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The cost of CO₂: the end of the free lunch?

As carbon pricing schemes emerge, both companies and investors will be faced with new risks and opportunities. Companies and investors that fail to prepare strategically for this paradigm shift risk being left behind.

Carbon pricing is here to stay

To prevent potentially catastrophic climate change, governments around the world agreed in 2010 to limit global warming to below 2°C relative to pre-industrial levels. In order to achieve this, global carbon dioxide emissions must be reduced dramatically by 2050. With the upcoming global summit on climate change in Paris between November and December of this year (COP21), expectations for a binding global agreement to reduce CO₂ emissions are running high.

Regardless of the final outcome, though, carbon pricing is expected to become a reality in most developed economies. Companies that are prepared for a low-carbon economy will provide exciting new investment opportunities, while companies that ignore this new cost factor will be increasingly exposed to risk and lower valuations. This paper explores how carbon pricing will affect both companies and investors in the utilities sector. As this sector is already the most affected by carbon prices, it may serve as a role model for other industries on how to deal with carbon exposure risk.

Few industries will be left unaffected

Global CO₂ emissions are concentrated in the most industrialized regions of the world: the three largest CO₂ emitters (China, the United States, and the European Union) together account for more than half (56 %) of global emissions. Encouragingly, all three regions have already developed carbon markets at least on a local scale. While the EU has had an EU-wide CO₂ trading scheme (the EU ETS) in place since 2005, the US and China have so far only implemented local schemes. China has recently announced its plans to introduce a nationwide carbon market in 2017, increasing the pressure on the US to follow suit within the next few years.

Moreover, ten years after the first introduction of a price on CO₂ emissions in the EU ETS, carbon pricing has also gained momentum in other regions. Most of the top 10 emitting nations – which account for more than 75 % of emissions – already have some market mechanisms to curb CO₂ emissions in place. A total of more than 40 national (up from 20 three years ago) and 20 subnational jurisdictions have put a price on carbon or are in the process of doing so.

Although carbon prices around the world still vary significantly, it has become clear that few industries will be left unaffected. The utilities sector, which contributes more than a third of all CO₂ emissions in the US and the EU, is most heavily affected by carbon market regulation, but many other industries will also be affected to varying degrees. While some CO₂ intensive industries will suffer heavily (for instance, the coal industry), others stand to benefit (renewable energy companies, for instance).¹

How does carbon pricing affect the utilities sector?

As the biggest global CO₂ emitters by far, utilities face CO₂ markets in an increasing number of regions. Although the price of carbon is still low (around USD 10/t in most CO₂ markets), it has already begun to influence investment decisions. While the share of coal electricity has increased in some countries in the EU recently (as it still is the lowest cost energy source ignoring the external costs of CO₂), the construction of new coal power plants is no longer attractive in Europe. The key indicator for utilities' carbon exposure is the carbon intensity of generation (tons of carbon per MWh generated). As a result of carbon pricing, this directly translates into the variable costs of the utility. A change of 1 euro in the price of carbon already has a sizeable impact (a few percentage points, depending on carbon intensity²) on profit margins of EU utilities today. Although a variety of financial

¹ The importance of carbon prices for companies across all industries is highlighted by the fact that the number of companies using internal carbon prices, as reported by the CDP, tripled over the last year.

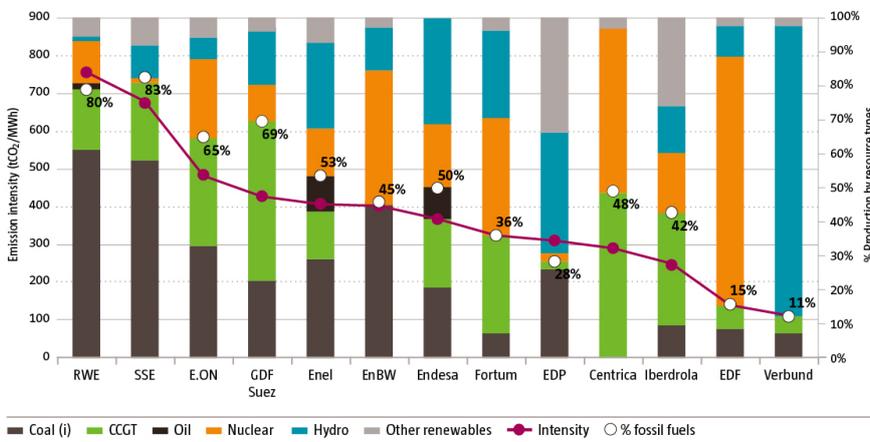
² Low-carbon utilities actually benefit from rising carbon prices as the wholesale price of electricity is determined by the marginal producer, which typically is (high- carbon) coal power.

instruments are already available to hedge against rising carbon prices, hedging can become costly in the long run for companies with high carbon intensity. For long-term investors, it is therefore important to screen for companies with low carbon intensity that do not need to rely on financial hedging.

A utility's generation mix is a key success factor in a low carbon world

The carbon intensity of generation is determined by the generation mix: coal power generates roughly 1 ton CO₂ /MWh, and gas roughly half of that, while nuclear power, hydropower and renewable energies can basically be considered to be 'clean' in this context (< 0.05t/MWh)³. A utility's generation mix is therefore a key success factor for utilities in the long run.

A utility's generation mix : Key success factor in the long run



(i) includes lignite
Source: CDP data, company data

Utilities with a high share of nuclear power (such as EDF or Centrica) typically have very low carbon intensity. Unfortunately, as nuclear power introduces other kinds of risks – ranging from operational to regulatory and political risk – investors must decide whether they want to trade in one risk for the other.

