

The Ambiguous Road to Cop 25

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ABSTRACT

Economic and industrial development has been generated by massive energy demand and associated increases in CO₂ emissions. A series of Agreements, culminating in the 1995 Paris Accord aimed at curbing such emissions to limit global average temperature increases to less than 2 Celsius. This implied an overhaul of historic proportions that are not easy to achieve or finance, and have so far failed to produce the impacts being sought.

Progress towards achieving the Paris and other Agreement goals has been negligible. The paper reviews empirical evidence of emission outcomes, different generating technologies (their costs, emission characteristics), policies and practices to deal with the issue, and comes out with a mix of actions aimed at enhancing emission outcomes at more affordable costs, to improve both economic and emission outcomes over the long haul, and ultimately improving the chances of meeting the international agreed goals.

WORDS OR DEEDS?

With over 25 years since the UN Framework Convention on Climate Change, and numerous Agreements (including the historic 2015 Paris Accord), there is little tangible evidence of progress in the climate change agenda.

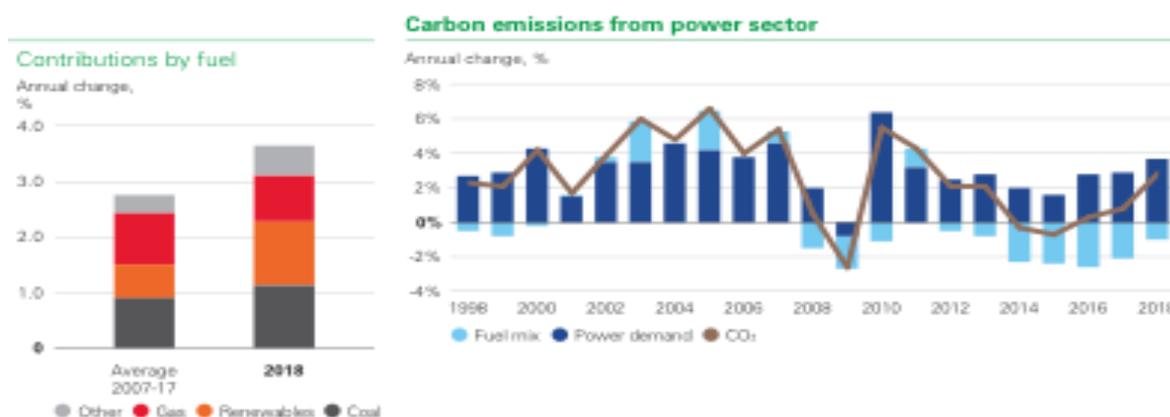
The recent IPCC Experts' Report unequivocally confirmed that we are already seeing negative impacts of rising sea levels, droughts and extreme storms.

Admittedly, much of the economic and social development over the last century, and the associated improvements in standards of living,

have been propelled by massive growth of energy demand, powered by hydrocarbons that brought about increases in CO₂ emissions.

There is, though, an increasing consensus that these emissions need to be curbed to prevent further global temperature increases.

The Agreements thus provide a framework for such effort, and will require significant reductions in hydrocarbons-based investments and profound changes in production and transportation practices. They, however, don't contain binding obligations to reduce its greenhouse gas emissions by the stated dates.



Source: BP Statistical Review of World Energy, 2019

Hitherto, accelerating gains in energy efficiency have muted growth in energy demand, rapid

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expansion in renewable energy combined with successive falls in global coal consumption; have lead to improvements in fuel mix. Similarly some progress has taken place through natural gas becoming the largest source of energy growth, boosted by a massive programmed of coal-to-gas switching in industrial and residential sectors in China.

But much more progress is needed to “move the needle”, particularly in the power sector, which absorbs more primary energy than any other sector. Adding all up, it accounts for over a third of carbon emissions, and despite the push away from coal and rapid expansion towards renewable, the progress has been negligible over the last 20 years, with hardly any changes in CO2 emissions, as evidenced above.

REGULATING OR ENABLING CONDITIONS?

The Paris and other Agreements, in essence imply an overhaul of historic proportions requiring investments of the order of \$16.5 trillion through 2030, to meet the agreed targets, as estimated by the IEA –to limit global temperature increase since the Industrial Revolution to 2°C.

