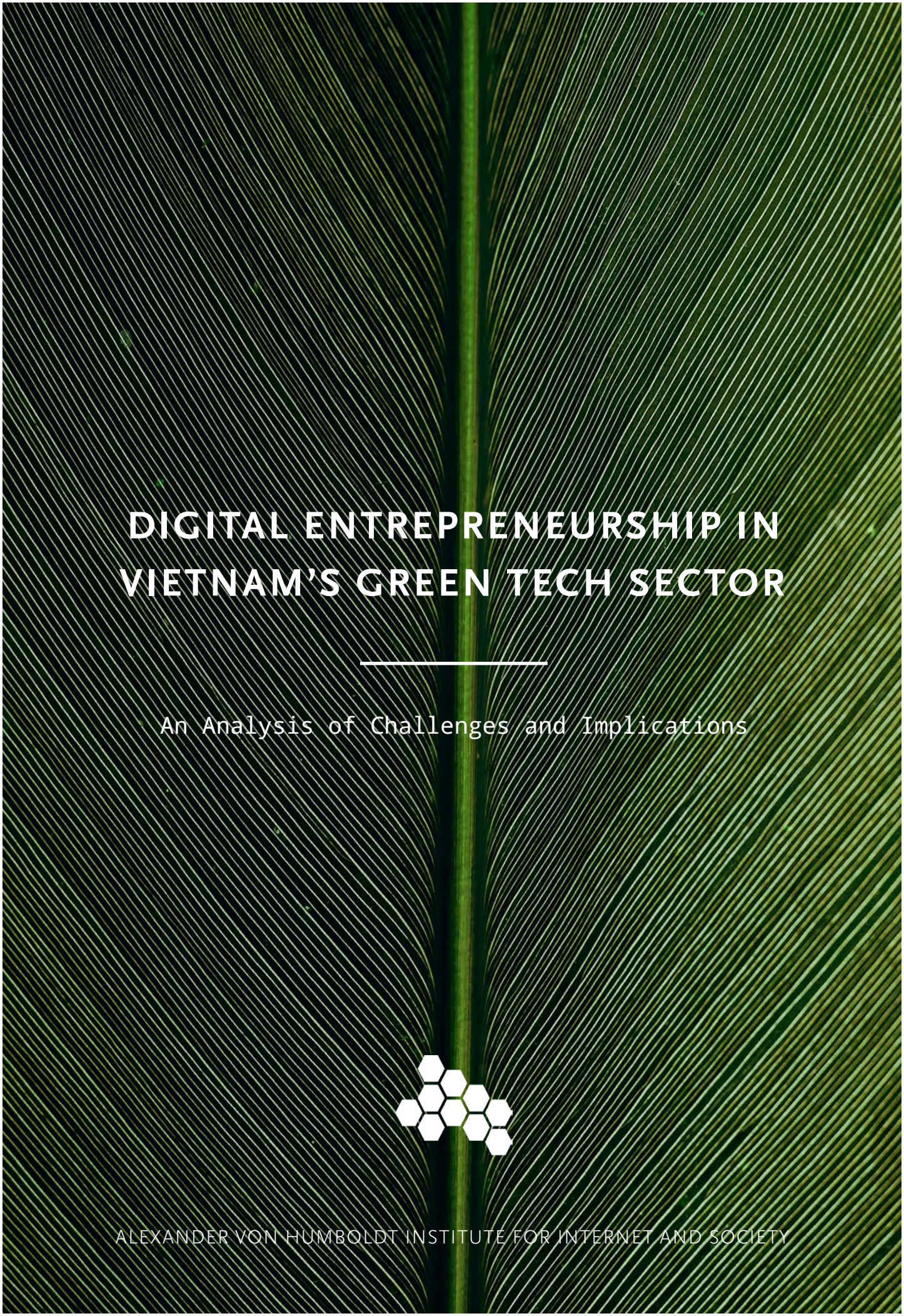

DIGITAL ENTREPRENEURSHIP IN VIETNAM'S GREEN TECH SECTOR

An Analysis of Challenges and Implications

ALEXANDER VON HUMBOLDT INSTITUTE FOR INTERNET AND SOCIETY

DIGITAL ENTREPRENEURSHIP IN VIETNAM'S GREEN TECH SECTOR: AN ANALYSIS OF CHALLENGES AND IMPLICATIONS

STUDY

Alexander von Humboldt Institute for Internet and Society

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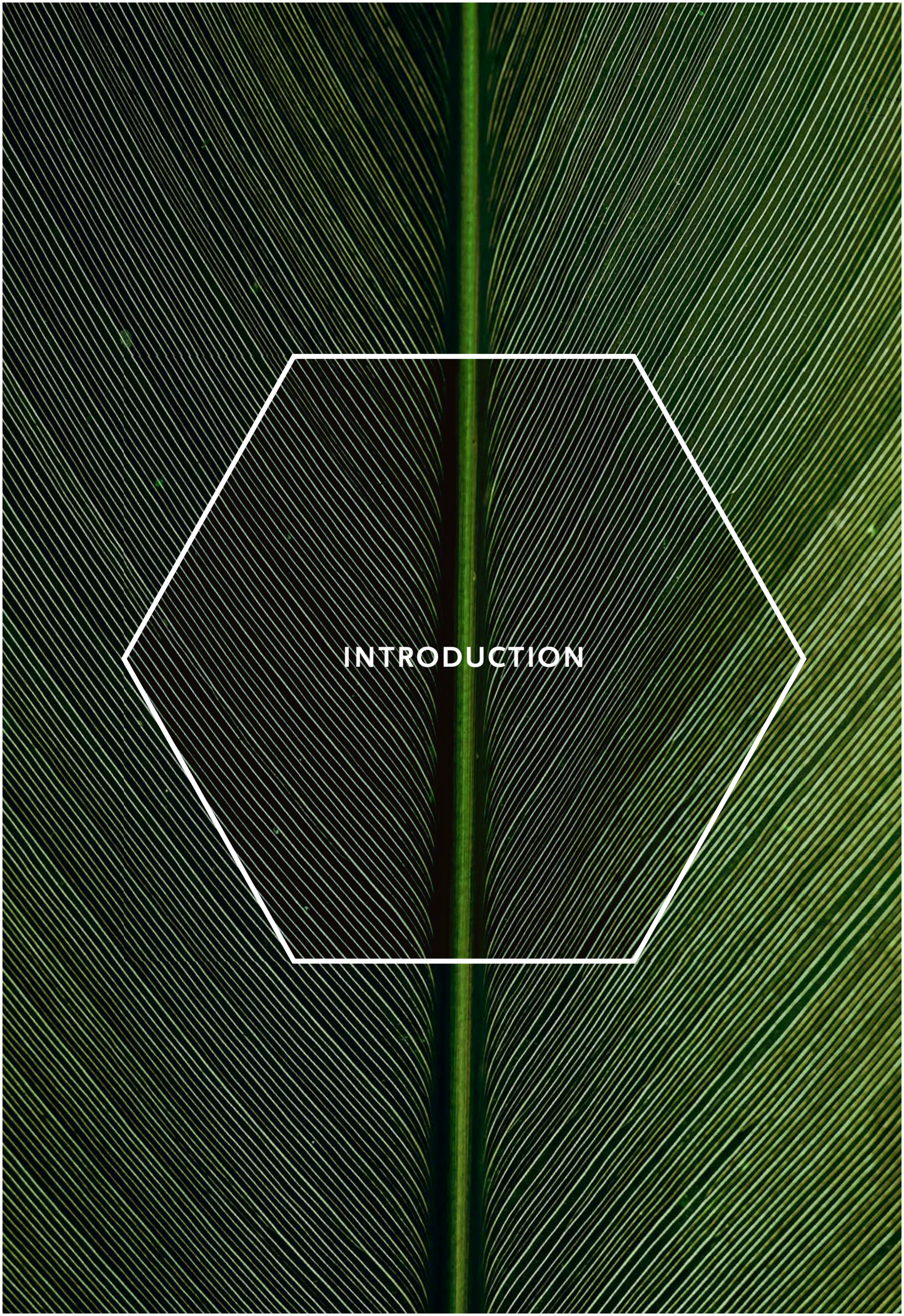
Berlin, March 2023

Alexander von Humboldt
INSTITUT FÜR INTERNET
UND GESELLSCHAFT


INTRODUCTION

Climate change is a global phenomenon with far-reaching environmental effects such as heatwaves, melting polar ice and declining biodiversity. Depending on where people live, they will experience climate change differently. Like many countries with low-lying coastal regions, Vietnam is threatened by rising sea levels, typhoons and floods that could have disastrous consequences for its ecosystem, economy and the wellbeing of its population (Eckstein et al., 2021; Zimmer et al., 2015). In light of these prospects, policymakers have called for immediate and drastic measures in Vietnam to adapt to climate change by building resiliency and to mitigate climate change by decarbonising the economy (World Bank, 2022a).

