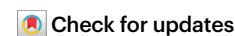


Globalizing green industrial policy through technology transfers

Benjamin H. Bradlow & Alexandros Kentikelenis



Unless the green technological transition underway in Global North countries is globalized, it will fail to reach its developmental potential. To realize the ambitions of green industrial policies in the Global North, technology transfers to the Global South are a necessary supplement to climate finance initiatives.

In just the past two years, high-income countries have made strides in devising and implementing a range of industrial policies to underpin their green transition¹. The United States has committed to a set of subsidies and incentives for businesses and consumers that are estimated to reach US\$800 billion. When including private funds that this public spending will catalyse in the calculations, actual expenditure on the green transition could reach up to \$1.7 trillion over the next decade². The European Union (EU) has also been implementing ambitious green transformation plans. Over €500 billion will come out of the EU budget in the 2020s, which is intended to catalyse additional private and public sector funding en route to the intended goal of more than €1 trillion³.

While the speed and scale of these developments are unprecedented and welcome, they remain geographically – and politically – limited: they are policies in, by and for the Global North. This is not wholly surprising, but it begs the question of whether northern-centric green industrial policies alone can meaningfully mitigate global warming, given that the majority of new greenhouse gas emissions is emerging from the Global South⁴. This is in part evidence of accelerated development in these countries, which holds the potential to improve living standards for millions.

The core challenge, then, is for Global South countries to still grow rapidly while simultaneously decarbonizing. If they are to pick up pace towards implementing development-enhancing green industrial policies, these countries will need extensive financial assistance as well as technology and knowledge transfers from the Global North. Progress on the former is lackluster, and meaningful engagement with the latter is lacking – major strides on both fronts are necessary for meeting pressing climate challenges. Unless the green technological transition underway in the Global North is globalized, its climate repercussions will be limited and its development potential will remain untapped.

Green transition policies in the Global South

The popularity of green industrial policies in the Global North reflects an understanding that, to be politically sustainable, climate policies must create conditions for a ‘just transition’. That is, they must mitigate the risk of unemployment for those working in fossil fuel sectors and create the conditions for equitable economic growth and inequality

reduction. However, this fundamental insight does not inform the Global North’s engagement with the Global South: these countries are being called on to reduce carbon emissions with limited prospects for similar domestic social bargains. The Global North’s promise of climate financing to the tune of \$100 billion annually to facilitate the green transition in the Global South was never realized. Even this commitment was remarkably low; a high-level panel has found that global climate financing needs are on the scale of \$4 trillion per year⁵.

One emerging paradigm for climate finance has been to provide limited funding to help high-emitting countries in the Global South implement decarbonization plans. This approach is exemplified by the Just Energy Transition Partnerships (JETPs). These are bespoke multilateral financing vehicles, which represent the first Global North financing commitments for carbon mitigation in the age of green industrial policy.

The first JETP was agreed between South Africa and a group consisting of the United Kingdom, the United States, the EU, Germany, the Netherlands and Denmark, in 2021. This group committed \$8.5 billion to the agreement, and, in 2022, the South African government presented an investment plan for these funds. The ensuing negotiations highlight two foundational tensions in this form of climate financing. First, priorities for carbon mitigation differ between donors and recipients. Donors want the funds to be used to wean South Africa off its coal-based power. By contrast, South Africa set out more ambitious development-focused priorities: transitioning from coal-based power while cushioning affected coal workers and communities, transitioning from the manufacture of internal combustion engine vehicles to electric vehicles and developing green hydrogen production capacity⁶.

Second, the terms of this financial support are fundamentally contested. Initially, donors sought to provide funds on market-based lending terms, while South Africa asked for concessional loans and grants instead. Ultimately, the negotiated investment plan of 2022 included a mix of market-based and concessional finance, with grants being approximately 8% (\$676 million) of the total funding. Although South Africa’s priorities were accepted by donor countries in principle, the bulk of the project-based financing announced has targeted the transition from coal-based power through a restructuring of the state-owned energy firm Eskom, and not through support for more developmental goals associated with growing electric vehicle manufacturing and ‘green’ hydrogen production. Further, the donors’ \$8.5 billion pledge is meagre compared with South Africa’s estimates that a ‘just energy transition’ (based on priorities identified in the investment plan) would cost \$97 billion over the next five years⁷.

Even so, the JETP model represents the clearest effort yet by the Global North to finance green industrial development in the Global South. Following the 27th COP meeting in 2022, further such agreements are being negotiated with other coal-reliant low- and middle-income countries, including Indonesia (with \$20 billion under negotiation), Vietnam (\$15.5 billion), India and Senegal.

