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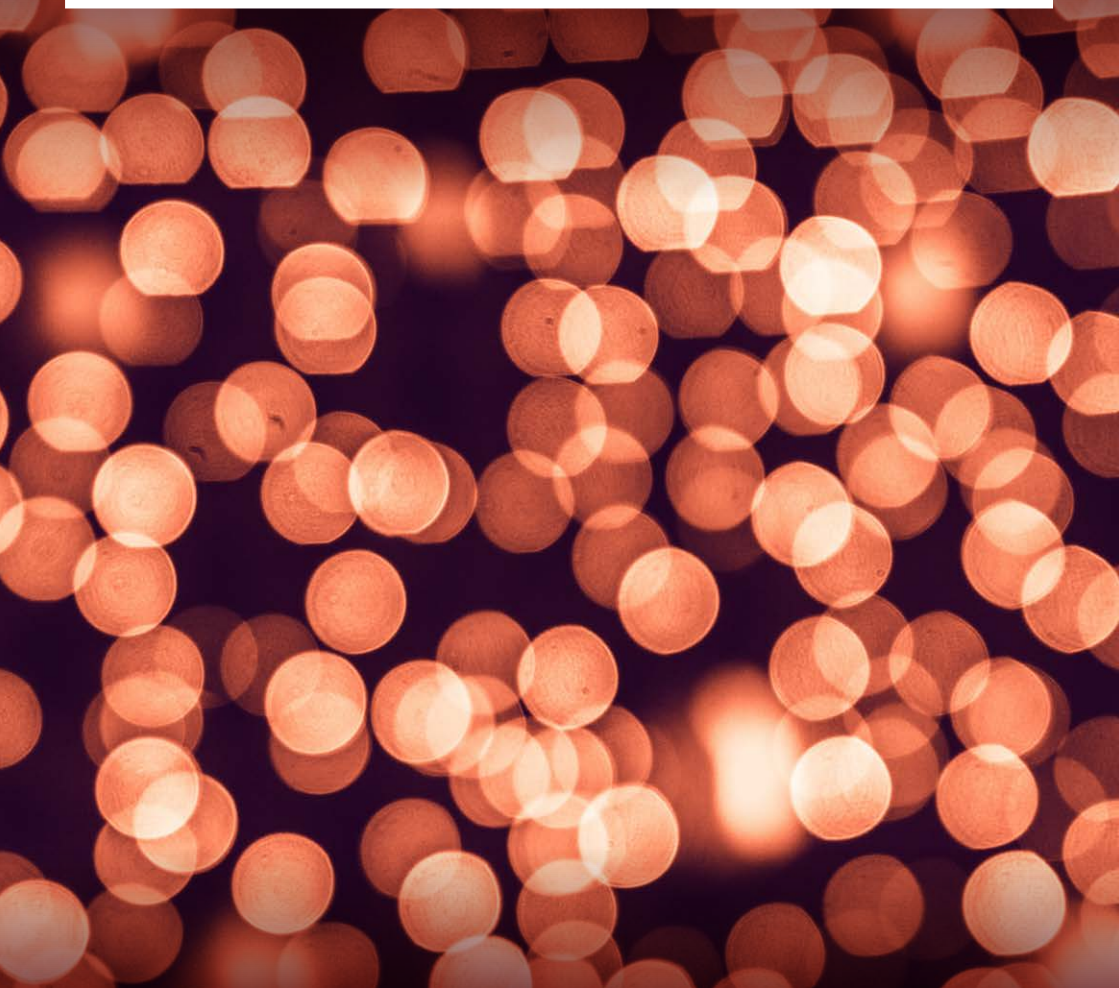


