EXECUTIVE SUMMARY AND KEY RECOMMENDATIONS

EXECUTIVE SUMMARY

Since the last in-depth review in 2005, Spain has made substantial progress in its energy policy. It is in full compliance with IEA oil security requirements and leads in gas diversification and LNG development in Europe. Together with Portugal, it has set up the common Iberian electricity market, MIBEL, and has strong ambitions in developing it further. It has also improved the system of end-user tariffs for gas and electricity. Spain is determined and successful in promoting renewable energy and puts increasing emphasis on improving energy efficiency. In short, the IEA is impressed with the strong positive developments of the past four years.

Spain's natural gas market development deserves particular praise. The roles of the transmission system operator (TSO) and other market players are clearer than before. The market is more open and less concentrated. Gas supplies are more diversified and secure, thanks to heavy investment in liquefied natural gas (LNG). The share of imports from any given country has been reduced to 50% of the total. Since the end of 2007, Spain has also been working with Portugal on building a common Iberian gas market.

Spain is exemplary also in developing wind power. Its generating capacity is the third-highest in the world and will continue to grow fast. It has succeeded in developing a well-integrated system to balance the inevitable variations in wind power generation. A key tool is the world-class Renewable Energy Control Centre operated by the TSO. To ensure that maximum wind generation can be utilised or stored at any given time, the government, the TSO and industry are developing ways to increase the use of electric vehicles and pumped storage. The government has recently set a target of one million hybrid and electric cars by 2014. New interconnections will also help, by allowing more exports. The IEA applauds Spain's success in promoting wind power.

Energy policy in Spain in the coming decade will be shaped by the European Union targets for 2020 on greenhouse gas (GHG) mitigation, renewable energy and energy efficiency. The country will have to cut emissions from the sectors outside of the EU EmissionsTrading Scheme by 10% below their 2005 levels. It will also have to increase the share of renewable energy sources in gross final energy consumption from 8.7% in 2005 to 20% in 2020. Spain and other EU member states also have a separate binding target for renewable energy to cover 10% of transport fuel demand in 2020. Also, Spain will have

to increase energy efficiency to help reduce energy demand in the EU by 20% below the business-as-usual level by 2020.

The ambitious aims that Spain and other IEA member countries are setting for climate change and energy security will require a transition to a low-carbon economy, a revolution in the way in which energy is supplied and used. New technology and increased government spending on energy research and development (R&D) are needed. The IEA applauds the steady increases in Spain's energy R&D spending since 2004, and encourages its government to raise this spending further. The IEA also commends Spain for the lead it is taking in R&D on wind and solar power, and carbon capture and storage.

Spain and other countries have in recent months pledged to increase spending to speed up economic recovery. Investing in energy efficiency and clean energy should be placed at the heart of every economic stimulus package. The IEA also encourages Spain to ensure that any spending contributes to the overall cost-effectiveness of energy policy. For example, subsidies on renewable energy are a means for reaching the broader energy policy goals of economic growth, environmental protection and securing supplies of energy. So are subsidies on energy efficiency and these often bring the same environmental and energy security benefits at a lower price. Energy efficiency measures to reduce the use of fossil fuels will also help Spain to reach its 2020 goal regarding the share of renewable energy in gross final consumption of energy. The IEA encourages the Spanish government to fully implement and enforce the Action Plan 2008-2012 under the 2004-2012 Energy Saving and Efficiency Strategy.

Driven by strong economic growth, Spain's CO_2 emissions are substantially higher than its target under the Kyoto Protocol. Spain is commendably using the potential of the EU-ETS for obliging power and heat generators and several process industries to reduce emissions. Outside the EU-ETS sector, transport is by far the largest emitter and the logical choice of focus. For road transport, Spain is using tax incentives to promote biofuels and low-CO_2-emitting cars. Plans to expand the high-speed rail network and facilitate shifting freight from road to rail are also encouraging. In a welcome move, Spain has adopted a strategy for sustainable mobility in April 2009. This strategy should be implemented without delay.

