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Building the economies of the future

We need a new narrative to exploit technological opportunities, overcome political-economic constraints and sow the seeds for a greener future

The outcome of COP28, held last December in Dubai, has been equally disappointing for advanced and developing economies. The former saw their desire for an agreement to 'phase out' from fossil fuels frustrated and had to accept a smoother language which refers to a generic 'transitioning away'. The latter had high hopes for the creation of a rich 'loss and damage' fund able to meet their needs. The fund was effectively created, but it amounts to no more than $700 million.

This stalemate reflects the perversity of the challenge ahead of us. Only changing the existing narrative and aiming at a process of socio-economic transformation socially 'desirable' for a great majority of the world population would pave the way for an energy transition on the scale we need.

The greening opportunity

In a sense, the transition to a low-carbon energy system is already underway. The technological conditions have never been more favourable to reduce emissions and move towards a new energy matrix. The paradigm that once dominated environmental economics – that clean (low-carbon) energy would be costly but bring other benefits – is no longer true.

Energy transformation has picked up momentum over the past few years due to a combination of better technology and the benefits of scale. Prices of renewable energy from solar photovoltaics or wind are collapsing. In many parts of the world, renewable energies are now cheaper than fossil fuel-based production. Combining this with batteries, which are also collapsing in cost, or with gas turbines as backup, we should be able within 15 years to build energy systems – electricity production systems which rely almost entirely on renewables, and which produce all the electricity that we eventually need – at very competitive

prices.

A variety of complementary factors also contributed to the increase in clean energy investments. These include enhanced policy support through instruments like the US Inflation Reduction Act and new initiatives elsewhere; a strong alignment of climate and energy security goals, especially in import-dependent economies; and a focus on industrial strategy as countries seek to strengthen their footholds in the emerging clean energy economy.

A disappointing reality

Despite this undeniable progress, however, the global average atmospheric carbon dioxide has continuously increased over the last decade, setting a record high in 2022. This year, the world is projected to emit an additional 40.6 billion tonnes of CO_2 from all human activities, leaving 380 billion tonnes of CO_2 as the remaining carbon budget, which essentially measures how much CO_2 humans have released and how much has been removed from the atmosphere by the oceans and land ecosystems.

This enormous amount of emissions is disastrous for the climate — at current levels, there is a 50 per cent chance that the planet will reach the 1.5°C global average temperature rise in just nine years.

The main challenge on the way to transition from a purely technological point of view is that we still have a whole set of functions in the economy, like producing critical materials required to embody our inventions, that do not depend on electricity and for which we still do not have a viable green alternative.

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Four materials rank highest on the scale of necessity, forming what Vaclav Smil calls the four pillars of modern civilisation: cement, steel, plastics and ammonia. These four materials share three common traits: they are not readily replaceable by others; under a business-as-usual scenario we will need much more of them in the future; and their mass-scale production depends heavily on the combustion of fossil fuels, making them major sources of greenhouse gas emissions.

Profound challenges have to do also with the economics of energy transition. As pointed out in Brett Christophers' *The Price Is Wrong*,

while it is true that renewables are becoming increasingly cheaper with respect to hydrocarbon resources, it is not just relative prices that determine how much capital will be invested in wind or solar parks. More important is how profitable these investments will be. And the anticipated returns are not yet comparable to those of fossil fuels. The reasons for this are many, but certainly the 'unbundling' of electricity markets, now divided between generation, distribution and retail, did not do any good: prices became too volatile to support the upfront capital investment that renewable generators require.

From a more structural point of view, reducing emissions is hard also because changing the sources of energy production from fossil fuels to renewables will impact trade, industry and government finance, thereby altering income distribution and generating winners and losers both within and between countries in the process. Such a massive distributional impact will compound with the costs associated with the early retirement of fossil fuel-based electricity-generating capacity ('stranded assets').

Green industrial policy

Therefore, we need to think about energy transition less in terms of carbon mitigation – the kinds of issues that are the focus of COPs – and more in terms of overcoming hurdles to economic transformation that is, in essence, a political economy challenge.

At the domestic level, addressing this challenge requires a strategic policy approach going beyond standard mechanisms to internalise externalities. Although these measures have a role to play, there has been an increasing recognition of the fact that markets have failed to internalise environmental costs at the scale and speed required to steer economies towards energy and industrial transition. The reason is not only that markets perform poorly in mobilising and allocating large-scale resources under conditions of uncertainty, but also that the individual decisions of profit-seeking firms over the assets they control do not automatically align with the broader social demands implied by a large-scale economic transition.

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Targeted interventions at the sectoral and sub-sectoral levels have better chances to accelerate energy transition than across-the-board policy measures. These measures should not simply 'encourage entry' of new technology or actors, but also 'facilitate the exit' and restructuring of incumbents. Feed-in tariff (FIT) and tradable

global governance is urgently needed.

green certificate (TGC) schemes can be particularly effective in this respect.

At the global level, we need to build capacity in developing countries where most of the emissions will take place under the business-as-usual scenario. This can only happen through the transfer of technology, including through a revision of the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) along the lines of the waiver released during Covid-19. This also asks for a significant shift of resources to compensate the population of fossil-fuel-rich economies for the opportunities lost because of the non-exploitation of their reserves and to finance the cost of energy transformation that, just in emerging and developing economies, has been estimated at $1.3 trillion to $1.7 trillion annually.

More in general, if developing countries are to build climate-resilient development paths, a better mix of international resources and strengthened global governance is urgently needed. This will require scaling back unduly intrusive global rules in some areas and expanding the reach of the system in others, in order to provide a broader set of global public goods and to align international cooperation with economic, social and environmental goals.



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