The deployment of green technologies, or green tech, is central to the measures to mitigate climate change in Vietnam. For example, using sustainable energy sources such as water, wind and solar power could help to decarbonise the energy sector (Nguyen et al., 2021), the expansion of public transport and adoption of electric vehicles could contribute to decarbonising transport, and the institutionalisation of circular economy practices could both reduce emissions and save resources (Chowdhury et al., 2022). Promoting the development and adoption of green tech will require considerable efforts, not only from both public actors such as governments and state-owned enterprises but also from private businesses and entrepreneurs (World Bank, 2022a). However, the Vietnamese green tech ecosystem currently suffers from a shortage of entrepreneurs. This raises the question: What can be done to promote the founding of green tech startups in Vietnam and what obstacles do green tech entrepreneurs currently face?

THE DEPLOYMENT OF GREEN TECHNOLOGIES IS CENTRAL TO MITIGATE CLIMATE CHANGE IN VIETNAM

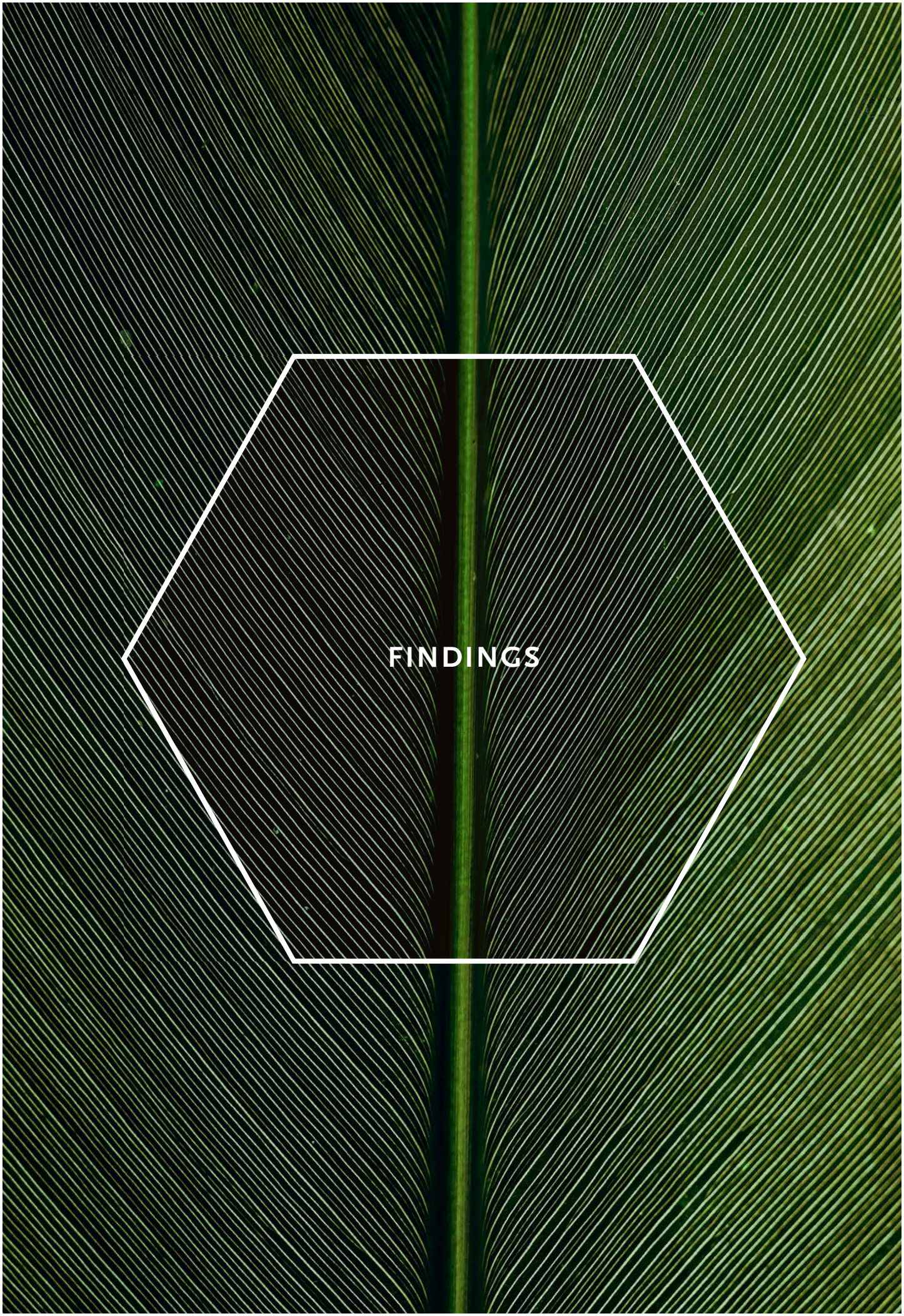
To find answers to this question, the Alexander von Humboldt Institute for Internet and Society (HIIG) organised a research sprint in close collaboration with the Digital Transformation Center (DTC) Vietnam, as part of the research project "Sustainability, Entrepreneurship and Global Digital Transformation" (SET), which is funded by the Deutsche Gesellschaft für internationale Zusammenarbeit (GIZ) on behalf of the German Federal Ministry for Economic Cooperation and Development.

