

Planning at the Dawn of the XXI Century: The Ambiguous Road to COP26

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Abstract

How did we Get Here?-Economic and social development in the last few centuries has generated unprecedented progress, overcoming recurrent and widespread famines, extending life expectancy, increasing incomes in large swaths of the world. This has been underpinned by productivity gains in agriculture, industry, advances in communications, transport and energy, never experienced in recorded history before. Much of this has been propelled by technological changes leading to the industrial revolution, particularly the development of the internal combustion engine, which has powered the productive progress since then. On the other hand, this has brought with it increases in CO₂ emissions, whose full implications are as yet somewhat unpredictable and not fully understood.

Index terms—

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Much of this has been propelled by technological changes leading to the industrial revolution, particularly the development of the internal combustion engine, which has powered the productive progress since then. On the other hand, this has brought with it increases in CO₂ emissions, whose full implications are as yet somewhat unpredictable and not fully understood.

In addition, this past decade alone was a period of significant disruption and change, where people across geographies, disciplines, and industries transformed the way we live. From how we move, drive, invest, and advertise to how we generate and consume energy, how we take care of ourselves, and both how and what we eat, every single facet of our lives has been challenged or reimaged.

On the other hand, human progress is outpacing the capacity of the resource environment to keep pace with the need for a balanced development. Whether it is economic expansion (at the expense of known resource bases, such as mining and raw materials, forests, land use), and consequent increased emissions; institutional and policy constraints to cope with ever increasing economies; growing and widening societal demands and so many other "unexpected" developments test the limits of human knowledge to develop and settle increasingly complex and emerging discontinuities.

Admittedly, there is some controversy about the underlying science claiming the connection of such developments with climate change, particularly the impact of solar radiation and other cosmological phenomena affecting global temperatures, and thus the capacity of human beings of influencing climatic conditions. Several studies reconstructing temperature changes over the last 5,000 years, essentially point to large climatic changes over the millennia, related largely to changes in sun radiation rather than other phenomena.

That said, there is an increasing consensus that CO₂ emissions generated by human activity need to be curbed to prevent further global temperature increases, and constrain global average temperature increases to less than 2 degrees Celsius above pre-industrial (18th and 19th centuries) levels, and to pursue efforts to limit temperature increase even further to 1.5 degrees Celsius. This is in essence what has been set out in the Agreement reached by the 195 countries in climate talks in Paris.

A change of this magnitude requires, however, an overhaul of historic proportions for energy policies, and investment of the order of \$16.5 trillion, as estimated by the International Energy Agency. Such outlays will

require profound transformation in production and transportation practices, and spending on renewables and efficiency, as well as carbon capture and storage through 2030. This is no small challenge, particularly when seen in the context of competing claims on scarce resource surpluses, particularly in emerging economies whose development needs remain challenging, in an uncertain, if not fragile, international economic environment.

Moreover, with changing pace of technological and other disciplines, and emerging in societal demands (including environmental concerns) there will be an increasing demand to look well beyond our comfort zones.

II. What Have we Done -Words, Deeds or Results?

The Paris Agreement mentioned above in effect provides a framework for such effort, and will require significant reductions in hydrocarbons investments, increases in emissions costs, reduction in deforestation, intensive reengineering of energy sources in use, and profound changes in transport systems. Has any of this actually taken place to achieve goals outlined in the Admittedly, in the last decade, accelerating gains in energy efficiency have muted growth in energy demand; mounting 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 (the hydrocarbon-based feedstock emitting the lowest CO₂ emissions) 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" in a tangible manner, 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 renewables, the progress has been negligible over the last 20 years, with hardly any changes in CO₂ emissions, as evidenced below:

What the record so far strongly suggests is that none of the large-scale changes needed will take place on its own or be politically, economically and technically easy. Henceforth, emphasis must focus much more sharply on how to move from words to actual deeds in a manner that does not affect negatively economic development -a burning concern of most, if not all emerging economies. Special attention will thus be required to ensure that future efforts can adequately address concerns of efficiency and effectiveness, which have hitherto received scant attention, with consequent limited incentives to produce progress and results in climate change actions. costly clearance arrangements for new investments and other such 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 is particularly important in countries in their early stages of development, where small engines, such as household consumption of fuel wood, petroleum products are the most important source of commercial energy, supplying approximately 70 percent of commercial requirements in these countries; and they are likely to be the fastest growing portion of the region's energy balance as the continent's modernization unfolds.

