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## International policy trends and practices

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Green entrepreneurship is quickly rising up policy agendas across OECD countries, building on the momentum created by the recent COP26 meeting and the opportunities created for green policies through COVID-19 recovery packages. Governments in OECD countries tend to promote and support green entrepreneurship through two main channels, namely direct support packages for entrepreneurs as well as policies and measures that create demand for green products and services. This chapter presents a brief overview of these different potential policy actions and describes how they are implemented in OECD countries.

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## Highlights

### Green entrepreneurship policy

- Governments typically use a combination of different types of policies and schemes to promote and support green entrepreneurship. These include measures that seek to build a demand for green solutions, as well as direct support measures for entrepreneurs.
- Overall, policies and schemes for green entrepreneurship are still in their infancy. Most governments have developed green entrepreneurship supports by adapting instruments used for supporting innovation and entrepreneurship more generally.
- Little is known about the effectiveness of green entrepreneurship support measures but some success factors can be identified from leading international cases, such as building funding pipelines, fostering networks and engaging the private sector.
- Non-government actors can also play an important role in supporting green entrepreneurship. This includes wealthy individual donors who support green projects, as well as cluster and industry organisations that support green innovation and specialised community organisations that offer training or other support services.

### Direct support for green entrepreneurs

- One main area of policy intervention is to support the development of green skills among entrepreneurs and help eco-innovators commercialise their work. Some small-scale training programmes have been implemented across OECD countries, but an emerging approach is to provide integrated support packages through dedicated cleantech or climate tech incubator and accelerator programmes. However, there is still only a very small number of such specialised incubator programmes.
- Improving access to finance is another critical area for policy intervention given the greater risks and longer time to market for green innovations. Governments are using a range of debt, equity and hybrid instruments to support green entrepreneurs, often managed through public financial institutions.

### Building demand for green solutions

- Governments have made many high-level commitments to move towards a more sustainable economic model. This includes high-level policy frameworks such as the United Nations' Sustainable Development Goals, as well as economic plans such as the European Union's Green Deal. The commitments and plans guide new policy development and help shift social attitudes to create new opportunities for green entrepreneurs. Both of these are critical for creating favourable conditions for green entrepreneurship.
- Another important area of policy work is supporting the development of the circular economy. While there are some examples of national-level policy action, the majority of initiatives (e.g. training, match-making) are driven by local governments.
- Governments are also starting to use green procurement to open up new market opportunities for green entrepreneurs.

## Direct supports for green entrepreneurs

### ***Supporting the development of green skills***

Entrepreneurs use a wide range of skills in the process of starting and running their business. These include both the workforce skills required of employees (i.e. to “do the job”) as well as additional skills that reflect the demands of running a business (e.g. identifying opportunities, financial literacy). Green entrepreneurs often also need an additional set of “green” competences. While there is no generally accepted definition of green skills, they can be considered as the skills needed to adapt products, services and processes to climate change and the related environmental requirements and regulations (OECD/Cedefop, 2014<sup>[1]</sup>). Some recent data-driven research has gone further in defining different occupational characteristics needed by workers in green jobs. On average, workers in green jobs use more intensively high-level cognitive and interpersonal skills compared to those in non-green jobs. The work content of green jobs is also less routinised, on average, than that of non-green jobs (Consoli et al., 2016<sup>[2]</sup>).

Governments across the OECD have increased the number of training schemes to support workers in transitioning to green jobs, but “green” entrepreneurship training continues to be quite rare. In addition to training for the circular economy that have been already noted, there have been some short-lived small-scaled schemes in countries such as Canada and Spain. Traditionally green entrepreneurship training schemes have focused on technical skills needed in the trades, often offered in partnership with industry associations, or on green finance. A notable exception is the Green Entrepreneurship Network (*Red Empreverde*) in Spain (Fundación Biodiversidad, 2022<sup>[3]</sup>), which is a platform that was launched by the Biodiversity Foundation (*Fundación Biodiversidad*), a public foundation supported by the National Ministry of Environment and Rural and Marine Development. The network provides support to entrepreneurs and business owners through 1) drafting or redefining business plans; 2) bringing investors and entrepreneurs together; and 3) providing training and technical assistance. It also organises competitions to encourage quality projects while financially supporting some of the most promising initiatives. An increasingly common approach to supporting the development of green skills among entrepreneurs is through dedicated business incubator and accelerator programmes (see next section).