Calls by the Global South to use JETP funds for developing high-technology, labour-absorbing manufacturing sectors, like electric vehicles, underscore the extent to which these nations see their position in global value chains at stake in a world of green industrial policies.

The case for North–South green technology transfers

While financial support may eventually enable some degree of decarbonization in the Global South by virtue of scaling up and reducing prices of green technologies, it will do little to enable southern nations to move up the green technology value chain through local production – the development-enhancing rationale of all industrial policies. Bilateral climate mitigation finance from the United States to countries in the Global South provides a case in point: the limited resources have for the most part been dedicated to support manufacturing and installation of one technology, solar panels⁸. But this production process is already technologically mature and integrates Global South countries at the lowest value-added segment of green technology value chains⁹. In other words, these countries largely lack the advanced manufacturing know-how to scale up the highest value-added components in the production of photovoltaic cells and panels. This undercuts the pressing need for upgrading local knowledge ecosystems for green technology manufacturing.

The greatest successes in green industrial upgrading have been achieved through building local innovation centres based on transfers of knowledge and training¹⁰. It is precisely such partnerships that have been major contributors to China's current leadership in manufacturing green technologies. In fact, these partnerships have been helpful for both Global North countries and China in developing domestic innovation ecosystems for green technologies, such as wind turbine and solar photovoltaic panel manufacturing. Importantly, the collaborative dynamics of this process across the Global North and China have been credited as a critical factor in enabling the scaling up and deployment of such technologies across the world¹¹.

For countries in the Global South to pursue a similar green industrial upgrading trajectory, they need access to technologies and knowledge to develop their own domestic ecosystems of innovation. However, technologies developed through Global North green industrial policies are tightly guarded through local production and procurement policies, thus stifling any attempts at technological diffusion and potential emergence of southern innovation ecosystems.

Rethinking intellectual property rights

To enable green technology transfers, a comprehensive rethink of the intellectual property rights regime is necessary. Given the scale of green research and development expenditure that is publicly financed or undertaken directly by public institutions in the Global North, there is even scope for northern countries to mandate making innovations available to the Global South. But such an approach faces vehement private sector opposition, as technology transfers and intellectual property rights liberalization target core profit sources of major corporations. For example, more than a decade ago, General Electric was emphasizing that green technologies are 'actionable property rights'¹².

Yet, there is good legal standing and helpful precedent in pursuing such a rethink over technology transfers and trade law. First, the World Trade Organization's Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) includes provisions intended to facilitate technology transfers to low- and middle-income countries, but there is little evidence that this is actually taking place¹³. Second, given the existential threats posed by climate change, there is also a

moral case. There are clear parallels to Global South campaigns over access to medicines: in the aftermath of struggles to increase access to life-saving pharmaceutical innovations related to HIV/AIDS, the international community ultimately bypassed objections of industry to allow and even facilitate the production of generic medications in the Global South¹⁴. In other words, both the legal framework and the moral imperative for intellectual property rights carve-outs exist. Governments of the Global North need to live up to their obligations, commitments and discourse and make strides in expanding access to green technologies.

Of course, freeing up intellectual property from stringent protections is not in itself sufficient to spur technological diffusion. The technology gap between high-income and low- and middle-income countries is also a function of gaps in skills and industrial capacities. But the implication that for these reasons any technological transfers are unlikely to be utilized or effective is a moot point. Countries in the Global South have a long track record of rapidly building up know-how and capacity in response to newly available technologies¹⁵.

A global vision for green industrial policy

The Global North's attempts to mitigate greenhouse gas emissions through industrial policies are likely to be ineffective unless they simultaneously enable an industrial transition in the Global South. To be sure, the emergence of green industrial policies in the Global North is a long overdue acknowledgement that climate policy cannot merely be focused on pricing carbon as if the industrial basis of a post-carbon economy is technologically mature¹⁶. The design of these policies, however, must reckon with Global South demands to take part in this global technological transition through the transfer of both resources and know-how. A reconsideration of intellectual property rights has to be part of such a reckoning.

Transfers of both finance and technology from the Global North to spur green industrial policy in the Global South would enable realization of the longstanding call for global sustainability made by the United Nations' Brundtland Commission nearly four decades ago: "meeting the needs of the present without compromising the ability of future generations to meet their own needs". Meeting the economic needs of those countries that have historically emitted the most greenhouse gases should not compromise the ability of the rest of the world – with the higher future emitting potential – to fully participate in a green energy transition. At present, national and regional economic policies targeting a green transition may end up deepening geopolitical divisions that prevent global solutions. Both finance and knowledge transfers to the Global South will be necessary to realize effective outcomes from the Global North's welcome embrace of green industrial policy.

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Competing interests

The authors declare no competing interests.

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