None of this will take place on its own or be politically, economically and technically easy. Hitherto, most attention has focused on regulations, time consuming and costly clearance arrangements for new investments and other administrative interventions that tended to create their share of distortions. Given the poor outcomes, actions must be refocused to increase attention to efficiency and effectiveness, without adversely affecting economic development.

This requires addressing a broader dysfunction - the failure of policies, institutions and governance arrangements to align incentives and emerging concerns on externalities, so that investments and consumption respond to the delivery of public goods and private services demanded by society.

Decades of attempting to constrain energy demand (so essential for economic development) show limits to acting through institutional compulsion and cumbersome regulatory clearance arrangements that don't have remotely the flexibility and responsiveness to contemporary dynamic developments. Policy efforts must reconcile more effectively the trade-offs necessary for:

- **Efficient resource allocation**, to enable energy producers and users face prices that reflect its scarcity value, including associated externalities;
- **Competitiveness and terms of trade** concerns, to confront growing fears of disadvantaging domestic producers in world markets and the cost and investment implications to meet more exacting environmental concerns;
- **Fiscal considerations**, particularly as hydrocarbons constitute among the largest balance of payments (either in imports or exports) or fiscal revenues in most countries;
- **Revenue, cost compliance and administration** concerns affect interactions with the wider tax system, more generally, and impact both the choice of instrument and the level at which taxes are set, so that associated costs are recuperated in pricing.

There are, however, limited precedents with proven performance to go by. Each country will need to develop its own institutional infrastructure to have a strategic framework on environmental concerns while facing emerging development challenges.

Hitherto, countries have introduced competing and duplicative policies, such as setting up over 15 different climate change ODA funds, with limited attention on standards, the establishment of distortionary pricing and subsidies, difficult to manage, or earmarked taxes on carbon trades to fund adaptation -- taxing one public good to fund another.

Countries must be vigilant to avoid developing institutionally intensive arrangements in institutionally weak conditions. “Institution-building” advocated by various Agreements is a long and difficult road. Wherever possible, policy frameworks should enable economic actors to interact organically, without too many constraints or complicated processes. The rule should be to minimize rules, use pricing where possible, and allow legitimate additional costs of compliance to environmental standards to be recouped through output prices.

MORE OF THE SAME OR NEW TECHNOLOGIES?

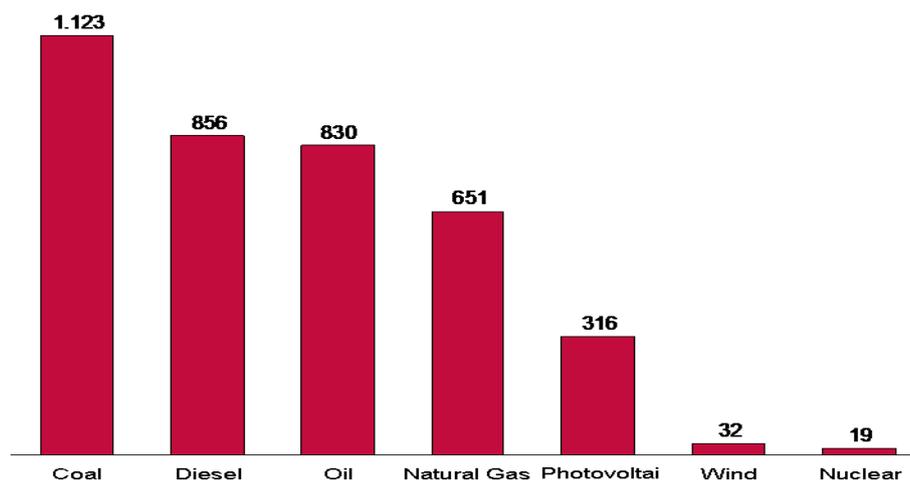
Renewable energy sources must become a growing part of a carbon free energy development, since they tend to have lower CO2 emissions than traditional sources, as illustrated below:

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Environment: Emissions & Local Ecosystems

There are large differences in emissions by energy source

CO₂ Emissions by energy type (kg carbon equivalent/ TEP)



Sources: CNE (Chile Energy Commission): J. Tockman "Current Situation & Perspective"; M. Schloss "Cambo Climático y Energía", 2019