### ***Delivering support packages through green incubators and accelerators***

Business incubator and accelerator programmes have been used widely in the United States to support start-ups and early-stage businesses and they are increasingly appearing in other OECD countries. These programmes typically provide a combination of training, individualised coaching and advisory services, access to networks, investors or markets, and traditionally a workspace and shared facilities and equipment. Governments are active in directly offering business incubator and accelerator programmes, and providing financial support to initiatives that are operated by private sector actors.

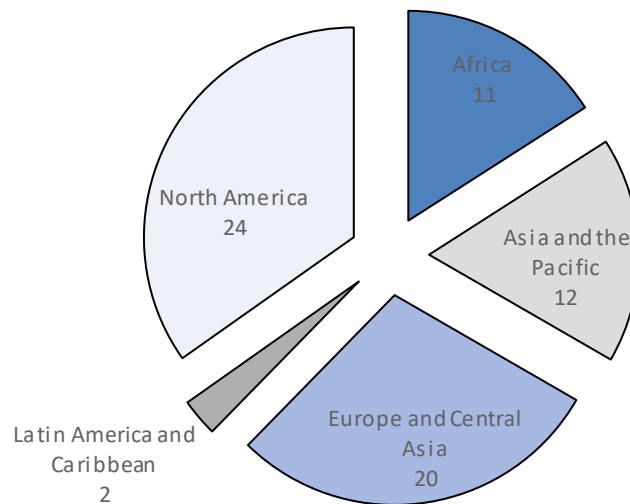
Estimates from 2017 suggest that there are approximately 2 000 technology incubators and 150 accelerator programmes worldwide, but fewer than 70 specialise in climate technologies (United Nations, 2018<sup>[4]</sup>). Given the potential benefits of such programmes and high profile success stories such as Climate KIC Europe, it is not clear why so few focus on climate technologies. Two potential factors include the long development time needed for climate technologies, which discourages investors, as well as reluctance among entrepreneurs to be identified as cleantech (Climate-KIC, 2014<sup>[5]</sup>).

Business incubator and accelerator programmes for climate technologies have both advantages and disadvantages. The main advantage is that incubator programmes are often well-linked to universities and science parks, offering a strong potential to stimulate the commercialisation of new climate innovations and technologies. In addition, there appear to be two recent trends in business incubation that can improve the support offered to start-ups. These are the growing focus by incubators on specific sectors as well as


the emphasis on strengthening international networks to help entrepreneurs reach new markets. However, traditional business incubator and accelerator models typically needed to be tailored for start-ups based on high-risk projects such as climate technologies.

### Figure 3.1. There are fewer than 100 climate technology incubators worldwide

Number of climate technology incubator and accelerator programmes, 2017



Source: (United Nations, 2018<sup>[4]</sup>)

StatLink  <https://stat.link/9f7tk6>

### **Facilitating access to green and sustainable finance**

Access to finance is a challenge for nearly all entrepreneurs. Green entrepreneurs are often among those who face the greatest obstacles, especially those working in new technologies. Climate technologies have higher uncertainties and costs than other technologies, such as software or medical (United Nations, 2018<sup>[4]</sup>). These obstacles often stem from a higher risk-return profile since green entrepreneurs' business models (e.g. low carbon innovations) can have long and uncertain development horizons.

A primary barrier faced by green entrepreneurs is the information asymmetry between lender and entrepreneur. In addition, there is often a limited range of sustainable financing products and an insufficient diversity of lenders with appetite for sustainable investments (McDaniels and Robins, 2017<sup>[6]</sup>). Furthermore, green start-ups typically rely largely on intangible assets, for example intellectual capital. Despite the large contribution that these intangible assets have on their growth and profitability of the firm (OECD, 2018<sup>[7]</sup>), they are often not recognised by lenders as acceptable collateral in exchange for debt financing. This, in combination with the long time horizon over which green start-ups become profitable, increases the need for more financing options for different stages of the firm's life cycle, and thus is a rationale for policy intervention.

