

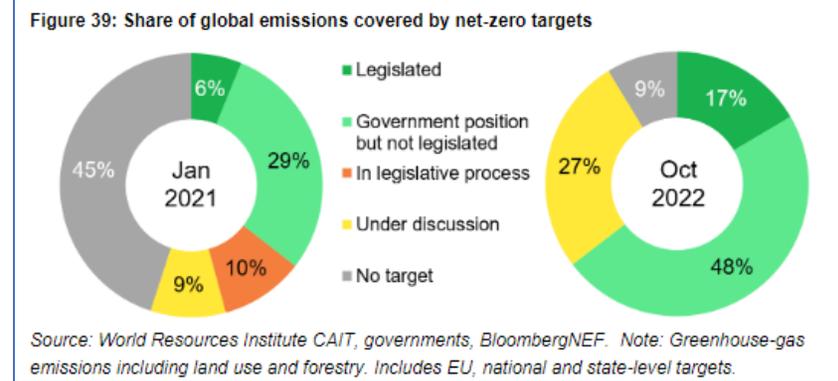
## Sustainability Rising

Sustainability affects almost every aspect of our lives, from the way we generate energy and manufacture goods to our daily purchasing decisions. More than ever, our actions as nations, businesses and individuals reflect the global movement to combat climate change and preserve our planet for future generations.

Over the past three years, several countries, including major emerging economies like China and India, have pledged to achieve net-zero emissions. BloombergNEF estimates that over 90% of global emissions are either now covered by net-zero legislation, are being discussed as part of ongoing legislation, or occur where net zero is the government’s stated policy position.<sup>1</sup>

Corporate pledges are also increasing. As of the end of 2022, more than 4,000 companies have established net-zero objectives or commitments through the Science Based Targets initiative.<sup>2</sup> Additionally, over 4,100 companies endorse the Task Force on Climate-Related Financial Disclosures, which requires them to modify their financial reporting to highlight the potential impacts of climate change on their business and opportunities for improvement.<sup>3</sup>

Sustainability and finance have also become inseparable. Global ESG assets are on track to exceed \$53 trillion by 2025, accounting for more than a third of global assets under management.<sup>4</sup> The rise of green bonds, sustainability-linked debt and other eco-conscious investment options has become central to both the global business and investment landscape.



<sup>1</sup> [BloombergNEF](#)

<sup>2</sup> [BloombergNEF](#)

<sup>3</sup> [BloombergNEF](#)

<sup>4</sup> [Bloomberg Intelligence](#)

And consumers increasingly expect businesses and brands to offer sustainable options. Some 88% of consumers feel sustainability should be considered a standard business practice, and 86% say businesses should play a role in solving challenges such as climate change.<sup>5</sup> This translates into consumer behaviour, with up to 80% of consumers saying they think about sustainability in their day-to-day purchases.<sup>6</sup>

On paper, globalisation—defined as the movement of goods, services, ideas, people and capital—has clear implications for sustainability, yet Consumers and Global Business leaders (GBLs) don't draw the connection. **Only 16% of GBLs and 25% of consumers associate globalisation with sustainability.**<sup>7</sup> Weak associations with sustainability create challenges, especially when it comes to the trade of goods and services as well as the cross-border flow of capital—areas that have a profound impact on our environment but are in need of more comprehensive policy measures.

Globalisation cannot succeed if these sustainability challenges are not addressed. The world isn't reducing greenhouse-gas emissions fast enough, which makes adapting to climate change more critical and also more difficult. As many as 3.6 billion people now live in settings that are highly vulnerable to climate change.<sup>8</sup> When it comes to addressing climate change and sustainability, it's now or never.



“If you think about achieving sustainability, with all due respect to anyone who’s a policymaker, that’s not going to come from governments of the world coming together and agreeing. That’s going to come from people and business leaders determining to take action.” --- *Davos Think Tank Participant*

“The extensive use of fossil fuels and [the pursuit of] non-sustainable growth has led to climate change and a rise in sea levels. People do not understand that we will face lot of problems if we don’t control ourselves. Globalisation is just benefitting developed nations and exploiting developing nations.” --- *Founder & Owner of a Venture Capital Firm*

<sup>5</sup> [Wunderman Thompson](#)  
<sup>6</sup> [BCG](#)  
<sup>7</sup> Bloomberg’s Research for SC  
<sup>8</sup> [IPCC](#)