Catalysing Finance for Incubators and Accelerators

Addressing Climate Change Through Innovation

EXECUTIVE SUMMARY

- Innovation is crucial for implementing the Paris Agreement and achieving the Sustainable Development Goals.
- Incubators and accelerators can reduce the risk, enhance the impact and speed up the technology innovation process. They do this by building the capacity of entrepreneurs and connecting them to markets, finance and other key innovation actors.
- However, incubators and accelerators face many challenges to success, especially for supporting the innovation of climate technologies in developing countries. For instance, incubators and accelerators struggle to perform effectively if the supporting environment (the entrepreneurial ecosystem) is weak. Furthermore, incubators and accelerators face challenges in becoming financially self-sufficient. Finally, the incubator and accelerator model is often based on that used in Silicon Valley, which may not be effective in a developing country context.
- Key findings related to international public finance and strengthening climate technology incubators and accelerators in developing countries:
    1. A strong entrepreneurial ecosystem unlocks financing for incubators and accelerators;
    2. Crowding in private finance helps to transform ideas into solutions;
    3. New incubation models should aim for financial sustainability.

INTRODUCTION

Innovation is the process by which new ideas are developed to respond to societal, environmental and economic needs. By generating new products, services, businesses, organizational models and behavioural changes, innovation speeds up and scales up national efforts to address climate change. It is key to implementing the Paris Agreement and achieving the Sustainable Development Goals. Historically, small enterprises have played an important role in technological innovation, often leading to the introduction of paradigm-shifting technologies and changes in the way we live. However, they face many challenges in maturing to a point where they can survive and have positive social, environmental and economic impacts. They often have weak entrepreneurial support systems, fragmented linkages to climate technology markets and a lack of finance for entrepreneurial activities. These challenges are exacerbated in developing countries.

Incubators and accelerators play an important role in addressing these challenges by providing vital support to start-ups, small firms and entrepreneurs. They reduce risk, helping entrepreneurs to transform inventions into technologies that meet societal needs. They act as local intermediary institutions, strengthening the national ecosystem that nurtures entrepreneurship and the growth of small businesses. They facilitate linkages between entrepreneurs, other innovation actors and potential markets of suppliers and buyers, leading to the development of products that are marketable and enhance welfare. They also help entrepreneurs to connect with sources of finance, providing them with the means to innovate. Incubators and accelerators thus play an important and multidimensional role in supporting new climate-resilient and low-emission technologies to be developed, accepted and used by society. Ultimately, they have the potential to catalyse the development of more sustainable and inclusive societies.

OVERVIEW

This brief, prepared by the Technology Executive Committee, the Climate Technology Centre and Network and the Green Climate Fund, identifies ways to catalyse finance for climate technology incubators and accelerators in developing countries. It aims to inform the Green Climate Fund as it develops terms of reference for a request for proposals on climate technology incubators and accelerators for consideration by its Board. It also aims to inform other financiers and policymakers on opportunities for catalysing financing in this area. It is based on the outputs of a thematic dialogue on incubators and accelerators held in March 2018. It also draws upon an extensive literature review undertaken by these bodies.

The three bodies note that enhancing the effectiveness of climate technology entrepreneurial efforts, including through incubators and accelerators, is complex and multifaceted and goes beyond financial interventions. Depending on the country context, there are many diverse actions that can be taken to increase the chance of success. A more holistic consideration of the issue can be found in a detailed report prepared by the three bodies, available at www.unfccc.int/ttclear/incubators. Furthermore, the Technology Executive Committee is developing a complementary policy brief on strengthening climate technology entrepreneurship (to be published in late 2018).

INCUBATORS AND ACCELERATORS

While no strict definition exists of either, an **incubator** is any sort of environment designed to support start-up organizations (Malek et al., 2014). It generally offers the following services to an entrepreneur: (1) a physical location; (2) business services; (3) marketing services; (4) technical services; (5) financial support (by linking the entrepreneur to sources of finance and investment); and (6) networking and information services. Generally, an incubator will support an entrepreneur for more than a year, and often for up to five years. The concept of the incubator originated in the early 1950s in the United States.

The **accelerator** is a more recent phenomenon. Arising in the mid-2000s in the Silicon Valley, the accelerator aims to speed up successful venture creation by providing specific support services during an intensive programme of limited duration (Pauwels et al., 2016). An accelerator operates by offering mentoring, peer review and skills transfer over a three- to six-month period to entrepreneurs in exchange for taking a small percentage shareholding in the resulting venture (Mian et al., 2016). Accelerators are often privately owned and financed and have traditionally focused on the IT sector.