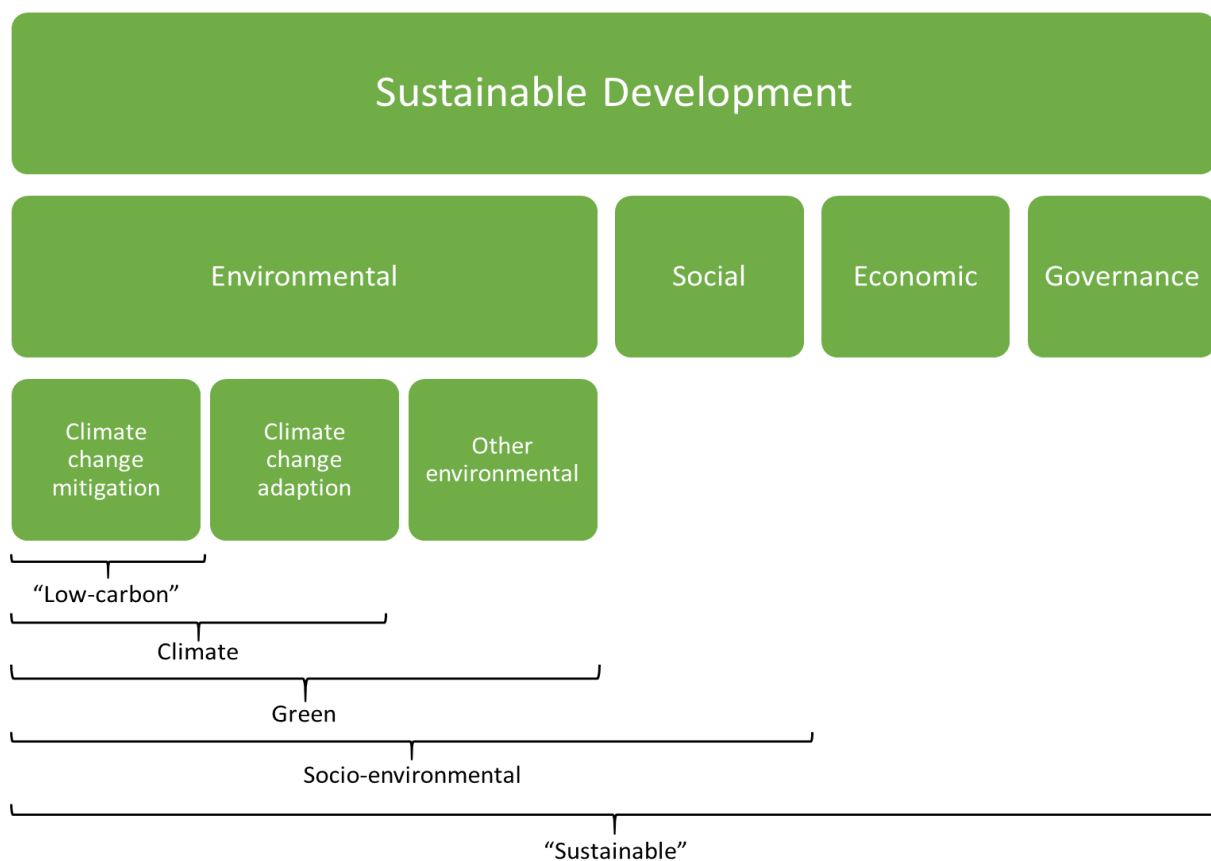
Another challenge faced by green start-ups is that they commonly serve new markets, which can deter lenders and investors given the large uncertainty surrounding potential returns given the unpredictability of future demand. Furthermore, the "niche" nature of green markets can contribute to a limited supply of finance options as: 1) investors and entrepreneurs might share different environmental objectives and ideals; 2) investors and entrepreneurs can have different levels of knowledge about green market; and 3) investors might perceive that green business have additional financial burdens, in addition to greater

uncertainty and longer time horizons (OECD, 2013<sup>[8]</sup>). Indeed, there can be a large incompatibility between investor expectations regarding time horizons and the time green businesses take to develop and enter the market. For example, eco-innovations require a period of 5 to 10 years from product development to market breakthrough, while venture capital firms normally aim to exit from investment in 2 to 3 years (OECD, 2013<sup>[8]</sup>).

These challenges have led governments, lenders and investors to respond with new financial products, commonly referred to as green or sustainable finance. Sometimes these terms are used interchangeably given the strong linkages between the two, but they are not the same (Figure 3.2). The term “greening finance” adds further potential for confusion:

- *Sustainable finance* is a broader concept that incorporates the three aspects of sustainable development – economic, social, and environmental factors – into finance. Thus, it incorporates ESG (Environmental, Social and Governance) principles to evaluate companies and investments.
- *Green finance* is a subset of the wider sustainable finance category. It refers to the capital that funds projects that tackle climate and environmental problems, e.g. financing actions towards resource efficiency, sustainable agriculture, forestry, and waste and water management to address problems such as pollution, biodiversity loss, and climate change, more generally.
- *Greening finance* focuses on improving the management of financial risk related to climate and the environment (European Parliament, 2021<sup>[9]</sup>). This involves capital provided to companies that manage environmental risks more successfully, and thus are perceived as more environmentally friendly companies (European Commission, 2017<sup>[10]</sup>).

