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BRIEFING PAPER

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Renewable energy myths exposed

Why Europe's renewable energy future is bright, not blighted

Renewable energy in the European Union is a success story. The sector employs well over a million people and has a turnover of almost €140bn. The EU is on track to surpass its 2020 renewable energy target[1].

Despite this success, or perhaps because of it, vested interests in fossil fuel intensive industries are aggressively lobbying EU decision makers to undermine legislative support for renewables – and they are not playing fair. Because the facts are against them, these forces have created myths that undermine the key to renewable energy's success – a legally binding generation target.

As part of WWF's work to ensure an adequate policy framework for renewable energy beyond 2020, this paper begins the work of exposing those myths.

Myth 1

The level of renewable energy in Member States' energy mixes will be optimised by the market using the carbon price.

Fact: The optimal carbon price only exists in economic models. In the real world, it has proved impossible to evaluate or implement.

Renewable energy is a 'no regrets' option for decarbonising the EU[2], but how should its delivery be supported? Unfortunately, the simplistic solution of relying on markets to optimise energy technologies through a carbon price signal only works in the theoretical conditions imposed by economists' models.

Those economic models depend on markets having the perfect information they need in order to produce the 'ideal' carbon price. In reality, this is extremely difficult to achieve, because of a lack of real-world information, such as:

- The impact of uncontrollable natural phenomena accelerating climate change;
- The different costs of managing climate change in different economies;
- The potential of technological and behavioural changes to reduce costs.

Furthermore, the cost of carbon needed to achieve decarbonisation is far above current levels. To date, whenever carbon prices looked like having a real effect, backdoors like over-allocation and international offsets have pulled the carpet from under the modeller's ideal.

That markets are, in reality, imperfect and lack information is only one of the barriers to the delivery of renewable energy through a carbon-price only approach. Variability in carbon and energy prices is a central feature of markets. But because most renewable energy technologies require almost all costs to be paid up front as capital investment, they are fully exposed to that variability for cost recovery. Without a stable framework guided by clear targets, financial markets price in a risk premium that raises costs.

The proven way of providing certainty for investors that an adequate policy framework will remain in place to support renewable energy, thereby reducing risks and costs, is to adopt EU level binding targets[3]. Depending on their degree of maturity, renewable energies could be pulled into the market using an economy wide carbon price, or through direct technology support. This is illustrated by the International Energy Agency's core policy mix for least cost climate mitigation strategies[4].

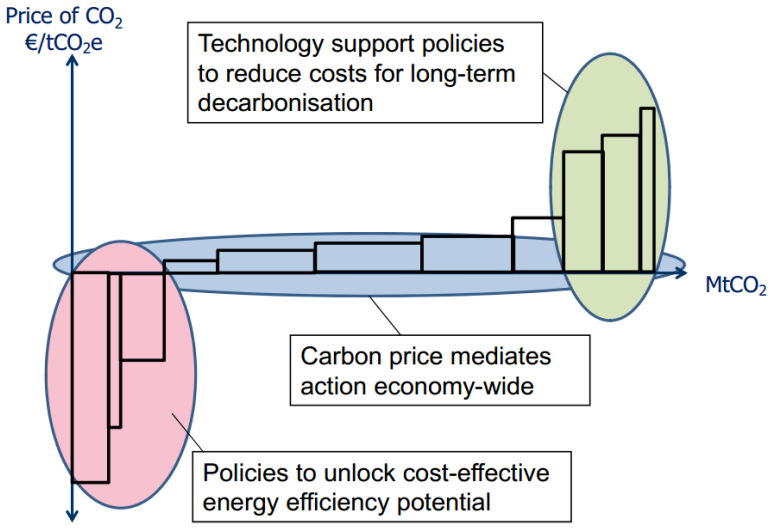


Figure 1 – A schematic representation of the purpose of the various elements of a core policy mix of carbon pricing, energy efficiency, and technology policies taken from Summing Up the Parts, International Energy Agency

Myth 2

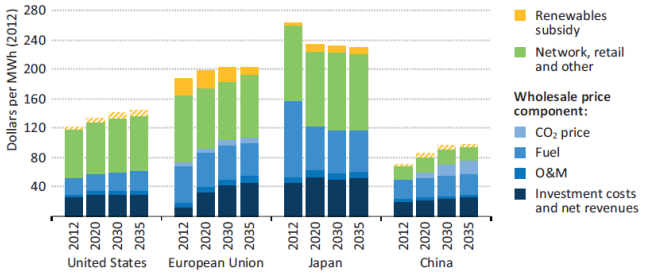
More renewable energy leads to higher electricity prices for households and industry.

