



Energy Dependency and Spanish Interests

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Theme: Energy should become a top priority for Spain.

Summary: Spain is highly dependent on imported hydrocarbons, particularly the most problematic types –oil and gas–. As a result, the Spanish economy is quite vulnerable to fluctuations in international oil and gas prices. Geographically, Spain is particularly dependent on countries that are not entirely reliable either in terms of supply or politics and it appears likely that the energy panorama will become even more complicated in the medium and long term. Therefore, Spain must take up the challenge and make it a national priority to diversify its energy mix and reduce its dependence on hydrocarbons.

Analysis: In recent years, it has become clear that energy is a key challenge on the strategic panorama of almost every country around the globe, both in the short and long term. Energy dependence presents Spain with strategic challenges every bit as complicated as those facing other developed countries.

Oil Prices and the Economy

In the short term, the price of oil –the hydrocarbon that continues to satisfy more or less half our energy needs and practically all energy demand in transport and agriculture– has become one of the key factors in the world economic cycle. Since early 2002, the price of oil has trebled –an increase comparable with the price hikes of 1974 and 1979-80–.

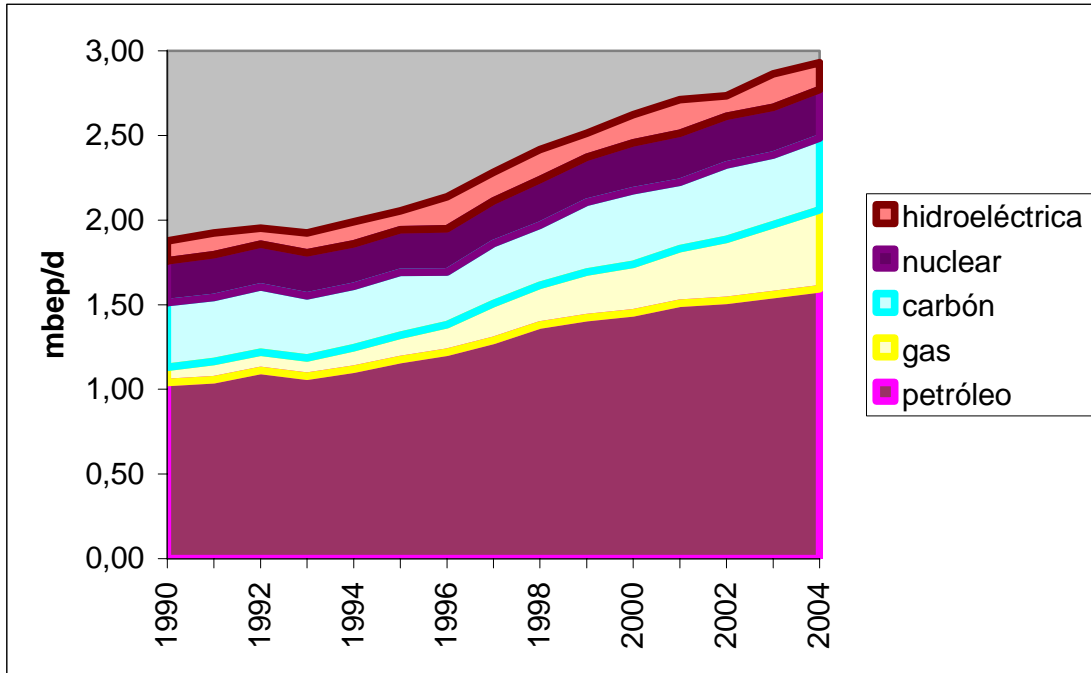
Each of the three most recent world recessions (1980-82, 1991-93 and 2001-02) was caused, at least in part, by a sharp prior increase in oil prices. Although the world economy has managed to absorb rising oil prices over the past three years, it is still very vulnerable to new increases that could take the price of oil above US\$80 –or even US\$100 a barrel– once again sparking inflation, pushing up interest rates, possibly bursting the real-estate bubble in the fastest-growing countries (such as the US, Spain and even China) and ending the current robust growth. A new recession or a fourth wave of financial crises in emerging market countries –to which Spain is particularly sensitive– is not out of the question in the short term. Spain is no less vulnerable than any other developed country.