THE RESEARCH SPRINT: BACKGROUND AND APPROACH

The research sprint "Green Technology, Entrepreneurship & Climate" brought together 11 international and interdisciplinary fellows to study the barriers to digital entrepreneurship in Vietnam's green tech sector. From 11 October to November 23, the fellows worked online and received input talks and guidance from senior researchers at the HIIG on topics such as digital entrepreneurship and sustainability as well as impact-oriented research. From 23–30 November 2022, the fellows then travelled to Vietnam for a week to discuss their initial findings with Vietnamese stakeholders. To that end, the HIIG and DTC Vietnam organised visits to local stakeholders in Vietnam's green tech ecosystem to learn both about top-down and bottom-up entrepreneurial initiatives and the status quo and potential of various green technologies in Vietnam. In Hanoi, for example, the fellows engaged in discussions with the National Innovation Center, a unit under the Vietnamese Ministry of Planning and Investment, and the Vietnam Initiative for Energy Transition.

THE RESEARCH SPRINT FOCUSED ON THE BARRIERS TO DIGITAL ENTREPRENEURSHIP IN VIETNAM'S GREEN TECH SECTOR

At the end of the week, the fellows presented results about the factors that inhibit the potential of digital entrepreneurship in Vietnam's green tech sector during a multi-stakeholder dialogue and a panel discussion at the Green Economy Forum & Exhibition (GEFE) 2022 in Ho Chi Minh City. During the dialogue, key stakeholders from Vietnam's green tech ecosystem discussed the findings of the sprint and measures to address the identified challenges. This report summarises the sprint's key findings. It is based on a review of prior literature, previous studies of the green tech sector by the DTC Vietnam, stakeholder interviews realised by the fellows and the discussions at the stakeholder dialogue.


FINDINGS

The fellows identified a range of factors that inhibit digital entrepreneurship in Vietnam's green tech sector. For reasons of clarity and readability, these factors were organised into four broad categories, namely economic, institutional, social and technological challenges. Note that the identified factors do not necessarily represent an exhaustive list of the challenges that digital entrepreneurs face. Moreover, some of the challenges could be arguably organised into different or across several categories. Below, these challenges are framed as opportunities for Vietnamese policy makers, as addressing these challenges could help to improve the conditions for green tech entrepreneurs and startups in Vietnam.

ECONOMIC CHALLENGES

Overall, three pervasive economic challenges inhibit digital entrepreneurship in Vietnam's green tech sector: insufficient access to a high level of funding, limited adoption of modern technological tools that fit the needs for digital entrepreneurs and insufficient economic support for incubators and accelerators.