As the region becomes more developed, the demand for energy will also grow, thus setting up a vicious circle: Economic growth will be needed to pay for the expanding oil bill, and more imported fuel will be required to generate economic growth.

These countries must make fundamental policy choices with respect to the petroleum industry if they are to escape this self-defeating cycle. Greater efficiency in procuring and distributing petroleum products would reduce the amount of funds these countries devote to paying their oil bills, thus freeing such resources to fund their development needs.

All this requires, however, 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 more effectively 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 the 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 accordingly 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 instruments 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.

Planning at the Dawn of the Xxi Century: The Ambiguous Road to CO P26 as small pumps, mopeds or mini-tractors, are replacing human and animal toil. These are for the most part powered by hydrocarbons, thereby making such countries particularly dependent on imported or locally produced oil, as can be seen in the graph below:

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© 2020 Global Journals 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 trade to fund adaptation -i.e. 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.

IV.

2 More of the Same or New

Technologies?

Renewable energy sources, including transitional hydrocarbon sources such as natural gas, 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:

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: 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 (particularly low head and run-of-river facilities), with renewables playing a niche role, and eventually mainstream option in the energy mix.

V.

3 Reframing or Transitioning?

The massive resources required for overhauling existing systems are unlikely to be successfully absorbed in the near term, and 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 and air transport, 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 nontraditional 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).

VI. Adding All up –Where do we go from Here?

This century is set to be shaped by a series of hugely demanding and closely interlocking challenges. The eradication of poverty, dealing with conflict and achieving the sustainable use of natural resources is among them. Linked to all these are difficult issues about energy -particularly having adequate and secure supplies of energy at affordable prices and consuming energy in appropriate ways to avoid environmental damages.

A solution to either of these threats is relatively straightforward; however, a solution to both simultaneously is one of the great challenges facing the world.

We have been thrust in a situation of high stakes and trade-offs requiring decisions under uncertain conditions. With global energy demand expected to rise by over 50% over the next 30 years, and fossil fuels (the main source of emissions) accounting more than 80% of the overall increase, simply calling for a cut in consumption is not a sufficient solution to the challenges we face, particularly in enhancing energy security and fueling both economic growth and poverty alleviation globally in emerging economies.

Statements, international agreements, regular international meetings and monitoring have their place. But in the end, achieving tangible progress while addressing environmental issues effectively require a much better understanding than what we have at present. To this end, we must overcome the temptation to look for solutions of problems that are poorly understood, grounded on fragile empirical evidence.

3 REFRAMING OR TRANSITIONING?

Technological innovations can have a pivotal role to play in harnessing new sources energy supply, but they have their costs and time frames for their development, as well as their policy, institutional and governance requirements to provide the enabling environment to attract resources and deliver progress.

In all, this is not a dash to renewables or curbs in energy use, but a race to reduce carbon emissions across many fronts -an endeavor that requires as much an international effort for innovation, as a series of local, down-to-earth adaptive investments compatible with economic development. This requires a hard-nosed approach distinguishing trend from fad.

Seen in this light, goal-setting, international agreements, awareness-raising can be useful, but only up to a point. A top-down and muscular approach to set targets and nudge towards action through institutional compulsion seemed to have been the preferred way of proponents for corrective action, but there are binding constraints (such as institutional weaknesses, economic incentives, etc.) that in effect explain the limited progress that such approaches have been able to generate.

In the end, the effort will require many players working independently, but coherently. This can only be achieved through proper pricing, taxation and various forms of institutional and economic policies that align interests among multiple stakeholders and provide the environment to invest and innovate in a more decarbonized economy.