There are estimated to be around 2,000 technology incubators and 150 accelerators worldwide. However, fewer than 70 are estimated to be climate technology incubators and accelerators, and just 25 of the 70 are in developing countries (UNFCCC, 2018b). Some of the climate technology incubators and accelerators around the world include the European Union's Climate-KIC, the World Bank's Climate Innovation Centers (in countries such as Ghana, Kenya and Viet Nam) and the Global Cleantech Innovation Programme, run by the United Nations Industrial Development Organization and the Global Environment Facility.

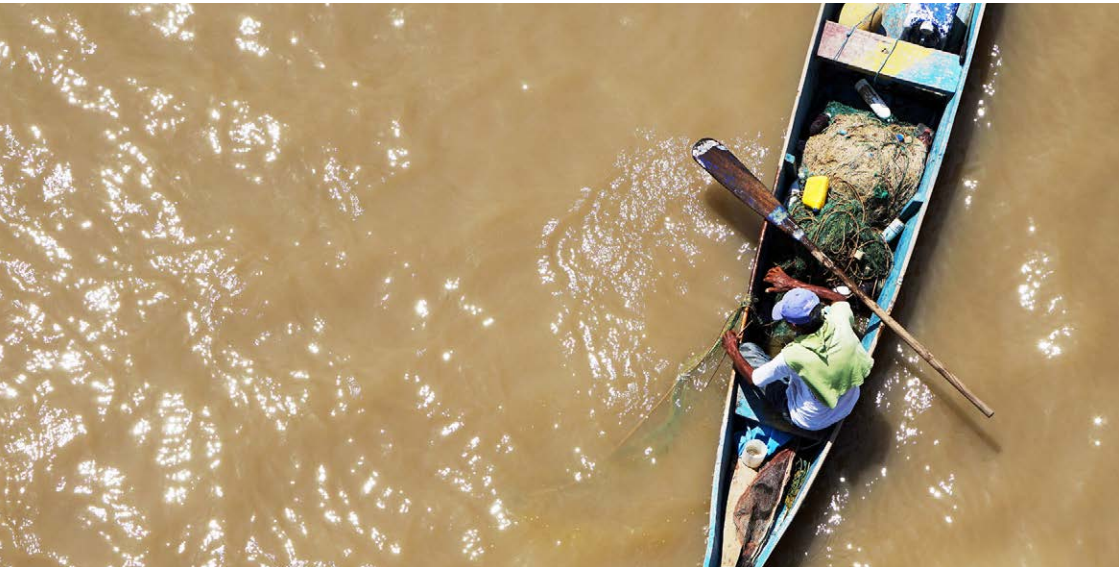
KEY FINDINGS

Based on the work undertaken together, the Technology Executive Committee, the Climate Technology Centre and Network, and the Green Climate Fund highlight the following key findings on financing for strengthening climate technology incubators and accelerators in developing countries.

1 A strong entrepreneurial ecosystem unlocks financing for incubators and accelerators

The entrepreneurial ecosystem is the supporting environment – the system of institutions, actors and linkages – in which entrepreneurs are embedded as they innovate. The system underpins and facilitates their activities and provides them with incentives, training, finance, networks and other kinds of support. A sound entrepreneurial ecosystem is fundamental for sustained entrepreneurial success, but strengthening it requires wide-ranging actions. Such systems in developing countries are often weak, underdeveloped and underperforming, affecting an entrepreneur's ability to innovate effectively. In such a context, incubators and accelerators also face significant difficulties in performing effectively.

Supporting a developing country in building and strengthening its entrepreneurial ecosystem enhances the effectiveness of its national innovation process and increases an entrepreneur's ability to innovate effectively. A strong ecosystem also unlocks finance, as it strengthens linkages between the private sector and entrepreneurs, and fosters greater awareness and capacity on both the supply and demand side. It also promote strong networks, opening up demand and delivery channels for climate technology solutions. While an ecosystem goes beyond providing support for climate technology, it is necessary for successful innovation.