## The Movement of Goods & Services

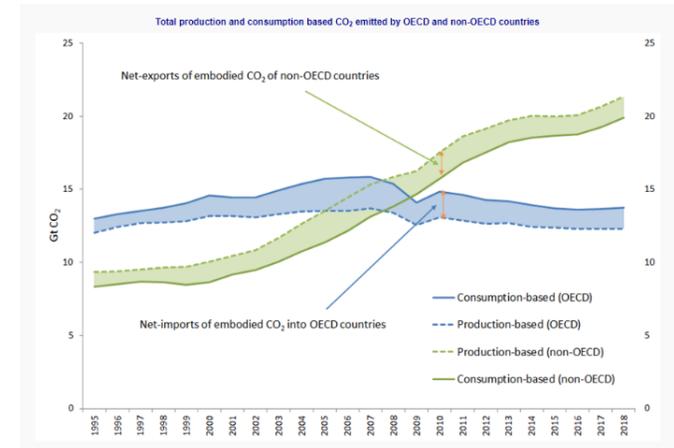
The global movement of goods and services has long been the force that powers globalisation. While international trade provides numerous opportunities for commerce and has improved the lives of millions worldwide, it also has a significant impact on the environment. According to the World Trade Organization, the global trade of goods and services accounts for 20-30% of global greenhouse gas (GHG) emissions.<sup>9</sup>

Therein lies a challenge: **50% GBLs and 43% of Consumers believe countries should support the movement of goods and services regardless of how it impacts sustainability.**<sup>10</sup> Without their support, it will prove more difficult to address global trade emissions through policy.

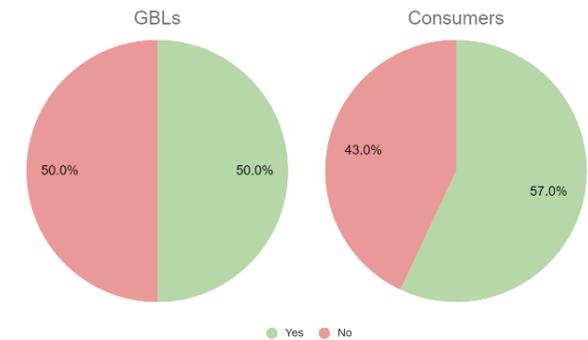
Before proceeding, it is crucial to grasp how the WTO calculates trade emissions and its implications for governments, businesses, and consumers. The WTO's emissions assessments use carbon emissions accounting, which considers both direct and indirect GHG emissions embedded in a product or service. Direct emissions refer to the final production, assembly, packaging, and transportation to the market or consumers. Indirect emissions are generated by the production and transportation of the inputs utilised to produce the final product or service, including electricity generation used during production.

The main determinants of GHG emissions embedded in trade include (1) the size of the economy; (2) the sectoral composition of trade flows; (3) the emergence of global value chains; (4) transportation; and (5) the energy efficiency of the production systems.

GHG emissions embedded in trade vary among economies, partly due to differences in their sizes. Developed economies, for instance, are generally net importers of GHG emissions, while developing and commodity-dependent economies are typically net exporters of GHG emissions. Nevertheless, the transfer of international carbon emissions from developed to developing countries has decreased in recent years, primarily due to improvements in energy efficiency.



Countries should keep sustainability in mind when supporting the movement of goods and services



<sup>9</sup> [WTO](#)

<sup>10</sup> Bloomberg's Research for SC

**BREAKOUT BOX (To be placed on the side): Emissions Embedded in a Chocolate Bar:** It's easy to underestimate the emissions embedded in a simple product like chocolate, for which average global consumption is estimated at [0.9 kg per capita per year](#).

Indirect emissions arise from producing and transporting key inputs like cocoa, milk, sugar, and lecithin. This includes the land used to cultivate cocoa, the land used to rear cows, the energy used to grind cocoa, and the transportation of pre- and post-processed inputs, among others. Direct emissions come from the chocolatier using energy to transform the ingredients into chocolate, as well as packing the chocolate and transporting it to markets and consumers.