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Demand and the Role of the Economy

Spain's demand for oil and gas has grown enormously in recent years. Since 1965, oil consumption in Spain has grown by 4.5% a year on average –a rate considerably higher than the world average of 2.5%–. There was not so much difference in the rates in the 1980s (1.75% in Spain compared with 1.2% in the rest of the world); but in the past ten years, Spain's average annual increase in oil consumption was nearly double the world average (3.5% vs. 1.8%).

Figure 1. Primary Energy Consumption (Traditional Sources), Spain, 1990-2004



mboep/d, Hydroelectric, Nuclear, Coal, Gas, Oil

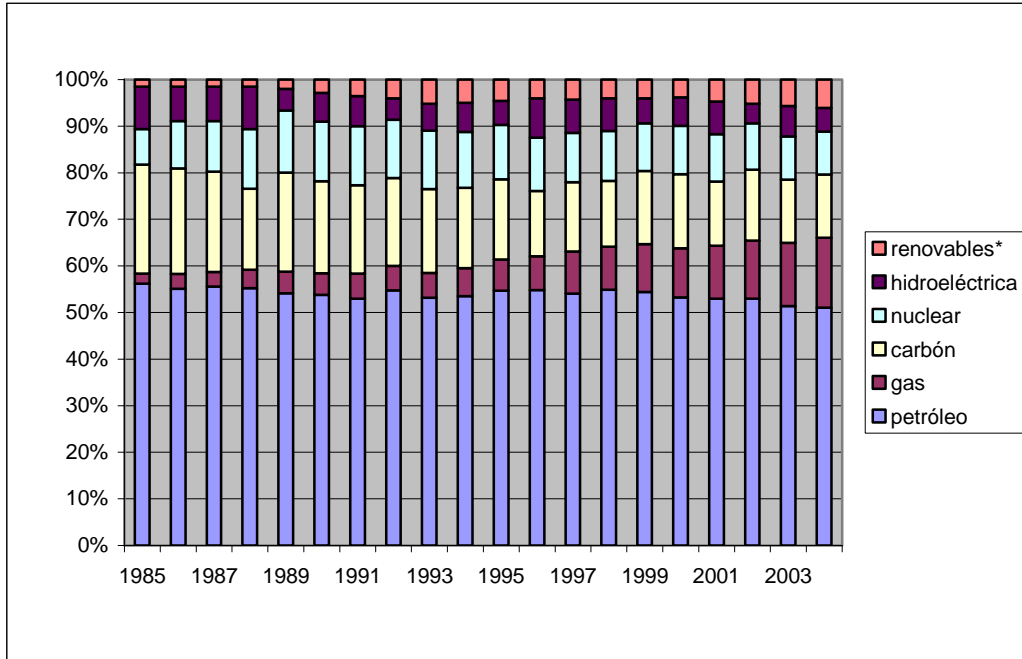
Note: mboep/d = millions of barrels of oil equivalent per day.

Source: British Petroleum (*Statistical Review of World Energy 2005*) and the author.

Spain's growing demand for gas reveals the same phenomenon. In the past ten years, consumption of natural gas in Spain has increased at an average rate of 15% a year. Since 1993, natural gas consumption has increased by nearly 275%, now accounting for more than 16% of the energy mix (more than any other traditional energy source except oil, which contributes 53% of the mix). Oil and gas together constitute 70% of the primary energy consumed in Spain (compared with 62% in 1990), a level much higher than the European average (64%) and an indicator that Spain is even more dependent on the main hydrocarbons than other developed countries (65% in the US, 64% in the OECD and 61% in the world as a whole).

In 2004, Spain consumed primary energy –including oil and its derivatives (53%), natural gas (16.9%), coal (14.5%), nuclear (9.8%) and hydroelectric (5.4%)– equivalent to nearly 3.0 million barrels of oil per day, or slightly less than 1.5% of total world primary energy consumption (more than 205 million barrels of oil *equivalent* a day). If we consider that this proportion (1.5%) far from reflects Spain's economic weight in world GDP (which stands at more than 2%) and the fact that the Spanish economy continues to show strong growth (3.4% in 2005), we can tentatively conclude that, unless there is a change in the country's energy policy and in Spanish corporate attitudes to energy consumption, energy demand will continue to rise in Spain at rates higher than the world average. This makes energy a key issue for the sustainability of strong economic growth in Spain.