Actions

There is a need to support developing countries in increasing their readiness for climate technology innovation. Actions include supporting a developing country to:

- Update national development and innovation strategies and align them with nationally determined contributions and national adaptation plans;
- Implement policies, standards, regulations and financial instruments that build markets and provide incentives for climate technology entrepreneurship in accordance with the above strategies;
- Facilitate private sector participation by undertaking business environment regulatory reform that increases the ease of doing business;
- Coordinate national entrepreneurial ecosystem activities and support related coordinating institutions;
- Deepen and broaden the pool of entrepreneurs through education and incentives (e.g. social protection that enables entrepreneurs to take risks);
- Strengthen the adaptive capacity of innovation actors through training and education programmes, including the professionals that manage incubators and accelerators;
- Increase and enhance access to the necessary infrastructure (e.g. IT connectivity);
- Strengthen and provide incentives for the development of enhanced linkages between the different actors in the ecosystem, including small and large firms, universities and government;
- Connect the national ecosystem to other national, regional and global ecosystems for accessing ideas, networks, knowledge and scaling opportunities (e.g. trade and investment policies);
- Encourage market development and stimulate demand by:
  - » Strengthening linkages between incubators/accelerators and private sector financing;
  - » Facilitating mission-based government procurement for climate technologies (noting that a credible process and a long-term focus are key to success on this). This may be especially relevant for climate technologies that are not commercially profitable on a broad scale;
  - » Incentivizing behavioural change, including through education and awareness-raising activities.

2 Crowding in private finance helps to transform ideas into solutions

Enhanced provision of public and private financing for climate technology entrepreneurship is greatly needed. It would enlarge the pool of entrepreneurs and facilitate the development, scaling up and market penetration of climate technology solutions that replace high-emitting and non-resilient incumbents. Globally, private funding for investment in the development and demonstration of climate technologies is scarce. And this is most pronounced in developing countries. There is a multitude of reasons for this.

Firstly, climate technologies can take a long time to mature and are often capital intensive. It can take more than 10 years for such a technology to reach profitability at scale. For this reason, most investors don't want to lock in an investment in such a sector when other low-capital alternatives exist that could provide quicker returns. Secondly, technology development is inherently risky. Learning from failure is an important part of innovation as entrepreneurs push technology and market limits in search of new solutions. While such risk is not unique to climate technologies, it compounds the challenges faced in climate technology innovation. This high risk makes such investment unattractive to many investors. In developed countries, venture capitalists and angel investors have filled this gap, but in developing countries this has not generally occurred. Thirdly, entrepreneurs in developing countries, especially those from the poorest communities, often face challenges in accessing low-cost capital. Fourthly, uncertainty in implementing climate policies that shape the markets for climate technologies leads to uncertainty of the benefits of undertaking related entrepreneurship.

Together, these reasons highlight why entrepreneurs in developing countries have limited access to capital for the development and demonstration of climate technologies. They particularly lack access to non-dilutive low-cost capital and financial instruments that they could use to leverage loans and private capital. And this is particularly the case for low-income entrepreneurs. Public funding and effective financial instruments are crucial as many developing countries have little or no venture capital. Enhanced provision of suitable public and private financing for such efforts is greatly needed. Care will need to be taken in designing such financial instruments, however, as subsidized bank loans can put pressure on entrepreneurs to generate cash flow earlier than desired and thus inhibit the innovation process.

Actions

There is a need to support developing countries in crowding in private finance, thus increasing access to finance for entrepreneurs. Actions include supporting a developing country to:

- Develop financial instruments that reduce the risk and opportunity cost for local public and private financial institutions to invest in the development and demonstration of climate technologies. For public institutions, such products might underwrite the risks of local bank loans by providing performance guarantees, driving down the interest rate for entrepreneurs and the buyers of the technology. For private institutions, products might crowd in private financiers with expertise in technology investment. Products might include first-loss tranches and blended finance, especially for the broader diffusion of a technology;
- Facilitate the provision of 'patient' capital with long payback periods for climate technology start-ups with high capital expenditure;
- Facilitate access to foreign exchange for entrepreneurs to purchase technologies not available in local markets that they need for developing their solution on an economically viable scale;
- Educate investors (such as angel investors and venture capitalists) on the nature of climate technology development (e.g. long payback times, type of market demand and broader benefits and returns);
- Educate public funders on how private investors think about investments.