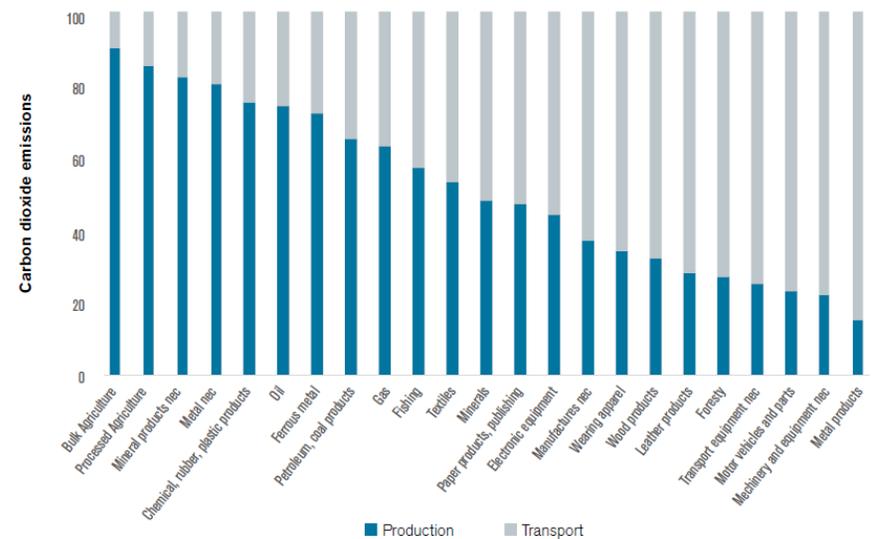
An average 40-gram bar of milk chocolate has a carbon footprint of around [200 grams](#), while the same quantity of dark chocolate has a carbon footprint closer to 300 grams (owing to the extra cacao content).

More than 75% of the GHG emissions embedded in international trade stem from a few sectors, including energy and transportation.<sup>11</sup> In various industries and economies, transportation-related emissions make up a larger share of total GHG emissions than production. The transportation used also significantly affects emissions, which is often influenced by the type of goods and services being traded and the geographical locations of trading partners.

What can we do? One study invites us to weigh the economic and environmental impact of international trade altogether. The study found that trade increases global CO<sub>2</sub> emissions by 5%, yielding an environmental cost of \$34 billion.<sup>12</sup> However, it pegs the global economic gains from international trade at \$5.5 trillion, noting the smallest gains from trade exceed the biggest environmental costs at a country level.

While international trade results in greenhouse gas (GHG) emissions, it clearly promotes welfare by supporting economic growth, reducing prices, enhancing consumer choice and product diversity, and tackling climate change through greater trade in climate-friendly goods, services and technologies.

Figure 4: The share of transport-related carbon emissions differs significantly across sectors



Source: Transport emission intensity from Cristea et al (2013); bilateral trade flows for year 2017 from the Global Trade Analysis Project (GTAP).

“Countries still need to make policy changes around good trade and investment policy reforms, and to protect the environment. I think there's an added need for them because being part of sustainable supply chains is going to increasingly be part of competitiveness. So, they must have a good climate and development plan.” --- Singapore Think Tank Participant

<sup>11</sup> [WTO](#)

<sup>12</sup> [American Economic Journal](#)

Better policy at the national, industry, and corporate levels could be beneficial. GHG emissions are global externalities, and in the absence of international cooperation, individual countries' adoption of climate policies is expected to be sub-optimal from a global standpoint. Policy initiatives and technological advancements in environmental and energy efficiency can decrease GHG emissions linked with the production and transportation of international trade. In this regard, trade can help disseminate green technologies and enhance carbon efficiency.

To address emissions associated with the international transportation of goods, a greater emphasis is needed on sustainable fuels and promoting more carbon-efficient modes of transportation. The International Air Travel Association, for instance, plans for the global air transport industry to achieve net-zero carbon emissions by 2050 using sustainable aviation fuels, new aircraft technologies and zero-emissions energy sources.<sup>13</sup> While other industries have similar plans, there's still a lot of room for decarbonisation initiatives.

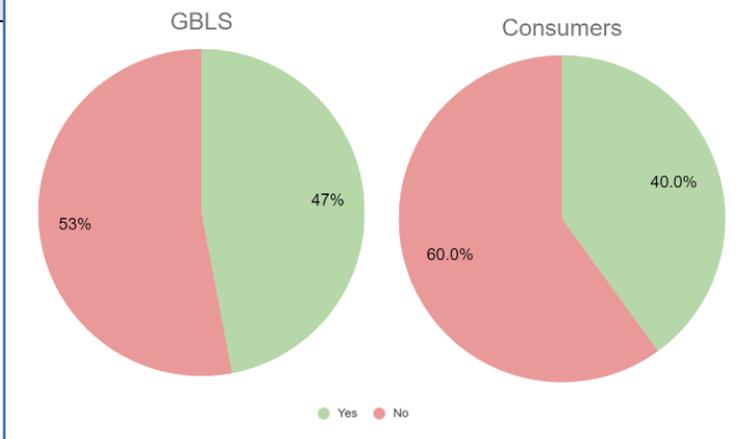
### The Movement of Capital

Foreign Direct Investment (FDI) plays a critical role in international economic integration. It's an important channel for the transfer of technology, promotes international trade and often spurs economic development. **More than half of the GBLS and Consumers we surveyed agree.**