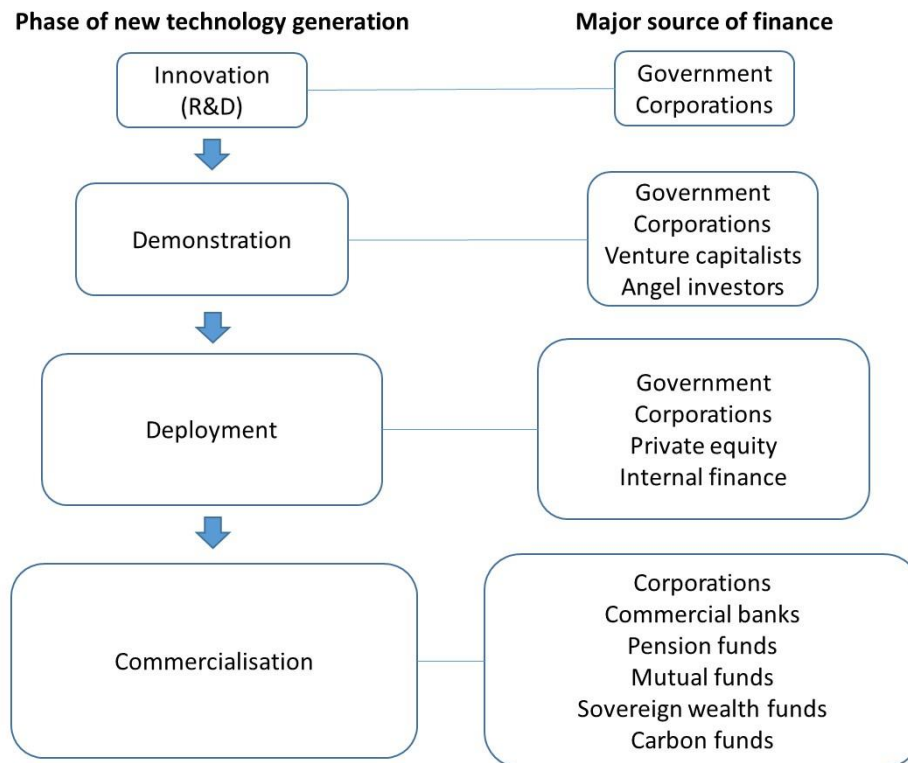
**Figure 3.2. Links between sustainable and green finance**



Source: (UNEP, 2016<sup>[11]</sup>)

Green entrepreneurs often access financing from different sources at different stages of development (Figure 3.3). Early-stage innovation projects, notably climate technologies, typically rely on government funding or investment from large corporations. Governments can support early-stage projects directly (e.g. university research, subsidised R&D projects) and indirectly (e.g. providing financial support to networks, funding specialised training) (GFC, 2017<sup>[12]</sup>). Subsequently, as researchers and entrepreneurs begin to develop prototypes, private investment becomes important. Technology-based start-ups typically depend on venture capital (Bocken, 2015<sup>[13]</sup>) but business angel investment and more recently crowdfunding can also be important sources of funding (Wallmeroth, Wirtz and Groh, 2018<sup>[14]</sup>).

**Figure 3.3. Sources of funding for climate technologies**



Source: (United Nations, 2018<sup>[4]</sup>)

There are several important actors in financial markets for green entrepreneurs:

- Public sector and supranational regulators:** Governments at the national and supranational level have a critical role in setting the regulatory framework that sets the conditions for sustainable and green finance. This includes the EU's Green Taxonomy Regulation, which contains six environmental objectives: 1) climate change mitigation; 2) climate change adaptation; 3) the sustainable use and protection of water and marine resources; 4) the transition to a circular economy; 5) pollution prevention and control; and 6) the protection and restoration of biodiversity and ecosystem. In addition, the taxonomy sets three conditions that an economic activity has to meet to be considered as environmentally sustainable and thus it helps all actors transition to the EU's environmental objectives (European Commission, 2020<sup>[15]</sup>).
- Public Financial Institutions (PFIs):** PFIs have a multi-faceted role in supporting green entrepreneurs through direct lending and investment, which can allocate capital to projects deemed too risky for private markets. They can also help to mobilise private capital through co-investment schemes and provide non-financial support to green entrepreneurs. For example, the European

Investment Bank (EIB) recently invested EUR 250 million in impact loans offered by Rabobank in the Netherlands to support sustainable entrepreneurs under favourable conditions (EIB, 2021<sup>[16]</sup>). Public banks are increasingly being mobilised to contribute to governments' sustainability and environmental goals.

