	PIE'S	Total	CFE	PIE'S	Total
1995	32,166		32,166	140.82		140.82
1996	33,920		33,920	149.97		149.97
1997	33,944		33,944	159.83		159.83
1998	34,384		34,384	168.98		168.98
1999	34,839		34,839	179.07		179.07
2000	35,385	484	35,869	190	1.21	191.21
2001	36,236	1,455	37,691	190.88	4.04	194.92
2002	36,855	3,495	40,350	177.05	21.83	198.88
2003	36,971	6,756	43,727	169.32	31.62	200.94
2004	38,422	7,265	45,687	159.53	45.86	205.39
2005	37,325	8,251	45,576	170.07	45.56	215.63
2006	37,470	10,387	47,857	162.47	59.43	221.9
2007	38,397	11,457	49,854	157.51	70.98	228.49
2008	38,474	11,457	49,931	157.16	74.23	231.4

Source Share.



Source Distribution



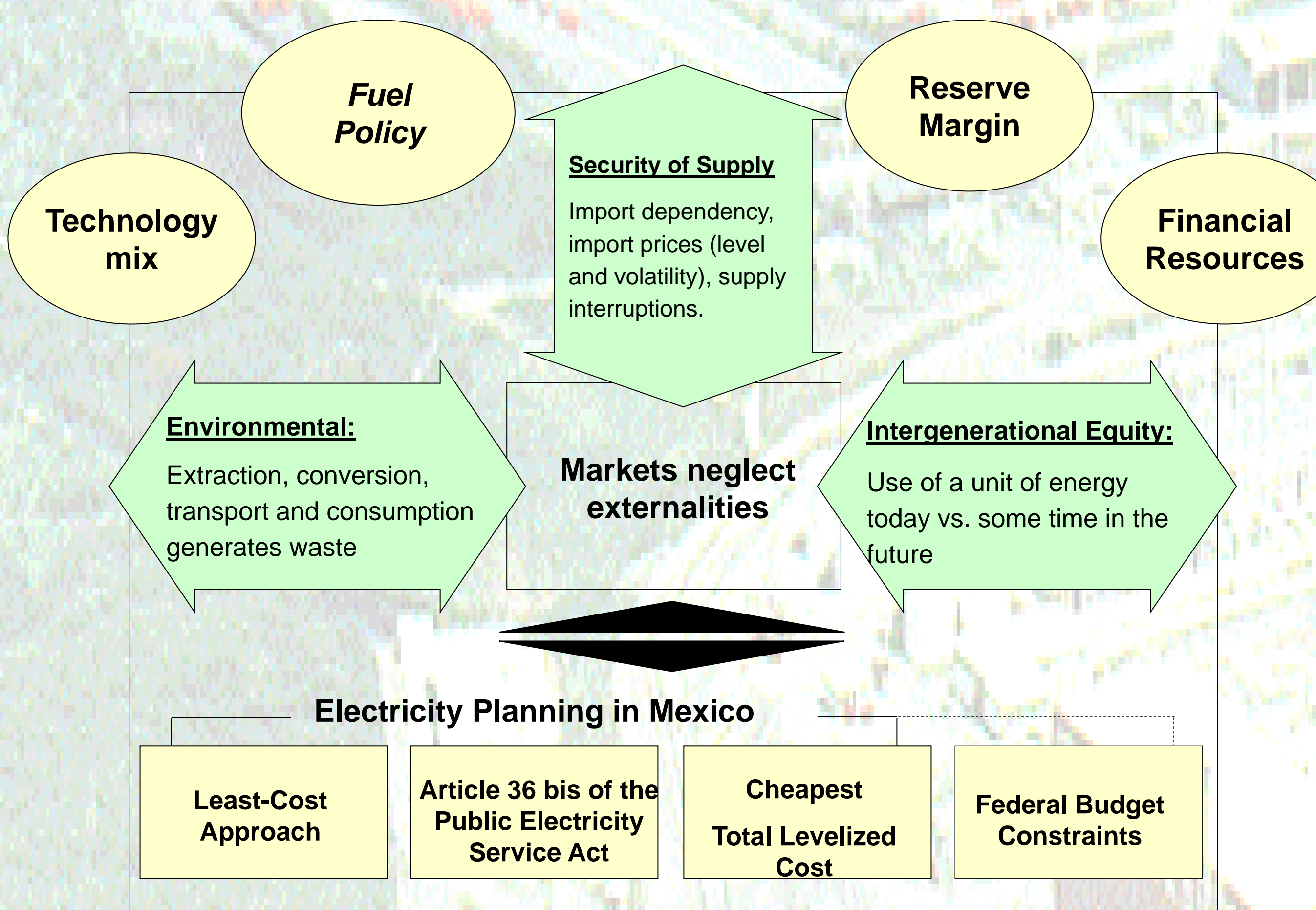
The Program of Works and Investment of the Electrical Sector (POISE)