In 2021, global Foreign Direct Investment (FDI) flows bounced back to pre-pandemic levels, totalling \$1.6 trillion.<sup>14</sup> Cross-border deals and international project finance were particularly strong. Although this development is encouraging for the worldwide economy, FDI has implications for GHG emissions. Here, two conflicting hypotheses emerge.

"Globalisation has led to the deterioration of weather patterns. The change in climate and weather patterns, the analysis of soil, the production of soil and the ground as far as animals are concerned are facing problems. There's only one area that seems to be given a lot of focus, which is carbon emission. There are products that are being brought to help with carbon emission. What about the other sectors such as agriculture? This needs attention and is a cause of concern. --- GM of Informati

FDI has been instrumental in the growth and development of my country's economy



"Globalisation has an impact on climate change. Initiatives put in place to reduce carbon emissions are only felt in developing nations... the impact is not being quantified like in developing nations." --- Vice President of a Food Servicing Firm

<sup>13</sup> [IATA](#)

<sup>14</sup> [UNCTAD](#)

The *pollution haven hypothesis* posits that trade and FDI lead to the relocation of polluting industries from high-income countries to low and middle-income countries with less stringent environmental regulations, resulting in a rise in GHG emissions in host countries.

The *pollution halo hypothesis* suggests that, via trade and FDI, multinational corporations introduce cleaner, greener and more sustainable technologies to developing countries, such as renewables and decarbonisation solutions.

Which is correct? It's complicated. A study of EU countries shows FDI increases emissions in European countries with below-average GDP per capita and decreases emissions in countries with above-average GDP per capita.<sup>15</sup> The difference reflects both policy and the technological aspect of FDI—for instance, investments in clean tech vs brown tech.

Another aspect of FDI flows that impacts the environment is the type of investment activity: whether investors are constructing new operations in an eco-friendly manner or merely transferring existing operations while continuing to harm the environment.

“We have to look at the green transition of the net-zero carbon future not only from the greener / cleaner perspective but also with the aim of making it reliable / affordable so the social and economic angles stand... for me security is also sustainability, right, it's sustainable development, it's how you think about the macro-economic with socio-economic angles and dimensions of sustainability. So, how are we going to transition into a world where we are going to come together and multi-solve and not just solve for the energy crisis of today or the longer-term transition to net zero.” ---  
*Singapore Think Tank Participant*

**BREAKOUT BOX (To be placed on the side):** Africa – Pollution Haven or Halo? ||| [A study](#) analysing data collected across 41 African countries from 2005 to 2019 concludes that FDI can contribute to both rising and falling CO2 levels, depending on the investor's objectives.

For example, in 2020, Dutch social impact investment firm Oikocredit [invested €1 million](#) in African Clean Energy (ACE) to expand its operations in Uganda. ACE offers pay-as-you-go-enabled solar-biomass hybrid cooking stoves that can charge mobile phones and provide light while using 50-85% less fuel when cooking, potentially reducing GHG emissions in Uganda.

By contrast, several of the world's largest automakers have moved some of their operations to Africa to produce high-end goods at lower prices, using conventional technologies that generate energy from coal, oil and natural gas. While such investments create jobs and stimulate the economy, they also increase emissions, taking a toll on both the environment and public health.