By international comparison, Spanish diesel and gasoline prices are low, and low prices tend to increase demand. In its efforts to limit CO_2 emissions from transport, the government should also consider revenue-neutral taxation. Taxes are typically much simpler and more cost-effective than other measures, although it is challenging to sell them to the public and overcome the resistance from pressure and interest groups, particularly in times of economic distress. For this reason, these taxes should be revenue-neutral, *i.e.* some other taxes should be lowered accordingly to keep the overall tax burden on citizens unchanged.

Low-carbon technologies must also be the goal for electricity generation. This includes renewable energy sources, nuclear power and the capture and storage of CO_2 from fossil fuels. Much work remains to be done, as fossil fuels continue to supply some three-fifths of electricity in Spain. The government is encouraging strong increases in renewable electricity, and it is also funding R&D on nuclear power and carbon capture and storage (CCS). It aims to progressively reduce the share of nuclear power in the energy mix, while ensuring security of supply and reducing GHG emissions. This should leave room for maintaining the current capacity until the end of its operational life, which is to be encouraged. Indeed, it is difficult to see how phasing out nuclear energy could serve Spain's energy and climate policy goals. This is particularly so because most electricity generation causes CO_2 emissions and climate change is projected to raise temperatures and increase droughts, thus reducing water availability for hydropower in the coming decades.

Spain should keep open all options for low-carbon power generation. It should also increase efforts to limit peak electricity demand through energy efficiency measures. This would bring clear economic and environmental benefits. Power demand peaks at times of high use of air-conditioners or electric heaters, *i.e.* when temperatures rise or drop to their extremes. Normally, this is during high pressure and, therefore, when there is little wind. As a result, Spain needs expensive backup capacity, typically gas-fired, to make up for this unavailability of renewable energy. Peak demand could be reduced by more efficient heating and cooling appliances, by better insulating buildings and using light colours for roofs and pavements, as well as natural shading, to reduce the need for these appliances.

Spain has traditionally capped end-user prices of electricity to several consumer groups under a regulated tariff system. With the generation costs rising faster than the tariff in the past several years, this system has created a huge tariff deficit that the government owes to the utilities, estimated at EUR 14 billion in May 2009. Commendably, the government has gradually reduced the eligibility for the tariff, and since the beginning of 2009 revised the whole tariff system to ensure it covers costs. The IEA applauds this improvement.

In a welcome move to solve the tariff deficit, the government and the utilities agreed in spring 2009 on how to settle the accrued debt. As part of that agreement, however, electricity prices for some five million households with either low use or low income will be frozen from July 2009 until 2012. As this new tariff does not reflect, nor necessarily cover, the costs of electricity generation, it distorts the market and is hardly conducive to energy saving and efficient use of electricity.

Another area of traditionally strong, but weakening government intervention is domestic coal production that depends on subsidies. All domestic coal is used for power generation, where it contributed some 8% to total power supply in 2007. It is therefore part of the electricity security equation and

its future should be considered in this context. Electricity supply can be secured by many measures that are more cost-effective than subsidies, such as through energy efficiency, demand response, system integration, gas storage, interconnections, or stocks of imported coal from diversified sources. The IEA encourages the government to continue to liberalise energy markets and develop social policies in such a way as to minimise and, where possible, eliminate distortion to energy markets.

KEY RECOMMENDATIONS

The government of Spain should:

- *Continue to stimulate a transition to a low-carbon economy by implementing and further enforcing its ambitious plans to save energy, reduce CO_2 emissions and promote renewable energy, including investments in technology deployment and R&D.*
- *Keep open all options for low-carbon electricity supply and increase efforts to limit peak electricity demand through energy efficiency measures.*
- *Continue to liberalise energy markets and develop social policies in such a way as to minimise and, where possible, eliminate distortion to energy markets.*