Fact: Renewable energy is not a dominant element in the composition of energy bills, and the overall cost of energy cannot be assessed by looking at bills alone.

The claim that renewable energy leads to higher electricity prices is a gross simplification. While the context for households and industry is clearly different, using more renewable energy can influence energy bills for both. However, renewables have not been a dominant element of energy costs for either. Instead, energy bills are influenced by many factors, such as fossil fuel prices, market competition, profit margins, taxes, funding for future investment, and supply/demand. Indeed, while EU residential and industrial electricity prices are higher than those in the United States, this difference cannot be explained by support for renewable energy.

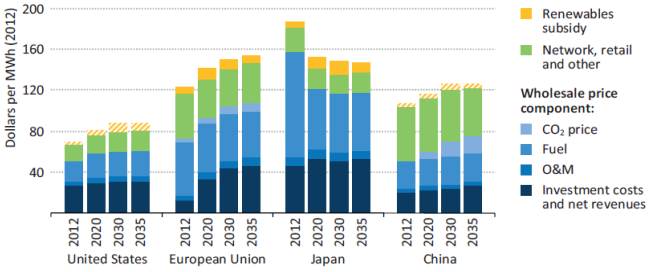
Even while the increasing use of renewable energies has a limited impact on the prices we see on our bills, they have the potential to influence greatly the overall costs of energy for European societies.

Figure 5.17 ▷ Average residential electricity prices (excluding taxes) by region and cost component in the New Policies Scenario



Notes: Hatched areas represent subsidies that are partly or fully borne by taxpayers rather than consumers. Chinese prices have a low component to cover network, retail and other costs, due to subsidisation.

Figure 5.18 ▷ Average industry electricity prices (excluding taxes) by region and cost component in the New Policies Scenario



Notes: Hatched areas represent subsidies that are partly or fully borne by taxpayers rather than consumers. The prices presented exclude taxes (see Chapter 8, Figure 8.7 for prices inclusive of taxes). Industry and residential wholesale prices are assumed to be equal but could differ, for example, due to long-term power purchasing agreements.

Figures 2 & 3 – residential and industry electricity prices as modelled in the World Energy Outlook new policies scenario (see endnotes for further information)[5]

The economic costs of the social and environmental damage by burning fossil fuels are *externalities* that are not priced by the market.

Some of these costs are relatively well understood. For example, the health costs of burning fossil fuels have been estimated at an annual €40bn for EU health systems[6]. EU citizens cover these costs through taxes or insurance payments without fully understanding what creates them. Other costs, such as climate impact costs are less well understood and furthermore are created and felt globally, rather than locally.

However, the costs of moving to renewable energy are finite and can be budgeted for, unlike the costs of the extreme weather events that are expected to become more frequent and severe as the climate changes. In Europe, around half of the hundreds of billions of euros in natural disaster related losses can be attributed to a few large events[7], such as Storm Xaver of December 2013. Furthermore, the benefits of switching to renewable energies, such as reduced fossil fuel imports, employment, EU based innovation, and technology exports must be taken into any consideration of the costs.

Myth 3

The EU's competitiveness is being compromised by rising energy prices driven by investment in and support for renewable energy.

Fact: Energy prices and policy are not a main concern for the majority of business leaders, since competitiveness is determined by a wider range of factors that contribute to productivity.

Business leaders rank energy cost and policies as only the 7th out of 10 key drivers of manufacturing competitiveness, with talent driven innovation, tax systems & financial policy, and the cost of labour & materials topping the list. Because of this, the same global business executives rank Germany above the US in terms of manufacturing competitiveness, both today and in five years' time[8]. Furthermore, rather than opposing the development of renewable energy, most executives report that those nations with the ability to provide access to clean and renewable energy at competitive costs would have an advantage over their competitors.