THREE PERVASIVE ECONOMIC CHALLENGES INHIBIT DIGITAL ENTREPRENEURSHIP IN VIETNAM'S GREEN TECH SECTOR

The first challenge, insufficient access to a high level of funding, is problematic because digital entrepreneurs depend on funding to create new sources of value and wealth (Samara & Terzian, 2021). While the capital market for startups is maturing in the South-East Asian region overall, the level of investment in Vietnam has been relatively low, as compared to Singapore, Indonesia and Thailand (StartupBlink, n.d.). There are several reasons for this, including but not limited to bad debts in financial institutions, unexpected tax assessments and a shortage of skilled personnel (Ho et al., 2022; World Bank, 2022a). Another major issue is the lack of close links between actors in Vietnam's startup ecosystem (Thu Ha & Thu Huyen, 2021). There is an urgent need for innovation networks to be linked up within the country and also abroad to attract a high level of funding. Policies may then be directed towards (1) helping firms to conduct accurate market research and creating a global brand value for the products to attract funding; (2) offering conditions to attract and accelerate foreign direct investment; and (3) boosting sustainable sources of funding through accelerators and incubators, loans and grants, angel investors and venture capital funds.

The second challenge concerns the adoption of new financial technology tools such as cryptocurrencies, blockchain and fintech. Adopting such tools can have positive results for increasing the number of startups by expanding financial resources, optimising their allocation and leading to innovation (World Bank, 2022b). But, due to low adult financial literacy and a relatively high level of the unbanked population, leveraging modern financial technology tools has been a challenge for digital entrepreneurs (Nathan et al., 2022). Thus innovation in the financial sectors must be further increased to boost Vietnam's entrepreneurial ecosystem (Hao, 2020). In addition, financial literacy should be promoted to improve the awareness of fintech products like digital lending and insurance.

The third challenge concerns the insufficient support for incubators and accelerators (see also the section on institutional challenges). Incubators and accelerators matter, because they stimulate startup culture and innovation, positively affecting their growth (Lange & Johnston, 2020). According

to secondary research data, Vietnam has a relatively lower number of incubators and accelerators as compared to other ASEAN peers (Swiss Entrepreneurship Program, 2022). One reason for this can be attributed to limitations of the legal framework for incubators and accelerators (Duc, 2022). Strengthening the connection of innovation networks within the existing incubators and accelerators, through proactive participation and value creation from digital entrepreneurs could pave the way for a more robust legal framework to be built in the future. A joint collaboration between universities, research institutes and the private sector could further catalyse the economic support for incubators and accelerators in Vietnam (Pham & Hampel-Milagrosa, 2022).

INSTITUTIONAL CHALLENGES

Topics such as climate change, circular economy, and entrepreneurship are receiving considerable attention as reflected in recent public policies and government programmes (Weina et al., forthcoming). However, there are still challenges to integrating digital entrepreneurship as a solution to achieve Vietnam's environmental and economic goals. Here, we highlight two pervasive challenges, namely, increasing institutional support of early-stage, especially domestic startups and enabling technology transfer through business accelerators and incubators as well as regional sectoral clusters.

VIETNAM'S STARTUP SCENE WOULD BENEFIT FROM MORE INDEPENDENT AND DOMESTIC VENTURES

First, public policies promoting entrepreneurship, science and technology are already in place; however, early-stage startups need further and continued support. Developing clearer and preferential policies for early-stage green tech investors, for instance, was one recommendation that had been previously identified (Weina et al., forthcoming). The fellows' observations further this notion. While many startups in Vietnam were owned by or associated with big corporations, studies suggest that startups that are not corporate-backed ventures bring better performing products to the market, move more decisively in changing conditions and grow at a faster rate than their corporate-backed competitors (Georgallis & Durand, 2017; Khessina & Carroll, 2008). Therefore, Vietnam's startup scene would benefit from more independent and domestic ventures. This in turn requires more generous policies for early-stage startups that balance out their more difficult conditions in raising capital. For example, the government could establish public angel investors and funds to support early-stage startups and entrepreneurs. Moreover, the continuous endorsement of the green tech sector by the government, as has been done on recent occasions (Vietnam News Agency, 2023), would make it more likely for firms to find backing by banks and venture capitalists (Georgallis & Durand, 2017).