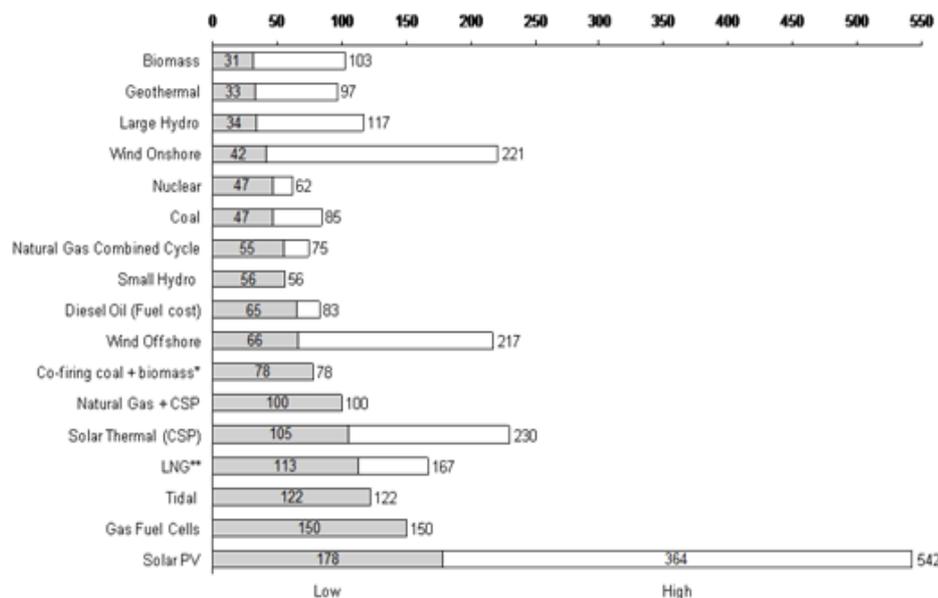
For the time being, though, such sources are still more expensive, and thus constitute in many cases situation-specific solutions, depending on local conditions (such as wind regimes or solar radiation levels), and appropriate for limited load factor requirements. The need to move towards a decarbonized economy, provide the

conditions for enhanced R&D to develop such technologies to further reduce costs and level the playing field vis-à-vis traditional energy sources. Some "green" technologies are closing the cost gap, and are bound to become more attractive when considering CO₂ emissions as can be observed below:

Security of Supply in Power Generation

...AND become even more attractive when considering CO₂ emissions

"Green" Cost Comparison, Production Costs (USD/MWh & CO₂ Emissions in Tons/MWh at 25 USD/ton)



Sources: IEA Energy Technology Perspectives; Ormat Technologies, Inc.

A long term energy strategy must rely on technological substitution of the current capital stock of non-liquid fossil fuels towards a greater mix of LNG based plant, geothermal and hydro electricity, with renewable playing a niche role, and

eventually mainstream option in the energy mix.

REFRAMING OR TRANSITIONING?

The massive resources required for overhauling existing systems are unlikely to be successfully

absorbed in the near term.

Transitional arrangements must thus be considered for:

- Financing *adaptation programs* (while underlying solutions are being worked on) through supporting investments -- e.g. storm barriers, resettlement, carbon capture, use and storage (CCUS) that could be recognized as part of the climate change agenda.
- As *tracking arrangements* leave a heavy burden on countries, as targets rely on "nationally determined contributions", they leave important *global factors* "out of the radar", such as maritime, air, the Arctic and Antarctic continents, which have their special environmental issues. For instance, the shipping industry emits more CO₂ per year than any European country.
- The global economic context may keep conditions in a *constrained growth path*, with consequent low commodity prices, and with it low fossil fuel prices (making them more competitive against non-traditional sources), reducing the surplus generation capacity of countries relying on extractives, depriving them from their main source of financing (and diminishing prospects of retrofitting investments to reduce their energy intensity).
- Climate change takes place globally but is acted on locally. The attempts of seeking agreements internationally have been too complex and removed from where action is necessary to be effective. The absence of tangible progress after 25 COP meetings suggest that the collective approach at the international level is in effect an impediment for responsive action, given the diversity of interests and constituencies. A **decentralised approach** permitting adaptations to different conditions and capabilities, facilitating innovation and initiatives, which could be upscaled by aligning interests through energy pricing and taxation arrangements that recognize environmental implications, and permit collective action of a variety of local actors harnessing their financial, institutional and technical capabilities that are otherwise difficult to align for innovation and local conditions.

In all, this is not a dash to renewable, but a race to reduce carbon emissions across many fronts.

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