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Can economies perform with high energy costs? How to conciliate competitiveness and fight against climate change? The 2013 WPC workshop on “Energy and Environment” focused on competitiveness, addressing the issue of the consequences of energy costs on economical performances.

The Northern American so called “shale gas” revolution questions indeed the two principles which were considered as conventional wisdom up to very recently: that the world would have to face a resource scarcity as far as hydrocarbons were concerned; and that the price for energy would raise everywhere. Both assertions have proved wrong: if the world has been facing high oil prices for the recent years, regional, we observe persistent regional price differences in gas and electricity, with low price in the US on the one hand, while Europe and Asia are facing significantly higher prices.

This discrepancy could last. It is expected that North America should enjoy low gas prices for at least one decade, if not more. The workshop has raised the issue of the economics of unconventional hydrocarbons in the United States and in Canada. It appears that a huge decrease in production costs has already been achieved and that continuous improvements - technological, logistical, and economic - are to be expected. Will this low gas prices expand outside of Northern America? If new LNG supplies accelerate the movement towards a more interconnected global gas market, a single worldwide gas price is not to be expected at least in the coming two decades.

This long-lasting phenomenon will have structural consequences, notably on energy-intensive industries, for which energy costs can account up to 70-80% of their total production costs, for example in the petrochemical or the fertilizers sectors. In the long-run, it means that, in the global trade, some countries (European ones, Japan) will lose market shares, while others – China, Middle Eastern ones, India, the United States – will benefit from this discrepancy.

In terms of competitiveness, the question must be asked about the evolution of oil prices in a context where we shift from the axiom of resource scarcity to the one of resource abundance. As the gas revolution extends to oil markets, it bears consequences on traditional oil producers, especially OPEC countries. In addition to the situation in the United States, Canada, Iraq, Venezuela, Brazil, Angola, and Kazakhstan, could globally add ten million barrels per day – not mentioning Iran, should the diplomatic situation evolve to a new situation. At the same time, many of the traditional oil producing countries are facing rising budget breakeven oil prices, around 100 USD per barrel because of rising expectations of their indigenous population in terms of social and economic development. Serious geopolitical movements could therefore come out of market. In the long-term though, OPEC’s role remain central on oil markets, especially Saudi Arabia which has long played a unique role of swing producer. In this respect, the absence of positive price signals sent by sluggish economies worldwide is a matter of concern considering the need for investments in additional capacities to be made. The backlash in terms of oil prices could be strong after 2020.

The issue of competitiveness and energy is to be considered in relation with the everlasting necessity to cope with climate change. What can be the cost-effective as well as workable and sustainable solutions?

The workshop has firstly focused on the necessity for right energy and environmental policies which imply some clarity on the sharing of responsibilities. Companies have to be clear about what they can do and what they are not able to do. Policy-makers must lead efficient market reforms where the right price signals are sent: gas markets in the Asia-Pacific region have been mentioned. Convincing carbon pricing mechanisms or sustainable subsidy policies are still to be implemented whether in Europe, in the US, or in Japan. A debate has aroused on the accurate definition of subsidies in the energy sector, especially on fossil fuels. Does a no or a low tax policy account for subsidizing? In countries where oil production costs are low, and prices as well, is the word “subsidies” appropriate? A definition in terms of opportunity cost has been suggested.

The workshop has identified the issue of true costs and prices as a second range of solution. The question of true costs of solar energy was highlighted. Regarding the costs of photovoltaic technologies, one cannot but acknowledge

that production costs have been dramatically reduced. If photovoltaic generates electricity at a cost of c. 100€/MWh, adding dispatchability is expensive. The cost of adding a storage system to PV can push the system's cost to 350€/MWh. As opposed to photovoltaic technologies, concentrated solar power with storage is dispatchable and can operate as base load or semi- base load power and does not suffer from saturation problems that photovoltaic faces. The example of solar energy suggests to consider costs in terms of energy system rather than through a silo approach, comparing energy technologies one by one without considering integration costs.

The workshop also considered the governance issue regarding climate change negotiations. A multilayered approach has been suggested in order to bring effective solutions on the table. The necessity for bringing more attention and financial means on research and development in technologies has also been underlined. Some funds dedicated today to subsidies would be better used in research for example on carbon capture storage, of a enhanced recovery rate in upstream oil and gas, or in electricity storage.

Whatever the mix of solutions which will have to be implemented, time is to be acknowledged as a key factor for properly managing energy transition. The world energy mix was made of 82% of fossil fuels thirty years ago; this figure remains the same today, and will decrease only to 75% in 2035. The real revolution will be to reach a truly different energy mix. Reaching such a goal requires both proactiveness and patience, as well as a genuine assessment of the investments made, and their results in terms of fighting climate change. Such a result will be met only if energy and environment are considered as going hand in hand.