In addition, COVID-19 recovery packages in many OECD countries expand sustainability and green financing for entrepreneurs (OECD, 2021<sup>[17]</sup>). For example, in the UK, GBP 11 million (EUR 13.2 million) was deployed in February 2021 to fund entrepreneurs through the Energy Entrepreneurs Fund (Gov.UK, 2021<sup>[18]</sup>).

- **Risk capital:** Equity investments are an important source of funding for green entrepreneurs. Many consider venture capital to be the most suitable form of finance for green start-ups but being green does not appear to increase the chances of receiving investments (Mrkajic, Murtinu and Scalera, 2017<sup>[19]</sup>). Although venture capital funding for climate technology declined in the United States in the first half of the 2010s (Gaddy et al., 2017<sup>[20]</sup>), there are signs that the global market has picked up in recent years. Industry estimates suggest that about USD 222 billion have been invested in climate tech between 2013 and the first half of 2021 and that year-over-year investment has grown 210% over this period (PWC, 2022<sup>[21]</sup>). Furthermore, the latest survey on venture capital funds and business angels (BA) by the European Investment Fund suggests that approximately 7 in 10 venture capital funds incorporate ESG criteria into their assessments, while 6 in 10 business angels do the same (EIF, 2020<sup>[22]</sup>). This shows a growing sensibility to sustainable and green finance in this market.
- **Debt markets:** The role of debt markets in the green financing arena has grown since the issuance of the first green bond by the EIB and the World Bank in 2007. Since then, the cumulative issuance of the global green bond market reached USD 754 billion as of 2019, with 5 931 deals (Climate Bonds Initiative, 2019<sup>[23]</sup>).
- **Impact investors:** Impact investing is an investment strategy seeking to generate positive and measurable environmental and social impacts while gaining financial returns (EIF, 2020<sup>[22]</sup>). One of the most important priorities for impact investors is to tackle environmental challenges. Impact investors are an important potential source of early-stage funding for green entrepreneurs because they can provide debt, equity or equity hybrid financing that is adapted to the entrepreneurs' needs (UfM Secretariat, 2018<sup>[24]</sup>).
- **Fintech:** Fintech companies have emerged as a new source of funding for entrepreneurs, including for green projects. The emergence of technologies such as Blockchain, Machine Learning, the "Internet of things" (IoT) and Artificial Intelligence hold potential for creating opportunities for a more inclusive and decentralised financial system (UNEP, 2016<sup>[25]</sup>), but it must be recognised that there are also risks that this will focus capital flows to profit maximising activities.
- **Online alternative markets:** Crowdfunding and peer lending platforms have created new markets where entrepreneurs can access debt and equity. Data suggest that the number of alternative lenders that offer green investment opportunities is increasing. For example, the UK is becoming an important hub for green crowdfunding as green investing expands (Peer2Peer, 2020<sup>[26]</sup>).

### ***Using public-private partnership models to create opportunities***

Public-private sector collaborations hold great potential for leveraging the strengths of a range of actors to create new opportunities for green entrepreneurs. In practice, several different approaches can be taken. In the Netherlands, for example, the Netherlands Enterprise Agency operates the Green Deal, which funds initiatives that accelerate the transition towards a more sustainable economy. It is a joint initiative by the Dutch Ministries of Economic Affairs and Climate Policy, Infrastructure and Water Management, the Interior and Kingdom Relations, and Agriculture, Nature and Food Quality. Green Deals are a form of funding agreement that finance coalitions of private sector actors, civil society organisations and local and regional

government. Deals typically last for about two to three years and focus on one or more of the following themes: energy, food, water, bio-based economy, biodiversity, circular economy, mobility, climate and construction. An evaluation of the 201 green deals agreed between 2011 and 2016 found positive impacts of the individually funded activities as well as a decrease in many structural barriers that accelerated green innovation more broadly (Green Deal, 2017<sup>[27]</sup>).