Given the unpredictable technological and other changes over time, some room for improvisation may be instrumental in coming up with new approaches, even allowing form to follow function in shaping of institutional reforms, to ensure that they respond to emerging concerns.

Accordingly, a certain amount of trial and error or learning by doing will probably be inevitable, if not helpful. A change agenda is not an option but a necessity, not only on fuels but also in strategies, structures, and leadership practices -enticing and harnessing unorthodox thinkers and their mold-breaking notions. Given the obvious shortfalls, businesses and governments are being challenged to renew -or fail. With increasing availability of data to track outcomes and analytical capabilities, new technical skills are bound to free the transformative forces for innovation to enhance conditions to morph fringe and exploratory ideas to mass markets.

But at a minimum, all such efforts must start with a basic understanding or diagnoses of the issues standing in the way for effective action, a thorough program to overcome them, preparedness to weather the pains inherent in any adjustment or modernization process.

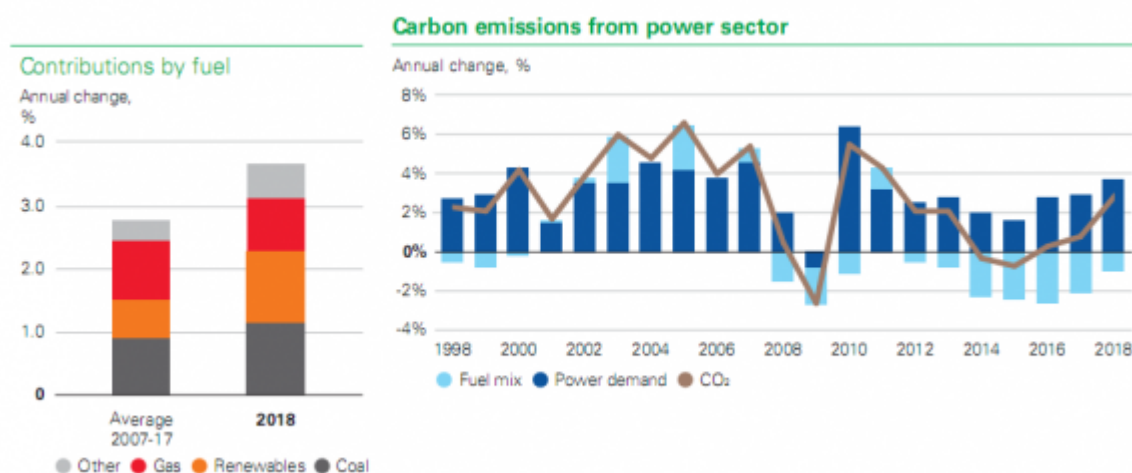
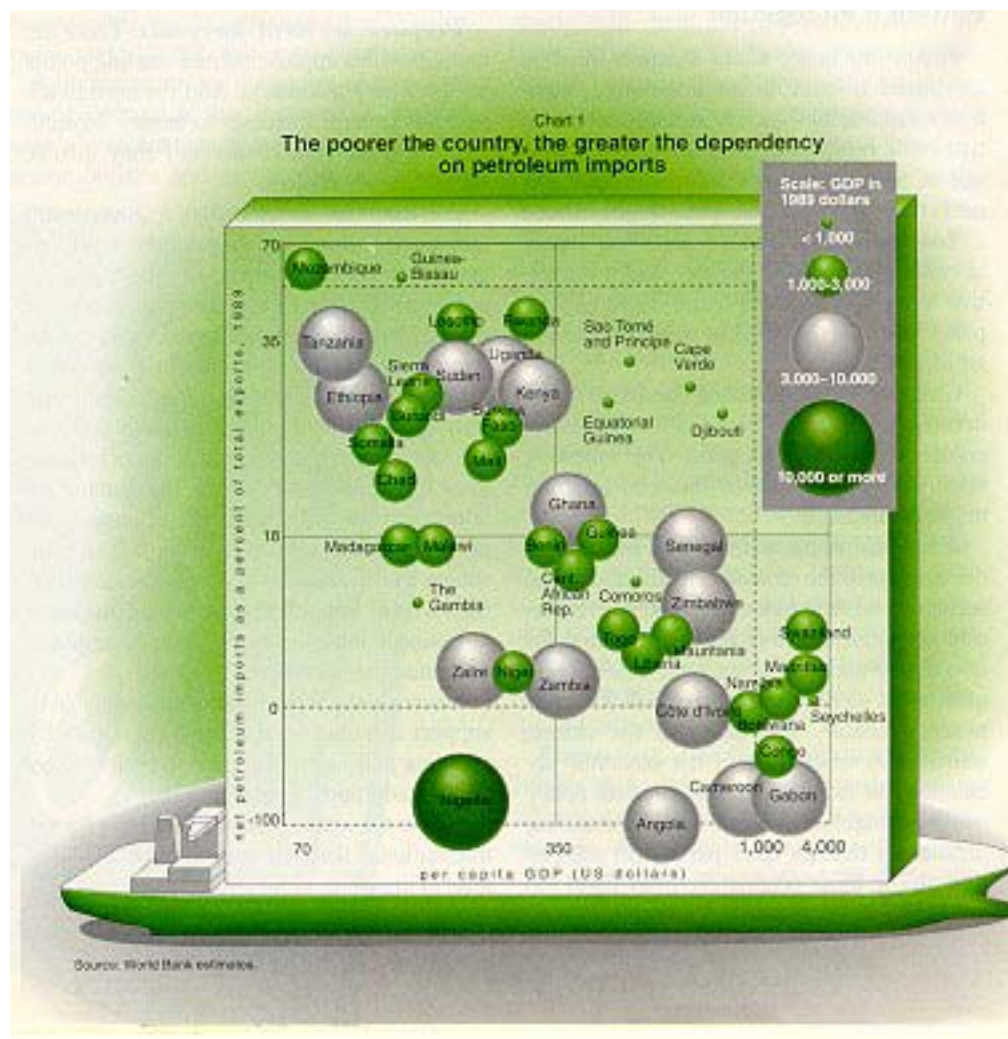