Studies show that, over time, the carbon intensity of gross fixed capital formation—using FDI to build new plants or equipment—has declined, primarily due to lower carbon intensity in the electricity, gas, and water industry across most nations.<sup>16</sup>

Carbon emissions stemming from the regular operations of Multinational Enterprises (MNEs) exceed those linked with their capital formation. Although FDI can boost the size of economic activity in the host country, enhance export diversification and bring about

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<sup>15</sup> [Energies](#)

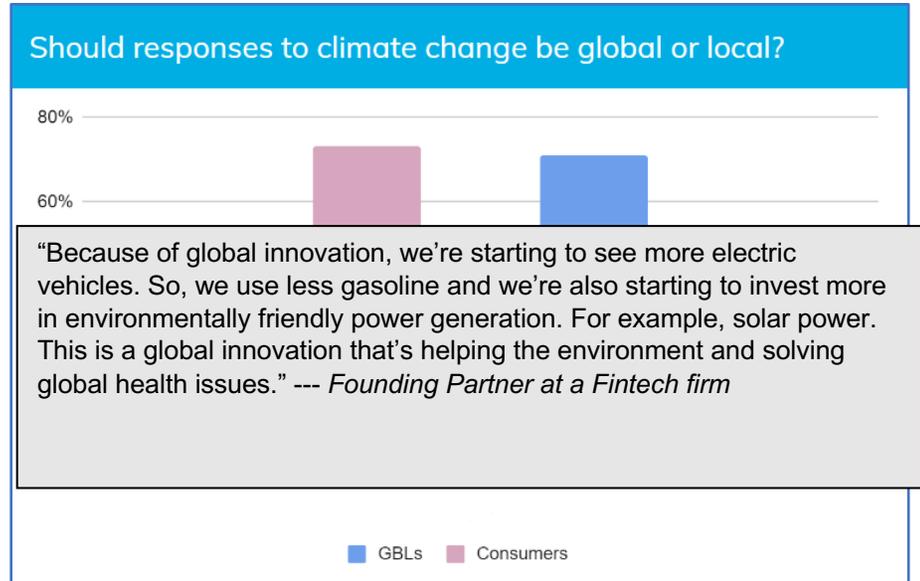
<sup>16</sup> [IMF](#)

structural changes by introducing new industries, the production activities of MNEs also produce carbon emissions in the host economy.<sup>17</sup> At the industry level, manufacturing, transportation and storage, and electricity, gas, and water had the highest overall emissions and emission intensities.

In both instances, the impact is closely related to the level of development of the host country. As with the EU study, an investigation into FDI flows and CO<sub>2</sub> emissions in G20 countries from 1996 to 2018 suggests that as an economy achieves a higher income level, the expense of environmental governance decreases, causing the public to become more concerned about environmental quality and encouraging the country to adopt more eco-friendly FDI policies and initiatives.<sup>18</sup>

Studies suggest that stronger global policy initiatives from both host countries and investors are the way forward. Therein lies tension. **Our research shows that 71% of GBLs believe responses to climate change should be local initiatives. By contrast, 73% of Consumers believe responses to climate change should be global initiatives.**

To make globalisation work, we must strive for global alignment and stronger policies. The OECD recommends four policy principles to improve the effect of FDI on GHG emissions:<sup>19</sup> (1) provide strategic guidance and foster policy coherence and coordination on investment and climate action; (2) ensure that domestic and international investment regulations are aligned with and reinforce national climate objectives, including commitments under the Paris Agreement; (3) stimulate investment and build technical capabilities related to low-carbon technologies, services and infrastructure; (4) tackle information gaps and administrative barriers that reduce the competitiveness of low-carbon investments.



“Because of global innovation, we’re starting to see more electric vehicles. So, we use less gasoline and we’re also starting to invest more in environmentally friendly power generation. For example, solar power. This is a global innovation that’s helping the environment and solving global health issues.” --- *Founding Partner at a Fintech firm*

“We hear a lot in Australia about the views of the Pacific nations in relation to climate change. They are not a part of this globalisation conversation, yet their only solution to stopping the drastic effects of climate change happening right now is globalisation, being part of a global solution and being part of leaders working collectively.” --- *Singapore Think Tank Participant*

<sup>17</sup> [IMF](#)

<sup>18</sup> [Energy Policy](#)