Renewable energy technologies, on the other hand, offer a natural and safe hedge against rising carbon prices. Utilities such as EDP or Iberdrola are, accordingly, well-positioned for rising carbon prices. In addition, given their business mix, these utilities are also best placed to exploit the increasing opportunities in the renewable energy business in emerging markets around the world.

In contrast, utilities with a large share of coal power plants (with typical lifetimes of 40 years and more) risk their assets becoming stranded when carbon prices reach levels at which coal is no longer cost competitive. In addition, stricter environmental regulation further adds costs to coal power in both the US and the EU. Some institutional investors, such as Norway's sovereign wealth fund, have already announced that they will divest from utilities with a signifi-

cant exposure to carbon (i.e. more than 30 % of generation from coal).

With the emergence of carbon pricing, the current and future generation mix is therefore becoming a key determinant for the financial performance of a utility. RobecoSAM's Corporate Sustainability Assessment (CSA) uses a variety of policy and performance indicators on carbon performance in order to identify companies in the utilities sector that are well-positioned to benefit from the long-term risks and opportunities relating to carbon prices. The CSA encompasses information from all important material perspectives: governance (e.g. management incentives), economic (market opportunities and investment budgets), environmental (generation mix, climate strategy, operational eco-efficiency, environmental management systems, etc.) and social (stakeholder engagement). Utilities that lead on these factors and that are attractive as long-term investments include leaders such as Iberdrola, EDP and ENEL, which was recently praised by Greenpeace International for its climate strategy.

³ However, a poorly designed and operated hydropower station can emit more than a coal power plant!

Carbon intensity and company profits

In absolute numbers, the CO₂ emissions vary widely among utilities: while RWE or Duke Energy emit more than 100 million tons of CO₂ per year (and would rank among the 40 largest country emitters), other major utilities such as Centrica or Sempra emit less than 10 million tons. Due to the mandatory CO₂ cap and trade scheme in the EU ETS, carbon prices (and price risk) are already factored in for European utilities such as RWE or Centrica. In the US, no nation-wide carbon trading scheme exists, so it is important to consider the US utilities' exposure to carbon. Duke Energy, for example, earned a net profit of USD 1.9 billion in 2014 with 125mt of CO₂. Sempra Energy, on the other hand – already subject to California's trading scheme – generated USD 1.2 billion of net profit with only 7mt of CO₂. The cost of a potential USD 10/t nationwide US carbon price (comparable to current European and Californian carbon prices) would correspond to two-thirds (over 60 %) of Duke's current profits, and less than 6 % of Sempra's profits.

Investor strategies to deal with carbon exposure

Investors need to understand what the impact of stranded assets could be on the valuation of their holdings and whether it is material. Based on an assessment of their exposure, investors can identify a pragmatic strategic approach to investing in companies that are exposed to fossil fuels, and rebalance in favor of companies with an upside potential from carbon pricing.

Opportunities for carbon-conscious long-term investors

Despite the difficult challenges the utilities sector is facing today, a few companies are well positioned in the emerging low-carbon world. In particular, companies with a successful track record in renewable energy seem to be a good long-term opportunity. Some more forward-looking European utilities like Iberdrola, Enel or EDP have spun off their thriving renewable energy business lines to form separate companies. While Iberdrola – and most recently Enel – have reintegrated their renewable energy business, EDP Renovaveis (EDPR) is still listed separately. In the medium to long run, spin offs like EDPR – unimpeded by the traditional generation business – could even overtake their parent companies, similarly to some mobile phone operators that left their fixed-line parents behind. Iberdrola – one of the first utilities to spin off its industry-leading wind business – is another interesting candidate that also owns a strategic 20 % share in Gamesa (a leading wind turbine producer), offering both operational synergies and business diversification away from the increasingly wobbly traditional utility business.

Enel, EDP and Iberdrola have also been successfully expanding globally, particularly in Latin and North America. Their international experience puts them in a good position to serve a huge future market of more than 1 billion people on the planet that don't have access yet to grid electricity, and for whom renewable energy will be the most affordable form of electricity. In combination with their renewable energy leadership in developed markets, we believe those companies will be among the winners of the global energy revolution. Overall, in the last few years, the utilities sector has lost its reputation as a defensive investment due to increasing carbon risk, carbon regulation and decentralized low-carbon generation technologies. The companies highlighted above, however, seem to be well-positioned to balance these growing risks.

Engagement as a means to decrease carbon risk

Engaging with companies on their carbon strategies can also be an effective way to influence company behavior. This year RobecoSAM's Governance & Active Ownership team is engaging with electric utilities companies. Our activities are aimed at encouraging the implementation of proactive and ambitious environmental strategies, operational excellence in thermal generation, business model innovation, and public policy. Over the course of the engagement, we expect to see electric utilities developing more ambitious strategies towards their own decarbonization.

Conclusion

The introduction of a price on CO₂ emissions has gained momentum worldwide and will affect many industries. Because of the major changes involved, it is a slow process that will take many years to complete. Nevertheless, both companies and investors must prepare now.

Companies must adapt to this new reality and start building systems to deal with carbon accounting, starting with internal carbon prices. The utilities sector can serve as a role model, as this industry is most advanced in dealing with carbon exposure risks.

Investors need to start measuring the climate impact of their investments – asset owners as a defensive measure to protect against carbon risk, and asset managers as an opportunity to differentiate against competition, for example by introducing novel impact investment offerings.



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