Second, as technological innovation often occurs at different stages of digitalisation and at different points along the value chain, technology transfer is necessary, both in order to digitalise the economy and, therefore, to contribute in achieving economic, environmental and social sustainability goals in agricultural, energy, mobility, and commercial sectors (Lee & Mwebaza, 2022; Swinnen & Kuijpers, 2019). During their site visits, the fellows met startups that had clear and strong value propositions in their sectors, but needed support to make their value chain more sustainable or in raising awareness of their impact. The role of business accelerators and incubators in improving these issues is important. Besides increasing the business viability of technology companies,

accelerators, and incubators provide opportunities for companies to develop and enhance value chains as well as provide a guiding direction for sector-relevant technology and innovation (Newell et al., 2021). Additionally, Vietnam's green tech sector would also benefit from the creation of regional sectoral clusters, because they promote the formation of business interrelationships and associated benefits, such as information exchange, technological learning, and the formation of joint ventures (Sternberg, 1992; Thuong, 2020). Strengthening organisations such as accelerators, incubators, and clustering projects can build a more sustainable and competitive startup scene.

SOCIAL CHALLENGES

The social challenges to scaling (digital) entrepreneurship in Vietnam's green tech sector lie in three main categories: social acceptance and willingness to adopt new technologies; awareness on the environmental and health impact of current economic activities and behaviours; and income and gender disparities. Challenges related to the first category are often rooted in realities such as the insufficient quality and availability of existing green tech consumer products; public sector goals related to economic growth; and the structure and priorities of higher education. For example, although the Vietnamese government has prioritised a phaseout of fuel-powered motorbikes in major cities, adoption of cleaner alternatives has been slow. One reason for this lagging transition has been the population's relative low trust in the quality of electric vehicles as well as concerns over their reliability in extreme weather (Huu & Ngoc, 2021). Opposition to the phaseout has also arisen because of a lack of alternative (public) transport options (VnExpress, 2022).

GOVERNMENT PRIORITIES TEND TO FOCUS MORE ON ECONOMIC GROWTH RATHER THAN ENVIRONMENTAL SUSTAINABILITY.

Likewise, federal and provincial government priorities – and with them, public dissemination of knowledge regarding these priorities – tend to focus more on economic growth rather than environmental sustainability (Sands, 2019). In other words, entrepreneurial solutions that promote topics like energy efficiency, circularity, or decarbonized power or transport do not always take priority. In a similar vein, despite strong engineering and computer-science education at Vietnamese universities, a limited emphasis on multidisciplinary entrepreneurship programmes – especially as they relate to the green tech sector – hinders relevant skills development (Pham & Hampel-Milagrosa, 2022). Greater inter-departmental collaboration, as well as partnerships between academia and industry, can help make green tech entrepreneurship a more attractive early career option for students and young graduates.

Finally, divisions based on ethnicity, gender, and geography have a strong impact on resource allocation. For example, the gap in living standards between the ethnic majority Kinh and minority groups is correlated to lower access to primary, secondary and university education, as well as contributing to disparate income levels (World Bank, 2022c). Similar disparities are observed on the basis of gender and geographical location (i.e. rural versus urban). This impacts not only awareness of sustainable alternatives but also opportunities for marginalised groups to access resources, financial, and education that would otherwise allow them to develop green tech solutions that directly impact their communities. Greater public and private sector outreach to marginalised

communities to improve access to government programmes, competitions, and awards focused on green tech entrepreneurship can help lower barriers to entry and level the playing field for potential entrepreneurs.