The EU is losing global manufacturing market share, but energy price pressure from the US does not appear to be the major diver. Despite higher energy prices in China than the US, China's continued rise is taking manufacturing market share from both the US and the EU[9]. Furthermore, in absolute terms, the IEA foresees growing output of energy intensive manufacturing in the EU for most sectors[10].

If the EU wants to improve the competitiveness of its businesses, the evidence suggests that it should not focus on energy prices alone. Instead, the EU should concentrate on its comparative advantages in complex and high-quality product segments and in the development of new areas of activity such as environmental technology – where it is well equipped to be a major actor[11]. Indeed, many energy intensive industries already have low-carbon solutions available now or on the horizon[12] - meaning that they also have the opportunity to benefit from a low-carbon transition if given the right incentives and requirements.

By focusing on what it does best, and not getting distracted by vested interests focused on one narrow element of competitiveness, the EU can improve its productivity, a vital component of overall competitiveness, and make up the ground it has lost in this area in recent years.

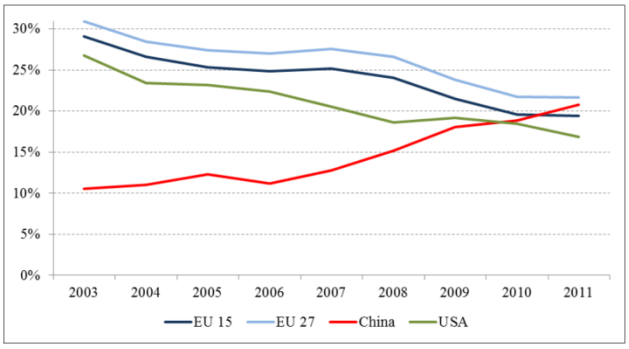
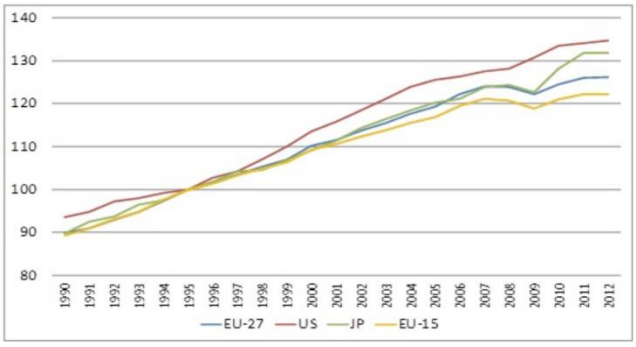


Figure 4 – Shares of global manufacturing output
Figure 5 – productivity growth 1990-2012 (1995 = 100%)
Competitiveness Report 2013, European Commission



Myth 4

The transition to renewable energy introduces too much risk when Europe's economies are just starting to recover.

Fact: For their vested interests, some conservative European businesses resist the modernisation of our energy system.

When we re-charge our smartphones, we are connecting advanced 21st century technologies to a power system that has progressed relatively little since the 19th century. There is no reason why the technological advances we have enjoyed elsewhere cannot benefit our consumption of energy.

It should first be understood that renewable energy is a group of generation technologies, and not a single solution on which the EU could become overly dependent. Some renewable energy can respond immediately to demand, such as sustainable biomass and hydropower, some is predictable, such as tidal power, and some is dependent on the weather, such as wind and solar.

Figure 6 – Graphic from The State of Renewable Energies in Europe – 12th Annual Report, EurObserv'ER

Modern power systems will maximise the availability of the cheapest sources of energy by matching flexible demand with variable supply. By creating an intelligent network of all energy consuming equipment, such as fridges and hot water tanks, power system designers can give households the opportunity to cut their bills by consuming power when is it most abundant and least expensive.

This choice could be a simple push-button setting that, once selected, requires no further thinking about other than a pleasant surprise on your bill. Such a system is no more complex, or less impressive, than the internet. Indeed, all of the technical elements to pull the energy sector into the present century are already available.

The range of renewable energy technologies means that systems which rely on them will be a less risky way of decarbonising of the energy system and reducing the threat of climate change. The alternatives of nuclear and Carbon Capture and Storage (CCS), by comparison, carry significant risk. The Fukushima disaster highlighted, once again, the downsides of nuclear power. Commercial roll out of CCS is far from guaranteed, meaning fossil fuel power plants build today could continue to pollute for their whole working life.