Figure 2. Primary Energy Consumption (including Renewable Sources), Spain, 1985-2004



Renewable, Hydroelectric, Nuclear, Coal, Gas, Oil

* Renewables include biomass, wind, solar and mini-hydro power.

Source: British Petroleum (*Statistical Review of World Energy 2005*) and the author.

Imports, Geographic Dependence and Strategic Risks

Spain depends to a great extent on imported energy, particularly the major hydrocarbons. The country's oil and gas reserves are merely anecdotal. Its current annual production of oil and gas is limited to a handful of small deposits covering less than 0.4% and 0.9% respectively of annual domestic consumption. Of the nearly 1.6 million barrels of oil consumed daily in 2004, more than 99.6% was imported. More than 99% of the gas consumed in Spain in the same year (an amount equivalent to 0.5 million barrels a day of oil) was imported. By comparison, the European Union depends on imports considerably less than Spain: about 75% for oil and 50% for gas.

In general, Spain now depends on a small group of countries for its energy imports: Russia, Algeria, Nigeria, Libya, Saudi Arabia and Mexico each supply at least a 5% share of the Spanish energy market (see Table 1). More than 54% of all Spain's energy imports come from these six countries and Russia's and Nigeria's share has increased by nearly 75% in the past four years.

Table 1. Energy Imports, Spain, January to October 2005

Rank	Country	Imports (€billion)	%
1	Russia	3.365	12.87
2	Algeria	2.918	11.16
3	Nigeria	2.321	8.87
4	Libya	1.842	7.04
5	Saudi Arabia	1.591	6.09
6	Mexico	1.583	6.05
7	Italy	1.248	4.77
8	Iran	1.206	4.61
9	Norway	1.069	4.09
10	Iraq	824	3.15
	Subtotal	17.971	68.71
	Total	26.154	100

Note: figures from chapter 27 of the schedule. Includes coal, hydrocarbons and electricity.

Source: *Mercados Emergentes*, based on data from Estacon.

Spain imports almost exclusively oil from Russia, Saudi Arabia and Mexico. It imports oil from Nigeria and Libya as well, but also large amounts of gas from these countries. In fact, around 65% of all oil imported to Spain comes from these five countries (see Table 2).

Table 2. Oil Imports to Spain, % of total, 2002-05

Rank	Country	2002 (%)	2003 (%)	2004 (%)	2005 (%)
1	Mexico	13.8	12.7	13.4	15.1
2	Russia	14.1	17.2	14.7	13.6
3	Nigeria	9.4	11.1	10.9	11.5
4	Saudi Arabia	12.0	12.2	11.6	11.4
5	Libya	11.5	13.3	12.3	10.5
6	Iran	5.8	7.4	6.4	8.7
7	Norway	3.9	5.4	6.2	5.1
8	Iraq	4.2	2.7	7.7	4.9
9	Algeria	1.9	2.6	3.1	3.3
	Subtotal	76.6	84.6	86.3	84.1
	Other countries	23.4	15.4	13.7	15.9

Source: *Boletín Estadístico de Hidrocarburos*, Ministry of Industry, Tourism and Commerce, November and January 2005; *Anuario Estadístico de España 2005*, National Statistics Institute.

Meanwhile, although Algeria supplies only 2.6% of Spain's oil imports, it supplies more or less half of Spanish demand for natural gas through the Maghreb-Europe Gas pipeline, which passes through Morocco. Nigeria (15%), Qatar (14%), Egypt (8.5%), Norway (6.5%) and Libya (2.7%) are also important sources of gas, particularly liquefied natural gas (see Table 3).

Table 3. Natural Gas Imports, Spain, 2002-05

Rank	Country	2002 (%)	2003 (%)	2004 (%)	2005 (%)
1	Algeria	58.5	57.4	49.8	44.9
2	Nigeria	7.6	16.9	18.0	15.2
3	Qatar	10.0	8.2	14.1	14.2
4	Egypt	–	–	0.3	8.5
5	Norway	10.8	10.0	8.0	6.5
6	Oman	5.1	2.4	5.0	5.0
7	Libya	2.9	3.1	2.5	2.7
8	Malaysia	–	–	0.9	1.0
9	United Arab Emirates	1.0	1.6	1.4	1.0
10	Trinidad and Tobago	2.2	0.1	–	0.8
	Subtotal	98.1	99.7	100	99.7
	Other countries	1.9	0.3	0	0.3

Source: *Boletín Estadístico de Hidrocarburos*, Ministry of Industry, Tourism and Commerce, November and January 2005; *Anuario Estadístico de España 2005*, National Statistics Institute.

