

SETTING THE SCENE. GLOBAL ENERGY TRENDS

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Abstract

This introductory paper to the energy global market and particularly to its trends - based on world statistical data and scenarios given by international organization, as IEA, WEC - highlights the main transformations which are changing the prospects for production, distribution and consumption of energy and, consequently, the terms of the global ecological issue. The new prospects, made possible by the growing technological innovations, are due to new market trends and new entrepreneurial strategies and certainly also in response to policy initiatives and the challenge of Climate Change. Despite the certainly positive trends, such as the growth of renewable energy, the long term evolution may prove to be more challenging than estimated, due to the social aspects and the economic policies required for a sustainable energy transition from both an environmental and an economic point of view. Global and regional models for the energy governance will therefore play a crucial role.

The energy world is undergoing a vertiginous transformation, which inevitably shows in the way the energy vocabulary has evolved, to include now new terms such as *decarbonization*, *prosumer*, *innovation*, *internet-of-things*, *digitalization* and *smart*, next to more vintage ones such as *baseload*.

In fact, even the most distracted observer could not help but notice a change in the energy consumption and production paradigm, while the most attentive ones would not fail in remarking that such a change has a twofold set of causes, some of which are internal, some other exogenous of - if one prefers - global or systemic. Technology has certainly played a major role as key enabler, but technology is a matter of choice, among several different options and solutions. Global trends and dynamics on the other hand play a crucial role in shaping the relevant energy patterns, broadening and diversifying options for both energy consumers and producers.

Renewable technologies have increased the possibility of producing energy on site, without having to rely on the fuel transport and logistics to the power stations. So that around large scale fossil (or fissile) power stations a myriad of smaller renewable ones have appeared pretty much everywhere. Then internet, and its unstoppable pervasiveness. Last but not least transport (be it aerial, terrestrial or maritime transport) has reached an unprecedented level of development and intensity⁶, thus making goods and service basically global, just consider Amazon.

Hence, for those in charge of flagging the main energy global trends, few references remain still important, and can be helpful while navigating in these uncharted waters.

On one hand technology, consumers and business models remain somehow in the realm of the individual choice for both energy producers and consumers. We can choose the technology as part of a certain public or industrial strategy, consumers (both as

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⁶ OECD - ITF Transport Outlook (2017)

individuals and as groups) determine their choices out of necessity or preference, and business models are the result of strategies which are up to the relevant economic and financial players.

Still all of these actors have to refer to a certain environment, where all other actors and players, in their cultural, social, political and economic dimension – a massive exogenous macro-phenomenon - influence their behavior, by offering risks and opportunities. So that global trends can either be searched in the schemes of geopolitics or geoeconomics and specifically in the “geopetitiveness” schemes (as a country’s ability to attract investment and provide at the same time a competitive hedge for its companies abroad), or otherwise by measuring Foreign Direct Investment⁷, both inflow and outflow, and these are numbers that can really matter.

Defining the right legal and regulatory framework for the energy sector, with all the right incentives to ensure secure, sustainable and affordable energy supplies, becomes an exercise than needs to take into account, in a genuine spirit of balance, all of the above considerations.

The International Energy Agency “World Energy Outlook” of 2016 (IEA, 2017) offers a good snapshot of the most compelling issues on the table for the energy sector at global level, and few highlights can be drawn from it.

Climate Change has become a genuinely global issue, and the Paris Agreement⁸ – a commitment with the highest number of signatories ever reached in the history of multilateralism – has sanctioned an irreversible change in the mindset of policymakers. The science-based evidence of Climate Change leaves no room for inaction, and terms have to be agreed now not on the IF but on HOW and WHEN.

Renewable energies are a widespread reality which has brought a profound change in the economics of the energy sector (J. William, 2017). The shift towards more capital intensive models at nearly-zero marginal costs has triggered a rethinking of energy investment, both for public and private actors.

Fossil fuel subsidies and renewable subsidies will have to be managed in the transition within intelligent public policies to be both economically and socially acceptable, and the financial dimension will certainly play a crucial and delicate role.

Markets have to adapt accordingly. Zero-marginal cost renewable production units have entered the merit order. Wholesale prices decrease, investment signals are perturbed, network costs increase as to ensure the necessary network stability, as variable generation increases its share in the energy mix. Electricity storage appears on the scene together with new market actors, service providers and data managers. Block-chain and Bitcoin gradually lose their original lurky reputation and start becoming interesting, if not fascinating. In the meantime energy security remains high in the agenda so that adapting the market functioning certainly cannot happen at the expenses of the system security and reliability.

The geography of the energy demand keeps changing at global level (Adamo, F. & M., 2015), with entire new areas witnessing skyrocketing demographic trends, consumption patterns and - as a consequence for the economies heavily relying on carbon intensive energy sources - emissions.

⁷ OECD, FDI Flows <https://data.oecd.org/fdi/fdi-flows.htm>

⁸ UNFCCC, Paris Agreement (2015)

The dynamics affecting oil prices, like it or not still a crucial reference, remain highly unpredictable with a *boom-and-bust* risk that might affect that (very) large part of the global economy that still relies on it and will (very) much likely continue to do so in the decades to come (Robert Papier, 2015).

LNG has spread substantially the commercial reach of gas as a commodity, thus breaking the geographical boundaries of the pipeline network.

To quote Fatih Birol, the IEA's Executive Director *"We see clear winners for the next 25 years – natural gas but especially wind and solar – replacing the champion of the previous 25 years, coal. But there is no single story about the future of global energy: in practice, government policies will determine where we go from here."* (IEA, 2016)

Another interesting prism to look at the complex and uncertain environment in which the energy sector is evolving is offered by the latest edition of the WEC 'World Energy Issues Monitor'. The survey offers a ranking for energy issues by impact, level of uncertainty and urgency as perceived in Italy, in Europe and at Global level. In the World Energy Council own words: *a snapshot of what keeps CEOs, Ministers and experts awake at night in over 90 countries.*

Out of the 2017 'World Energy Issues Monitor' edition⁹ three main common issues emerge from the aforementioned geographical areas: commodity price volatility, energy efficiency and renewable energy.

While European and Italian leaders are concerned by regional and geopolitical dynamics, Europe remains highly committed to Climate Change¹⁰ and struggles to identify the most adequate approach for a large-scale deployment of energy storages and batteries. Finally, at global level, leaders converge on the common challenge to agree on energy governance models catering for regional cooperation. In the meantime, the surrounding atmosphere sees an increasing attention for cyberthreats and cybersecurity.

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⁹ World Energy Council - World Energy Issues Monitor 2017 | Exposing the new energy realities <https://www.worldenergy.org/wp-content/uploads/2017/04/1.-World-Energy-Issues-Monitor-2017-Full-Report.pdf>

¹⁰ European Commission, 2030 climate & energy framework https://ec.europa.eu/clima/policies/strategies/2030_en#tab-0-0

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