Multinationals and renewable energy: boosting innovation through foreign direct investments



Multi-technology corporations making green foreign direct investments, such as in renewable energy, increase the capacity for innovation in their own headquarters, as well as in their subsidiaries. Access to environmentally friendly knowledge pools in the global economy gives them an advantage over non-globalised companies in sustainability-oriented innovation. Based on these findings, **Vito Amendolagine**, **Rasmus Lema**, *and* **Roberta Rabellotti** *argue that deglobalisation may be detrimental to corporate innovation activities that contribute to the green transformation worldwide.*

Multinational enterprises (MNEs) can have both positive and negative effects on the global green transformation. Many MNEs are known for organising internationally to avoid environmental regulations and for using accumulated corporate power to lobby with governments and sustain outdated technologies, in effect slowing down the green transformation. For example, a recent report by InfluenceMap, a think tank, listed three large multinational enterprises – Exxon, Chevron and Toyota – as the three most obstructive organisations globally when it comes to the definition and implementation of climate policies aligned with the Paris agreement.

Some MNEs – not least the ones with vested interests in the production and consumption of fossil fuels – slow down the green transformation. However, others, such as corporations with interests in green technologies such as renewable energy, may help speed it up. Given their global reach, they may provide access to more innovative solutions that can help reduce carbon emissions. Access to environmentally friendly knowledge pools in the global economy gives them an advantage over non-globalised companies in sustainability-oriented innovation. This is what we find in a recent article focused on foreign direct investments and innovation in renewable energy.

It is perhaps not so surprising that pure environmental players specialised in renewable energy technology – such as Danish Vestas Wind Systems or Chinese Yingli Energy in the Solar Photovoltaic sector – are more innovative than firms in the same industries that do not go global. After all, it is well known that foreign direct investments tend to boost the innovativeness of firms. But it is interesting to note that large multi-technology conglomerates with green business lines – such as German Siemens, US-based General Electric or South-Korean Samsung – are subject to an overall *greening effect* at the firm level when they make foreign direct investments in renewables. In other words, foreign direct investment in renewable technology does not only strengthen innovation capacity in and around the subsidiary but also contributes to the greening of the knowledge base in the headquarter of the multi-technology conglomerates.

We derive these insights from a dataset including 1,217 green foreign direct investments (GFDIs) undertaken worldwide during the period 1997 to 2015. Sourcing information from Orbis and PATSTAT databases, we first select multinationals that already have some experience in innovative activity in renewable energy. That means that we concentrate on MNEs with one or more patents in renewable climate change mitigation technologies as defined by European Patent Office classification. We then pick up their FDI aimed at establishing or acquiring subsidiaries for the production or distribution of renewable energy technology.

This method allows for a fine-grained understanding of the patterns. First, GFDI has a positive impact on innovation (green investors apply for more renewable energy-related patents) and there is an increase in the share of green patents in the investors' patent portfolios in the first five years after the investment. Second, it matters what type of GFDI the MNE engages in with the respect to the so-called 'mode of entry'. When it establishes an entirely new subsidiary, building it from the ground up, the innovation increase becomes larger and larger year by year. Firms that make green foreign direct investments in the form of greenfield investments file more green patents (and these patents are cited more) than firms that make acquisitions of foreign green innovators. When GFDI takes the form of an acquisition of an existing company, there are only short-term effects on the MNEs innovativeness.

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Why do these findings matter – what is new? It is already well established that MNEs can play an important role in the diffusion of relevant climate change mitigation technologies, especially with the transfer of knowledge and capabilities from lead markets to the rest of the world. However, in the early stages of the green transformation, such diffusion has been undertaken mainly by pure green players working in niche environmental areas. The deeper involvement of large multinational conglomerates can facilitate scaling up these niches. Our finding that green foreign direct investments increase the overall sustainability focus of multi-technology corporations is novel. We show that green foreign direct investments increase the green specialisation of such firms. Given the fact that the world's largest and most influential manufacturers have a multi-technology nature, this insight is not trivial, and it is good news from the perspective of green transformation.

If the world's largest MNEs devote their innovative activities to making green technologies more efficient, affordable, and accessible, their contribution to the green transformation could be significant. As the knowledge base becomes greener, sustainability-focused technologies move to the centre of competitive strategy. As such, they may also begin to take the lead in progressive strategic policy engagement. In this respect, InfluenceMap 2021 has created an A-List of potential corporate leaders which includes multi-technology MNEs from our sample such as Philips, Schneider Electric, Siemens.

The impact of outward GFDI on sustainability-oriented innovation has so far been overlooked as a mechanism to support the green transformation both in the policy arena and in the international business literature.

Our findings indicate that governments should encourage and sustain firm internationalisation in environmentally friendly domains because this will help green transformations, sustaining the decarbonisation of energy systems in the specific domain of renewable energies. Multinationals are in fact already key players in producing innovation around the world: green type investments, such as those in the wind sector by the German Siemens or the US General Electric or in the solar sector by the Korean Samsung can help lead global technologies to a more sustainable direction. The potential impact on green innovation should also be accounted for in the domain of trade-related investment measures (TRIMs) under the World Trade Organisation (WTO) and in the implementation of the screening investment frameworks have that have gained momentum around the world in recent years due to rising political concern over security issues and the associated strategies of self-reliance. Deglobalisation may be detrimental to the effectiveness of corporate innovation activities that can speed up the green transformation worldwide.

- *This blog post is based on Green foreign direct investments and the deepening of capabilities for sustainable innovation in multinationals: Insights from renewable energy, Journal of Cleaner Production (2021) 310, and first appeared at LSE Business Review.*
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