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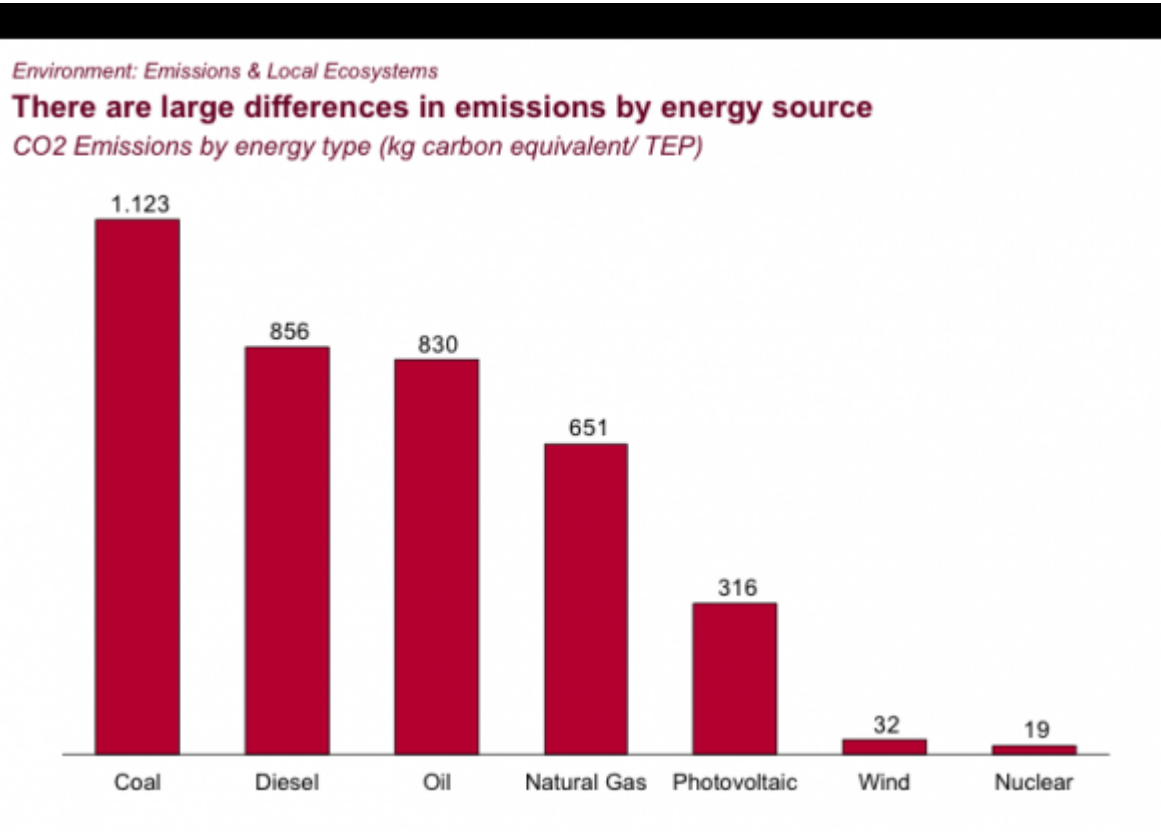