Another approach that is used in OECD countries is to facilitate collaborations through innovation labs. This model typically provides a combination of business incubation support with a strong emphasis on facilitating collaborations between government, sector organisations, large firms, researchers and entrepreneurs to identify challenges and potential solutions. Often, sector organisations and large firms have a role in identifying challenges that researchers and entrepreneurs seek to address. Innovation labs are often organised by sector and there is a strong focus on supporting sectors in becoming more green. The results of innovation labs can be positive (see Israel case study in Chapter 4) but there is a strong risk that large firms use these types of arrangements to externalise their own innovation operations. This calls for close monitoring of activities by government.

### ***Increasing diversity in entrepreneurship through green entrepreneurship policy***

Green entrepreneurship is key in facilitating the transition to a more sustainable economy. It is well documented that many groups, including women, young people and immigrants, are under-represented in entrepreneurship (OECD/European Commission, 2021<sup>[28]</sup>). Raising participation among these groups can be an effective way of supporting green entrepreneurship. Some under-represented groups have a particularly high level of concern regarding environmental issues, and may therefore have a greater propensity to engage in green entrepreneurial ventures if they are empowered to do so. For instance, in the Spring 2021 edition of the European Commission's Eurobarometer, 24% of those 15-24 years old listed the environment and climate change among the top two issues facing their country. This compares to a figure of 15% among those 40-54 years old.

Policy makers are taking steps to tap into the potential of young people in the field of green entrepreneurship. An example of this is the EU's Erasmus Plus programme, which has a project on entrepreneurship, youth and the environment. This project seeks to provide young people with the tools and skills necessary to start a green business, through the development of an e-learning platform and handbook and the identification of role models. Meanwhile, the Green Youth Network in South Africa provides entrepreneurship training to young people in order to assist them in entering the green economy.

### ***Implementing local public initiatives***

Local governments also have a strong role in promoting and supporting green entrepreneurship. Many green entrepreneurship projects are supported by cities in their move towards becoming more smart and sustainable. Cities and metropolitan areas drive economic growth, as they contribute to about 60% of global GDP, but they also account for about 70% of global carbon emissions and over 60% of resource use. Many cities are adopting ambitious targets. For instance, Prague has a commitment to reduce CO<sub>2</sub> emissions by 45% until 2030 and become CO<sub>2</sub> neutral by 2050. To reach these goals, the city developed strategies to improve its environment. These entailed tree planting activities, organising green events, fostering a circular economy and boosting sustainable mobility, thus creating opportunities for green entrepreneurs.

Local initiatives are often funded and supported by national governments and international initiatives. This includes direct support as well as other incentives for cities, including international recognition. For example, the European Commission launched the European Green Capital Award (EGCA) to reward local efforts to improve the environment. EGCA is given yearly to a particular European city. Previous winners



include Stockholm, Hamburg, Vitoria-Gasteiz, Nantes, Copenhagen, Bristol, Ljubljana, Essen, Nijmegen, Oslo, Lisbon, Lahti and Grenoble.

### ***The role of non-government actors***

In addition to governments, the private and non-government sectors have a strong role in supporting green entrepreneurs. Many global companies and foundations partner with green entrepreneurs in working towards sustainability objectives. For example, the Ellen MacArthur Foundation funds innovative ideas and start-ups that contribute to growing the circular economy. Meanwhile, the World Wide Fund for Nature (WWF) works with entrepreneurs, corporations and individual citizens in a range of projects aimed at reducing CO<sub>2</sub> emissions.

Corporate and individual philanthropists are also a growing source of support for green entrepreneurs. At the UN COP21 conference, the so-called “Mission Innovation” was born, aimed at accelerating the Clean Energy Revolution. One of its many initiatives, also supported by Bill Gates and other investors, is “Breakthrough Energy”, which finances innovations that may contribute to reaching a world with net-zero emissions. More recently, Jeff Bezos launched the Bezos Earth Fund, which is designed to combat the effects of climate change by issuing grants to scientists, activists and other organisations in their efforts to preserve the environment. The fund announced 16 initial recipients of support, who will receive USD 791 million of funding.