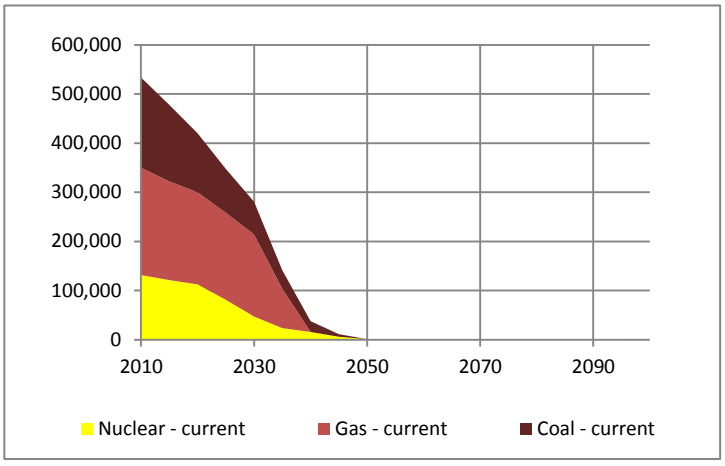


Figure 7 - Closure of current EU power plants, as envisaged by the European Commission Energy Roadmap 2050 - Analysis and graphic representation by CE Delft for WWF

However, choices have to be made now. Europe's power plants are aging rapidly, and a significant amount of capacity will shortly have to be replaced – one way or the other.

1 http://observer.cartajour-online.com/Interface_Fondem/css/picture_libs/barobilan11.pdf
2 http://ec.europa.eu/energy/energy2020/roadmap/index_en.htm
3 http://assets.wwf.org.uk/downloads/on_picking_winners_oct_2012.pdf
4 http://www.iea.org/publications/freepublications/publication/Summing_Up.pdf
5 http://www.worldenergyoutlook.org/publications/weo-2013/. The New Policies scenario represented in figures 2 & 3 is the central scenario in *WEO-2013*. *It* analyses the evolution of energy markets based on the continuation of existing policies and measures as well as cautious implementation of policies that have been announced by governments but are yet to be given effect.
6 http://www.europarl.europa.eu/sides/getAllAnswers.do?reference=P-2013-008112&language=EN
7 http://www.eea.europa.eu/media/publications/climate-impacts-and-vulnerability-2012/
8 http://www.deloitte.com/assets/Dcom-UnitedStates/Local%20Assets/Documents/us_pip_GMCI_11292012.pdf
9 http://europa.eu/rapid/press-release_MEMO-13-815_en.htm
10 World Energy Outlook 2013, International Energy Agency
11 http://europa.eu/rapid/press-release_MEMO-13-815_en.htm
12 Steel, Cement & Paper; Identifying the breakthrough technologies that will lead to dramatic greenhouse gas reductions by 2050, Climate Action Network Europe, October 2010 *and* Identifying breakthrough technologies for the production of basic chemicals; A long term view on the sustainable production of ammonia, olefins and aromatics in the European region, CE Delft for Climate Action Network, November 2011.

Conclusion

The case of those opposing more renewable energy in the EU is based on myths, not facts. A carbon price is not enough on its own to deliver renewable energy – a target approach ensures ambition and creates investment security for the sector – which it needs, in addition to support policies. Renewable energy has limited impact on energy prices – but it has the potential to reduce important costs massively. Addressing energy prices alone will not have a significant impact on economic competitiveness – improving productivity through energy efficiency and clean indigenous sources of renewable energy is the key to success. Modernising the EU's energy systems is not too risky – instead, the transition to renewable energy is the EU's surest way to cut CO_2 emissions.

Modernising the EU's energy system is central to the modernisation of the EU's economy. The benefits of transiting to renewables include:

- Reducing the EU's fossil fuel import bill;
- Creating jobs in world leading businesses;
- Protecting lives otherwise cut short by pollution;
- Meeting the EU's responsibilities to prevent dangerous climate change.

The economic, social, and environmental burden of fossil fuel use in the EU is enormous. It is essential we all face the facts, and are not fooled by the myths.

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To stop the degradation of the planet's natural environment and to build a future in which humans live in harmony with nature.

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