In general, Spanish oil sources can be considered quite diversified. Meanwhile, the fact that the international oil market is a fungible market, with many different alternative sources, creates a certain stability for Spain, reducing the risk of a hypothetical cut in supply from any particular country. In any case, Spain depends on oil for more than 53% of its primary energy (compared with only 40% in the US and the world in general) and, as has been pointed out, more than 99.6% of it is imported. Since the oil market is both fungible and international, Spain continues to be particularly sensitive to price shocks in a market which –due to its currently low level of idle production capacity (less than 2% of world consumption)– suffers from highly volatile prices.

Furthermore, Spain imports more than 50% of all its oil from six members of OPEC (Saudi Arabia, Libya, Nigeria, Iran, Iraq and Algeria), countries that are not democratically consolidated or whose regimes are not stable or predictable. Another 11% comes from African countries with similar characteristics. Reliable European partners (such as the UK and Norway) contribute barely 6% of Spanish imports and, due to their limited production,

cannot do much to increase this. Mexico continues to be an important partner (the second biggest supplier in 2002-05 and the top supplier in 2005), but cannot increase its production easily.

This leaves Russia, Spain's most important oil supplier in recent years. Russia, too, has limited capacity to quickly increase its exports in the short term, nor does it have the most reliable government in terms of energy supply, something which became clear during the recent crisis with the Ukraine and is evident in the general drift of Russian energy policy in recent years. In the end, if we consider the fact that more than 75% of all Spanish oil imports (equivalent to 40% of its primary energy consumption) comes from non-democratic or unstable regimes (in the Middle East, Africa and Russia), we can conclude that the Spanish economy does indeed face a high level of political risk.

On the other hand, although Spain is quite advanced in its use of liquefied natural gas – which increases the flexibility of its gas imports– nearly 60% of all gas imports (more than 10% of primary energy consumed) comes from three North African countries (Algeria, Egypt and Libya) and of this, nearly half comes from Algeria alone. Most of this gas reaches Spain via Morocco through the MEG gas pipeline and will continue to do so; at least until the Medgaz pipeline (a joint project of CEPSA and Sonatrach, which will link Beni Saf in Algeria directly with Almería) begins operations in 2008-09. However, even after this direct importation line enters into service, Spain will continue to be highly dependent on Algeria, and to a lesser extent on Libya, for its natural gas supply. As gas continues to gain weight in the energy mix, such dependence will clearly underline how important stability in the Maghreb (and North Africa in general) is to Spain's fundamental interests.

Therefore, what goes on in the Persian Gulf, and in North and West Africa, is of paramount interest to Spain, depending as it does on these three regions for more than 40% of its total primary energy consumption. More than most of its European and trans-Atlantic partners (Canada and the US), Spain has a fundamental interest in the stability and development of the Arab and Islamic worlds and in maintaining constructive relations with these countries.

Diversification and Energy Policy

Without a significant transformation in the energy base of the Spanish economy, Spain will become increasingly dependent on oil imports from the Middle East and, in particular, from the Persian Gulf, as is the case of all the world's most significant importers, West and East alike. This likely continued trend in Spain's energy dependence suggests that diversification of the country's primary energy mix and a reduction of Spain's dependency on oil and oil products should become a national priority. Although natural gas is likely to become a more important part of the mix, Spain's high dependence on the Maghreb suggests that it would be wise to foment alternatives other than hydrocarbons.