## **Building demand for green solutions**

### ***Political commitments to shift social attitudes***

Governments have collectively made a number of political commitments at various levels to signal the need to change the way that societies operate in order to mitigate the risks of climate change. These high-level objectives also seek to guide future policy development and shift social attitudes, which are critical for creating favourable conditions for green entrepreneurship (Domańska, Żukowska and Zajkowski, 2018<sup>[29]</sup>). One of the overarching guiding frameworks is the United Nations’ (UN) Sustainable Development Goals (SDGs). The 2030 Agenda for Sustainable Development, adopted by all of the UN Member States in 2015, provides a shared blueprint for policy development. At its core are the agreed 17 SDGs, with 169 associated targets, which are integrated and indivisible, and represent an urgent call for action. Several of the SDGs’ commitments are directly related to tackling climate change, strengthening environmental policies and developing a more sustainable planet. Accomplishing these objectives will require strong engagements from citizens, governments and non-government actors, including contributions from green entrepreneurs and corresponding public policies to facilitate this.

At the European level, the new European Green Deal was introduced to guide the EU towards becoming the world’s first climate-neutral continent. The European Green Deal includes a set of new measures to reduce net GHG emissions by at least 55% by 2030 relative to 1990 levels. These include the development of the first European Climate Law; the extension of the Emissions Trading System to cover the maritime sector and reduce the free allowances allocated to airlines over time; the introduction of a Carbon Border Tax; the definition and deployment of a strategy for green financing; the adoption of a Sustainable Europe Investment Plan; and the creation of a Just Transition Fund to ensure that certain groups are not left behind. The European Commission presented its plan to implement the Green Deal in July 2021 and many of these measures are expected to contribute to the promotion of green entrepreneurship through the creation of new markets and opportunities.

This is supported by a number of more specific action plans such as the EU Circular Economy Action Plan. The action plan aims to make sustainable products the norm in the EU. It targets how products are designed, promotes circular economy processes, encourages sustainable consumption, and aims to

ensure that waste is prevented and that consumed resources are kept in the EU economy for as long as possible (European Commission, 2020<sub>[30]</sub>). The plan outlines 35 actions with an initial focus on sectors that use the most resources and where there is a high potential for circularity such as electronics and ICT, batteries and vehicles, packaging, plastics, textiles, construction and buildings, food, water and nutrients.

Another important initiative led by the President of the European Commission is the New European Bauhaus. This is an interdisciplinary initiative to make the Green Deal a positive, “touchable” experience. It is intended to facilitate the exchange of knowledge and to create interdisciplinary projects to build towards a sustainable future. The New European Bauhaus aims to shape societal thinking, behaviours, and markets around new ways of living and building, including also public procurement. Many of the actions supported through this initiative will stimulate green entrepreneurship.

Many OECD countries have adopted national action plans to work towards achieving sustainability goals. In the US, for example, a range of executive actions have been taken to promote and support clean energy, build modern and sustainable infrastructure and re-establish the President’s Council of Advisors on Science and Technology. Similarly, most OECD countries have defined strong national sustainability agendas.

### ***Developing new economic models such as the circular economy***

New economic models such as the circular economy hold potential for generating positive impacts on the environment and creating new opportunities for entrepreneurs. The circular economy is based on three core principles: 1) design out waste and pollution; 2) keep products and materials in use; and 3) regenerate natural systems (OECD, 2020<sub>[31]</sub>). This economic model can have an important role in achieving environmental policy objectives by increasing the share of renewable energy and recyclable resources and reducing the use of raw materials, energy, water and land. Some estimates suggest that the circular economy could be worth as much as USD 700 billion in consumer good material savings globally (OECD, 2020<sub>[31]</sub>). There are clear opportunities here for green entrepreneurs to bring new products and processes to market. Many activities in the circular economy are labour intensive, so there is also substantial job creation potential attached to it.

Government support to green entrepreneurs in the circular economy is slowly growing, notably by facilitating access to finance. The most common approaches used by governments are the provision of loans and grants. In the EU, the EIB offers loans for large-scale projects and guarantee mechanisms for smaller projects to access financing through local banks. The European Fund for Strategic Investments also offers several financing instruments that support green entrepreneurs in circular economy projects such as InnovFin, which was launched in co-operation with the European Commission under Horizon 2020. It offers support under thematic financing initiatives until the end of 2022.