Laguna Verde Nuclear Power Plant

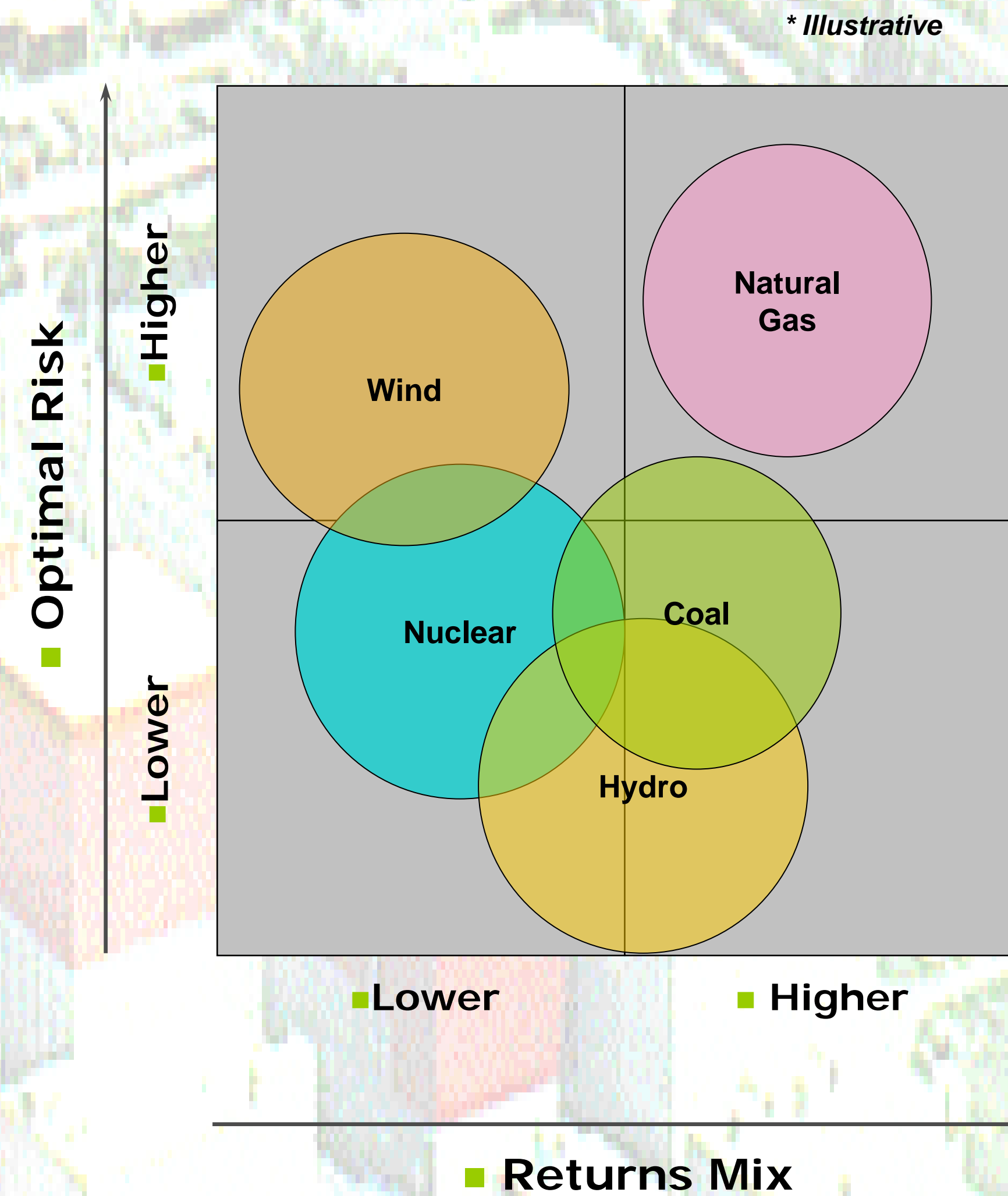
- Two identical units
- Each unit has a BWR type reactor
- 2027 MWth each unit (1931 MWth original)
- Unit 1 operating since 1990
- Unit 2 operating since 1995
- Power upgrade to 105% in 1999 (Both units)
- An extended Power Uprate to increase from 105% to 120% of the nominal capacity is being performed (2317 MWth)
- Plans to extend the operational license of these two units for another 30 years.
- The power uprate for Laguna Verde reactors will add 200 MWe to installed capacity of Mexican Electricity Network