For the moment, there is room to expand renewable power (i.e., wind and solar) –a sector in which Spanish companies are among the world's leaders– and even nuclear energy, if this can be made politically and economically viable. In any case, in the short and medium term, these alternatives may serve as substitutes for gas and coal in electricity production, but not as alternatives to the basic use of oil in the transport and agricultural sectors. Although these alternatives would help Spain meet its obligations under the Kyoto Protocol (a venture in which Spain is now one of Europe's most outstanding underachievers), they would have only a minimal impact on the country's great vulnerability to oil price fluctuations in the international market and to hypothetical cuts in oil and gas supply from the unstable suppliers mentioned above. Only bioethanol and biodiesel could make a difference in this regard.

There are new sources of primary energy (including the future generations of nuclear technology, hydrogen and non-conventional uses of hydrocarbons) on the horizon, but to date none appears to be an obvious or problem-free medium-term solution. Nevertheless, the difficulties and inconveniences involved in this challenge have not prevented Sweden from seriously considering a plan to eliminate its oil consumption by 2020 (starting with the design of policies to boost the use of biomass to mix with –and eventually replace– petrol and diesel). Spain should move in this direction. Although the Ministry of Industry, Tourism and Commerce has adopted a new national Renewable Energies Plan for 2005-10, the EU objectives have not yet been met.

For this reason, it must become a top priority for Spain and for Europe to design and implement an energy strategy that diversifies energy sources, reduces the intensity of oil use and generally increases efficiency. In the medium and long term –that is, in the next twenty years– we must search for other, non-traditional sources to replace oil in particular and must include them in the energy base of the economy in an economically rational and non-traumatic way.

For this to be feasible, this new Spanish energy policy will have to be developed within a European framework, at least in the best-case scenario. In this context, the publication of the forthcoming *Green Book* on European energy policy (March 8), and the subsequent debate at the European Summit of the Austrian Presidency are of great interest to Spain.

The Role of the Spanish Energy Industry

Spain's energy future will be a challenge even with the development of an effective energy policy. The same may be said of Europe, its traditional allies and the rest of the world. But while there are great challenges and difficulties on the horizon for the Spanish energy industry, there are also opportunities.

First of all, the energy sector is of enormous importance to the Spanish economy. The big oil and gas companies, along with the electricity firms, comprise nearly a quarter of the market capitalisation of the IBEX-35. Second, we must bear in mind that the Spanish energy industry has been relatively successful to date. The sector has dealt successfully, and relatively easily, with an increase in national demand considerably higher than the world average. In the past fifteen years, the sector has been largely liberalised and has consolidated itself quite successfully in corporate terms.

In any case, Spanish oil and gas companies (such as Repsol-YPF, Cepsa and Gas Natural) and electric companies (such as Endesa, Iberdrola and Unión Fenosa, among others) face the same challenges as their peers in other developed, democratic Western countries. On the one hand, the oil and gas companies have increasingly restricted portfolios of oil and gas reserves (as was made clear in the latest revisions by Repsol-YPF) and the opportunities to increase them are limited, except for the possibility of operating in high-risk countries with the promise of adding only modest quantities of reserves. Meanwhile, the electricity companies are facing the Kyoto challenge and the spectre of climate change. Given the uncertain future of the energy industry in Spain, the evolution of the international energy panorama is of paramount interest.

At the same time, these challenges could also prove to be opportunities, both for the traditional energy companies which –in addition to continuing to develop new sources of oil and gas– could position themselves to lead a future energy transition, and for companies in the incipient Spanish renewable energy industry, which has already developed a foundation from which to expand. Examples of such companies include Gamesa –a leader in wind energy– and Abengoa and Ebro Puleva, leaders in the biofuel sector.

Conclusion: Spain depends more on traditional hydrocarbons (oil and gas) than most of its European and trans-Atlantic partners. It also suffers from heavy dependence on energy imports, concentrated mainly in undemocratic or unstable countries, or countries that have volatile energy policies. Therefore, a national priority should be to develop an energy policy aimed at reducing dependence on hydrocarbons and increasing energy efficiency.

Although this conclusion will come as no surprise to the Spanish authorities who deal with these issues, recent developments in the world's economic and strategic panorama – along with their future implications– should lend new urgency to the goal of designing and implementing such a strategy. This conclusion also underlines the importance of articulating a policy within a European framework, since this is a challenge that is shared in varying degrees by all EU members. If we also consider the long-term challenges presented by the energy issue –including climate change and geopolitical competition between countries to guarantee themselves access to oil and gas– the stakes involved become even clearer.

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