3 New incubation models should aim for financial sustainability

Most current incubators and accelerators are not financially self-sufficient. It is estimated that fewer than five accelerators worldwide support themselves on revenue generated from equity in their successes. Generally, incubators and accelerators support themselves via a variety of sources. These include the government, international sponsorship, private investment and revenue from equity. Each incubator or accelerator will use a different combination, but for those in developing countries typically the first two sources are prevalent, which means they often remain dependent upon continued public support. The incubators and accelerators that support themselves are often part of a seed fund, consulting company or think tank that offers incubation as one of its services.

Furthermore, current incubator and accelerator models might not be the best fit for developing countries. For instance, the current accelerator model is based on supporting start-ups in ICT in the Silicon Valley, which has one of the strongest entrepreneurial ecosystems in the world. This model might need to evolve to effectively support climate technologies, with regard to both time scale and types of financing. The current accelerator model, generally a short three- to six-month burst of entrepreneurial support with the aim of achieving venture capital at the end, might not lend itself to climate technology development in developing countries. The model might also need to evolve to respond to challenging local market conditions in developing countries. Here entrepreneurs often encounter a lack of local manufacturing capability and weak integration into global value chains. Furthermore, the model might need to evolve to support the development of climate technologies that have limited (or no) commercial profitability but may play an important role in addressing climate change. Thus, incubators and accelerators in developing countries need to work, think and operate contextually.

To address these challenges, new models of incubators and accelerators are arising in developing countries. For instance, in order to address the need for financial sustainability, new incubators and accelerators are being co-created by public and private financial institutions with a value proposition for a broader range of actors. To address market challenges, new models are evolving that focus on creating linkages with supply chains and markets for the products. In this way, they are taking on the role of a market incubator, working to support not only technology development but also the connection of technology solutions to market users. Finally, new models are considering incubators and accelerators as local intermediary institutions that contribute to strengthening the entrepreneurial ecosystem within which they exist. If designed correctly, these new models could have a significant and long-lasting effect on climate technology innovation efforts.

Actions

There is a need to support developing countries in developing sustainable and impactful climate technology incubators and accelerators. Actions include:

- Supporting the international community in piloting new incubator and accelerator models for developing country contexts. Such models might take into greater account the diverse needs of entrepreneurs and technology users in relation to differing cultural contexts, local communities, income levels and gender considerations. They might focus on being an effective local intermediary institution that plays a leadership, coordination and advocacy role for developing the entrepreneurial ecosystem. They could also focus on market incubation, working to connect entrepreneurs to local and cross-border markets for supply and demand;
- Supporting the strengthening of global networks for learning, mentoring and exchanging good practices on climate technology incubators and accelerators in developing countries;
- Supporting a developing country to introduce incentives that encourage well-functioning existing incubators and accelerators to expand into climate technology markets instead of establishing new incubators;
- Encouraging the creation of multi-country incubators and accelerators that draw on a larger pool of entrepreneurs, financial providers, supply chains and potential markets. Encourage their co-creation with the participation of public and private financiers.

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More Information

This is a summary of the joint work of the Technology Executive Committee, the Climate Technology Centre and Network and the Green Climate Fund. It focuses on how to effectively finance climate technology incubators and accelerators. It should be noted that strengthening climate technology incubators and accelerators goes beyond finance and requires consideration of other aspects such as technology policy and human capacity. A more holistic consideration of the issue can be found in a detailed report prepared by the three bodies, available at www.unfccc.int/ttclear/incubators. Furthermore, the Technology Executive Committee is developing a complementary policy brief on strengthening climate technology entrepreneurship (to be published in late 2018). For further information, contact: tec@unfccc.int.

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Unless otherwise noted, this brief is based on:

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