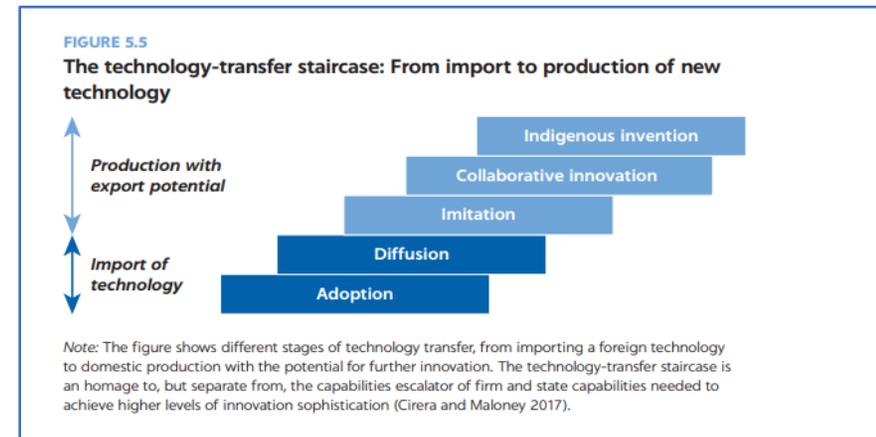
<sup>19</sup> [OECD](#)

## The Movement of Knowledge and Technology

While international trade and FDI sometimes increase GHG emissions in emerging markets, they also facilitate the dissemination of low-carbon technologies, such as solar panels and wind turbines, as well as the transfer of the technical knowledge and competencies required to operate them.

A successful low-carbon technology transfer requires that the host country gains the ability to deploy, operate, maintain, adapt, improve and replicate the transferred technology.<sup>20</sup> Eventually, it should also gain the capacity to develop new technologies. The World Bank represents the stages of this process as a "technology-transfer staircase." These stages reflect the import of foreign technologies, the adjustment of these technologies to suit the local context and the development of new technologies within the country.

The international trade of low-carbon technologies has been ongoing for quite some time. In fact, low-carbon technologies constituted roughly 4% of global trade in 2016.<sup>21</sup> And their growth rate has surpassed that of global



<sup>20</sup> [World Bank](#)

<sup>21</sup> [World Bank](#)

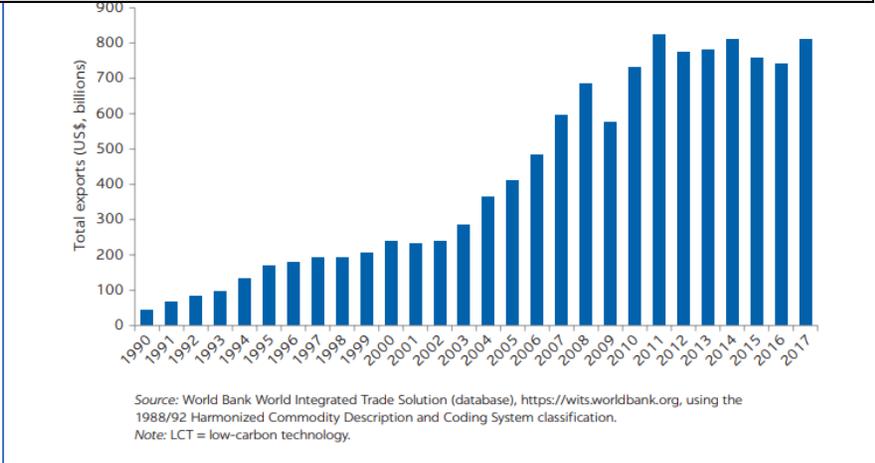
trade in recent years. From 1990-2016, low-carbon technology exports experienced a compound annual growth rate of 11.1%, exceeding the growth rate of total exports.<sup>22</sup>

FDI is another critical channel for technology transfer to developing countries. According to the UNCTAD, this entails the transfer of technologies, practices or products by MNEs to host countries, through FDI and non-equity MNE participation, such that their own and related operations and the use of their products and services generate significantly lower GHG emissions than would otherwise be the case.<sup>23</sup> Low-carbon foreign investment also includes FDI undertaken to acquire or access low-carbon technologies, processes and products.

The most accurate way to measure FDI into low-carbon technologies is to focus on renewable energy investments. FDI flows to renewable projects reached record highs over the past few years as developments in hydrogen and offshore wind dramatically increased the sector's capital intensity. In the first seven months of 2022, investors announced 327 projects worth \$132 billion.<sup>24</sup>

According to the World Bank's analysis of patent data from 75 countries, restrictive trade and FDI policies discourage technology transfer.<sup>25</sup> However, non-tariff barriers, such as import quotas, tend to increase technology transfer by promoting interactions between firms and foreign markets through FDI. Similarly, subsidies that incentivise

“Taking knowledge and learning from overseas, and then adapting that to a local product, service or company is the best of both worlds. You will ultimately get a much better outcome than just trying to recreate the wheel by thinking about it yourself in a closed space and trying to decide to do something locally that most likely won't work.” --- *Founder of a Venture Capital Firm*



