



## WHO HAS THE ENERGY TO COMPETE?

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**Large, persistent differences in natural gas and electricity prices across regions**, coupled with a sustained period of high oil prices that is without parallel in market history, have made energy a hot political issue. Lower natural gas prices in the United States, supported by the shale-gas revolution, have boosted that country's industrial and economic competitiveness, raising hopes of a sustained economic recovery on the back of the manufacturing sector. Conversely, higher energy prices in Europe and parts of Asia, particularly Japan, are setting alarm bells ringing, with politicians calling for urgent action to prevent the demise of their industrial heartlands. Are these hopes and fears justified?

The results of new IEA analysis just published in the 2013 edition of the *World Energy Outlook (WEO)* suggest that shifts in energy competitiveness could indeed have far-reaching effects on investment, production, employment and trade patterns. In most sectors, in most countries, energy is a relatively minor part of the calculation of competitiveness. But its cost can be crucial to energy-intensive industries, such as chemicals, oil refining, iron and steel, paper, cement, glass and aluminium. For those sectors, differences in prices across regions can lead to significant differences in operating margins and potential returns on investment, especially where the output is easily traded internationally. So these industries do tend to migrate to where energy costs are lowest, though other factors – such as labour, capital and raw material costs – matter, too.

In recent years, regional natural gas-price differences have ballooned as a result of falling prices in North America, thanks to booming production of shale gas, and rising prices in Europe and Asia, where gas prices remain largely indexed to expensive oil. By mid-2012, the price of gas imported into Europe reached a level more than five times higher than in the United States, while Japanese prices were an astonishing eight times higher. United States prices have since rebounded, but are still three times lower than in Europe and almost five times lower than in Japan.

These price differences are contributing to significant differences in electricity prices across regions, too, as gas is often an important fuel-input to power generation. Industrial electricity prices in Japan, Europe and China remain roughly twice as high as in the United States. In the WEO central scenario, we project that gas-price differentials will narrow somewhat in the coming years, though nonetheless remain substantial through to 2035, while electricity-price differentials will persist in many cases (figure 1). So what we see today reflects a structural issue, not a one-off.

There are signs that these price divergences are already starting to affect investment in new capacity, especially in the petrochemicals sector, and our analysis indicates that this is set to continue over the coming two decades. In many emerging economies across Asia, we project that strong growth in domestic demand for energy-intensive goods supports a swift rise in their production, accompanied by growth in exports. But relative energy costs play a more decisive role in shaping

developments elsewhere. We project the United States to see an increase in its share of global exports of energy-intensive goods, providing the clearest indication of the link between relative low energy prices and the industrial outlook. By contrast, the European Union and Japan both see a strong decline in their export shares – a combined loss of around one-third of their current share (figure 2). Such shifts in industrial competitiveness have important knock-on effects for the rest of an economy: lower industrial costs mean lower input prices into other economic activities, an improvement in the terms of trade and higher income.

### SEARCHING FOR AN ENERGY BOOST TO THE ECONOMY:

Fortunately, there is considerable scope for action to enhance energy competitiveness, both by putting downward pressure on energy prices and by mitigating the impact of price increases. The challenge is to identify solutions that improve energy competitiveness, or at least mitigate part of the impact of energy price disparities, while at the same time addressing energy security and environmental concerns.

Improving energy efficiency is at the top of the list. As well as bringing down costs for industry, efficiency measures mitigate the impact of energy prices on household budgets (the share of energy in house-

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hold spending has reached very high levels in the European Union) and on import bills (the share of energy imports in Japan's GDP has risen sharply). But for the full economic potential of efficiency to be realised, action is needed to break down the various barriers to investment in energy efficiency. This includes phasing out fossil-fuel consumption subsidies, which the IEA estimates rose to \$544 billion worldwide in 2012.

Another avenue to boosting energy competitiveness is encouraging the development of indigenous sources of energy with the potential to meet domestic demand at lower cost. In several regions – including parts of Europe, China and Latin America – there is the potential



to replicate, at least in part, the United States' success in developing its unconventional gas and oil resources, but considerable uncertainty remains over the quality of the resources and the cost of producing them. Moreover, a number of technical and regulatory hurdles will need to be overcome for large-scale production. What can be done to achieve this, while allaying legitimate public concerns about the potential environmental impact, is encapsulated in the recent WEO Special Report *Golden Rules for a Golden Age of Gas*.

Other low-carbon sources of energy, such as nuclear power and renewables, can also contribute both to enhancing energy competitiveness and achieving climate change goals (the 2014 edition of the IEA's WEO, to be released on 12 November 2014, will include an in-depth focus on prospects for nuclear power). Governments need, though, to be attentive to the design of their subsidies to renewables, which surpassed \$100 billion in 2012. As renewables become increasingly competitive on their own merits, it is important that subsidy schemes allow for their multiple benefits to be realised without placing excessive burdens on those that cover the additional costs.

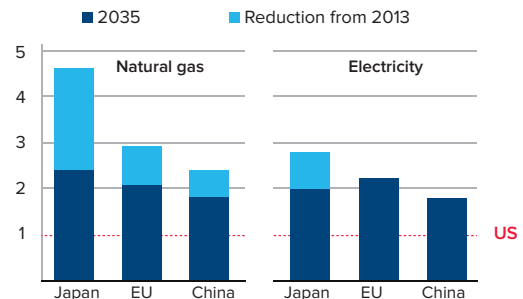
And finally, efficient, competitive markets are crucial to minimising the cost of energy to an economy. In many countries, market reforms aimed at liberalising energy supply and increasing competition in wholesale and retail markets for gas and electricity are far from complete, and therefore result in an inefficient allocation of resources and higher prices to end-users than would otherwise be the case.

Related to this – particularly in Asia – renegotiation of pricing terms in both existing and future import contracts for natural gas can be another possible avenue towards improving energy competitiveness. This

all highlights that energy policy choices will continue to be just as important in unleashing or frustrating economic growth in the developed countries as they are in the emerging economies.

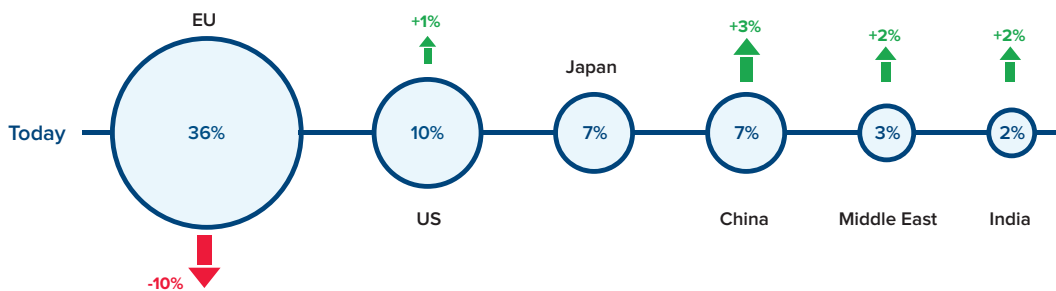
By making the right choices, governments can see to it that relatively high energy prices do not have to mean high energy costs to consumers or their national economy. They can help their firms compete internationally and their households to obtain affordable energy services by pushing firms and households to invest in energy efficiency, promoting diversification away from expensive sources of energy and developing transparent, free and open energy markets. ■

figure 1



Ratio of industrial energy prices relative to the United States  
Source: World Energy Outlook 2013, International Energy Agency

figure 2



Share of global export market for energy-intensive goods (2011 and percentage difference in 2035)

Source: World Energy Outlook 2013, International Energy Agency