Figure 3:

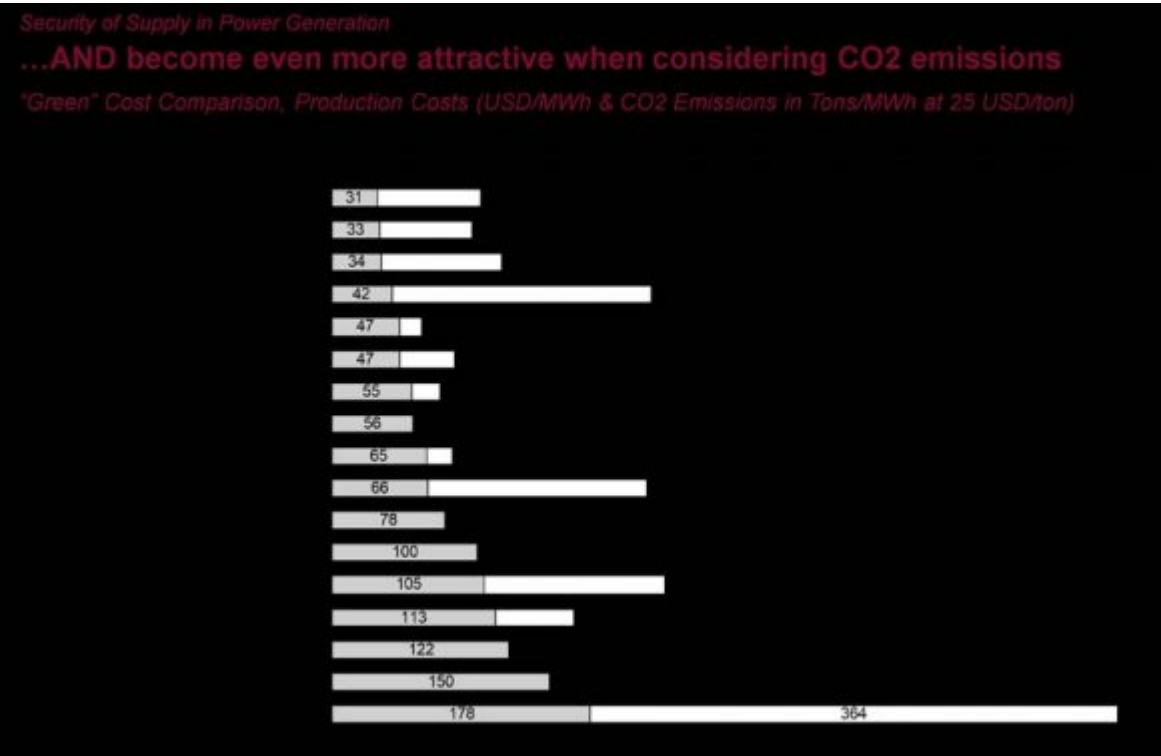


Figure 4:

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