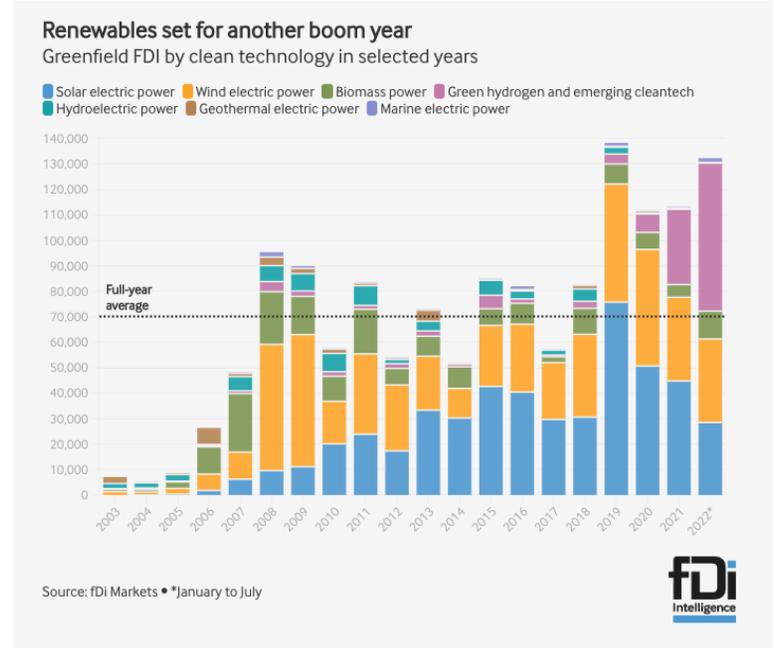
<sup>22</sup> [World Bank](#)

<sup>23</sup> [UNCTAD](#)

<sup>24</sup> [FDI Intelligence](#)

<sup>25</sup> [World Bank](#)

foreign companies to enter the domestic market have a comparable effect. Conversely, restrictions on the movement of capital and people have a significant negative effect on the transfer of low-carbon technology patents by both high-income and developing nations.



**BREAKOUT BOX (To be placed on the side): Technology Transfer in Motion:** Vietnam's wind power industry is gaining momentum, with onshore and nearshore wind set to lead [renewable capacity additions](#) by adding 7.2-9.7 GW of new capacity between 2022 and 2025. Moreover, the country's plans to develop offshore wind have already piqued the interest of many international developers.

In March 2021, the Asian Development Bank (ADB), Export Finance of Australia (EFA), Japan International Cooperation Agency (JICA), and members of Power Construction JSC No.1 (PCC1) [signed a \\$173 million green loan](#) to develop the 144MW Lotus Onshore Wind Power Project. At the time of signing, it was the largest wind power project in Vietnam to be project-financed by international lenders.

The Lotus Onshore Wind Power Project involves the construction, development, and operation of three wind farms and their associated transmission facilities in Quang Tri Province, with each farm having a 48 MW capacity. PCC1 and Japanese renewable energy developer Renova formed special purpose holding companies to carry out the projects.

Renova had been searching for investment opportunities in Vietnam for two years. The Lotus Onshore Wind Power Project provided the perfect opportunity for the company to bring its renewable technology and technical know-how to the country and marks a significant milestone for Vietnam's rapidly expanding wind power industry.

While our research shows that only 10% of GBLs and 53.5% of Consumers are optimistic about the implementation of climate change solutions globally, we must strive towards greater collaboration to make globalisation work.

In the energy and climate space, governments worldwide implement policies to advance environmental, industrial and security objectives simultaneously. Policies shaping innovation in climate-related technologies can drive climate mitigation policy, yielding additional benefits such as competitiveness, improved health and distributional impacts.

Regional and national factors influence policy, and the diverse trajectories of innovation, so local needs and purposes must be considered while crafting international policies to foster the global transition to increased sustainability.

According to the Intergovernmental Panel on Climate Change, the effectiveness and sustainable development benefits of technology sharing under market conditions are mainly determined by technology complexity, local capabilities and the policy regime.<sup>26</sup> Therefore, developing planning and innovation capabilities is essential, particularly in emerging markets. Thus, we need to do a better job of reflecting this in policies around international trade and FDI for globalisation to succeed.