A number of national and regional governments offer financial support for circular economy projects. This includes loan schemes such as “*ICF EcoVerde*”, which is offered through Catalonia’s Finance Institute (*Institut Català de Finances*). Grants are also used by national and local governments, including for example the Finnish Ministry of Economic Affairs and Employment and the municipality of Valladolid, Spain. However, grant schemes tend to support circular economy projects broadly (e.g. education programmes for children, business associations) rather than supporting green entrepreneurs in business creation. Another financial instrument that governments can use is revolving funds, which allow for revenues to be reinvested in new projects. For example, the city of Amsterdam in Netherlands invested EUR 30 million in more than 65 projects related to climate, sustainability and air quality through the Amsterdam Climate and Energy Fund (ACEF) and the Sustainability Fund (OECD, 2020<sub>[31]</sub>). There are some examples of governments providing growth capital to green entrepreneurs in the circular economy so that they can scale their businesses. In the UK, the London Waste and Recycling Board operates a growth fund called the Circular Economy Business Support Programme, which supports SMEs in scaling their business.

Another important tool for governments in supporting green entrepreneurs in the circular economy is regulation. Several governments are using sector-specific regulations to remove restrictions on the use of recycled materials. This includes, for example, the easing of restrictions in the wind energy sector in the Netherlands in 2017 that prevented the reuse of plastic turbine blades. This plastic can now be used as an input in the car and ship industry (Ministry of Economic Affairs, 2017<sup>[32]</sup>; OECD, 2020<sup>[33]</sup>).

Many governments across the OECD are increasing awareness of the circular economy among entrepreneurs and SMEs. Common approaches include communication campaigns, notably through dedicated websites and events. Short training schemes for entrepreneurs are another tool used to raise awareness. These are commonly organised by local governments (e.g. Public Waste Agency of Flanders, Belgium) and chambers of commerce (e.g. Glasgow Chamber of Commerce, UK). A less common approach is to use ambassadors that promote the circular economy in companies, sector organisations and local authorities. This approach is adopted by the London Waste and Recycling Board in the UK (OECD, 2020<sup>[31]</sup>).

A critical tool used in many countries, including the Netherlands and Israel, is to create networks for material chains to help entrepreneurs identify opportunities. For example, in Tilburg, Netherlands, a network for the textile sector aims to facilitate exchanges between entrepreneurs, producers, retailers, educational institutes, local governments and banks. It is key to share experiences across experts in each sector (e.g. tourism, construction, waste, etc.) to have a better understanding of what can be done, where the gaps exist and how these can be overcome. A similar but slightly different approach is to create marketplaces for recycled materials. For example, the city of Austin, United States, operates a secondary materials marketplace where businesses can acquire recycled materials.

### ***Expanding green public procurement***

Governments are starting to use public procurement as a tool for creating green markets and supporting green entrepreneurs. The European Commission has defined green public procurement as "a process whereby public authorities seek to procure goods, services and works with a reduced environmental impact throughout their life cycle when compared to goods, services and works with the same primary function that would otherwise be procured" (European Commission, 2008<sup>[34]</sup>).

Green public procurement holds great potential for supporting green entrepreneurs. Public authorities spend approximately EUR 1.8 trillion annually, representing about 14% of the EU's GDP (European Commission, 2021<sup>[35]</sup>). For example, CO<sub>2</sub> emissions would be cut by 15 million tonnes per year if the whole EU adopted the same environmental criteria for lighting and office equipment as the City of Turku, Finland, which reduces electricity consumption by 50%. In addition to directly purchasing goods and services that reduce environmental impacts, governments can also influence markets through procurement. For example, public authorities can create incentives for entrepreneurs and industry to develop green technologies and products. This is particularly true in sectors such as public transportation and construction and health services, where public authorities account for the majority of purchases.

Despite the myriad of benefits of green procurement, governments continue to face a range of barriers to expanding the use of green procurement. These barriers include low levels of awareness among public authorities and a lack of political support. One of the main challenges is that public procurement typically uses cost as a dominant criterion for awarding contracts and green procurement is perceived as increasing costs. Moreover, public authorities often lack practical tools to implement environmental criteria in procurement processes and legal expertise to define environmental criteria.

A specific tool that some governments are using to facilitate green public procurement is eco-labelling. The use of eco-labels helps public authorities specify the technical needs of the products and services being purchased and verify compliance with these requirements. The use of third-party verification can also reduce time in assessing bids and boost the credibility of these processes. The EU is actively supporting

national and regional authorities in green procurement by providing technical support and providing practical tools such as the Buying Green Handbook (European Commission, 2016<sup>[36]</sup>).

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