- The Program of Works and Investment of the Electrical Sector (POISE) is an annual national electricity program that covers the electricity need for the following 10 years
- In the 2007-2016 document the use of nuclear power was considered in a medium term program.
 - The following was taken from that government document as a possible alternative.
 - The first point was to define a long term energy policy to avoid the concentration of any technology because a planning using least cost approach could result in an extensive use of a particular technology.
 - Therefore this policy must establish the minimal and maximum shares for each technology and the year to start with its deployment
 - In this sense the shifting of the current energy policy of evaluating the least cost approach of alternative technologies, to evaluate alternative generating portfolios and strategies (i.e. optimal risk/returns mix) provides the best means of hedging possible future outcomes
 - The medium term planning 2007-2026 allows the use of nuclear power starting in 2015. In this scenario the share of nuclear power will be 12% by 2026 and 8 units could be deployed with a single capacity of 1,350 MW to add 10,800 MW in this period, where is expected a total electrical installed capacity grow of 55,000 MW.
- In this program Mexican government (POISE 2009-2018) has stated plans to install 17,942 MWe by 2018 of new electricity capacity,
- From this amount 15,574 MWe will be produced using conventional sources and 2,368 MWe will be defined in the future, with technologies that can include nuclear power

Electricity planning considerations.



Portfolio planning.



Nuclear power deployment planning



Technology Share in 2026

Technology	Share %
Coal	18
Hydro	15
Nuclear	12
Geothermal and Wind	5
Residual Oil and Diesel	5
Combined Cycle	40
Free	5

Discussion

- A diversification strategy can give greater protection against the volatility prices of primary fuels. It also eliminates the international dependence to only one natural gas provider among other benefits.
- In Mexico several studies already consider nuclear energy an option to be considered as part of the electricity expansion, it makes a viable option from several different points of views. It can help to reduce or mitigate carbon emissions helping to alleviate climate change and also is already a competitive economical option in the long run.
- Laguna Verde already has proven the adequate use of nuclear power providing with almost 5% per year in the last 10 years of the total annual electricity generation. In 2008 it only represented 2.7% of the total installed capacity but due its better practices and with capacity factors around 90% it provided 4.7% of the total electricity generation. It shows that it is a mature technology that has been absorbed by the Mexican engineers.
- However, in particular in Mexico the use of nuclear power is a President decision that involves a lot of political constraints. Therefore, it is very important to make consciences in all political actors in order to proceed in a near future with new deployments of nuclear power in Mexico.