TECHNOLOGICAL CHALLENGES

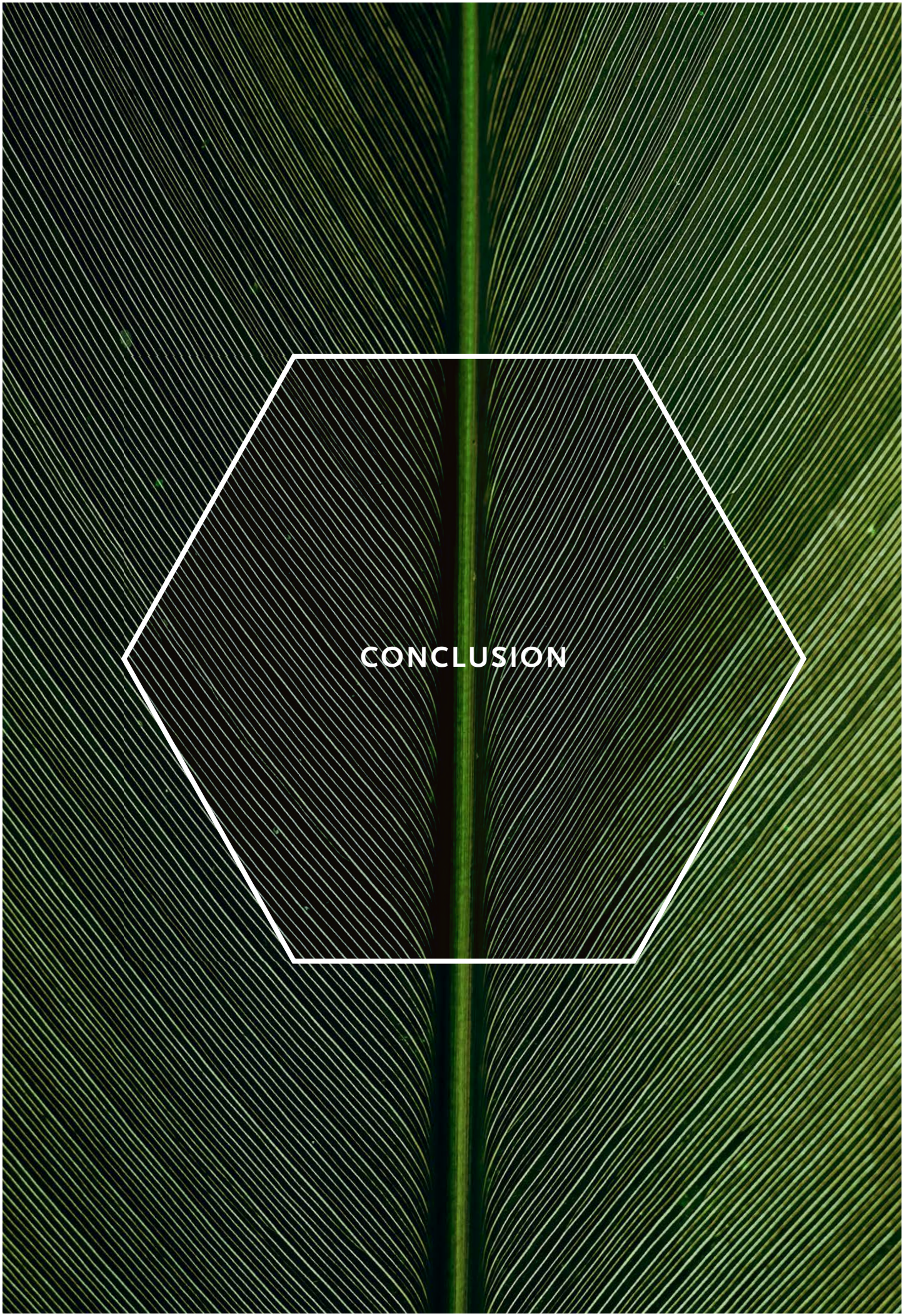
The technological challenges for digital entrepreneurship in Vietnam's green tech sector can be summarised into skill-, infrastructure- and data-related challenges, each of which will be covered in turn.

To date, Vietnam lags behind some of its nearest regional peers such as Malaysia, Thailand, and Singapore in terms of overall digital skills (Tan et al., 2021). For the country to meet its goal of joining the top 50 countries in the global ICT Development Index (IDI), about one million more ICT personnel will be needed in the country by 2030 (Vietnam News Agency, 2021). In addition to mere technical digital skills, there is a further need to develop entrepreneurial skills in the digital sector. This also relates to training on legal, intellectual property, and finance; competencies that green tech startups often lack (Weina et al., forthcoming). To date, 80% of startups fail after the first two years, and Vietnam has been ranked as a country with low capacity to implement business plans (Ho et al., 2022).

WITHOUT EFFECTIVE GOVERNANCE SYSTEMS, THE USE OF DIGITAL TECHNOLOGIES IS LIKELY TO INCREASE ENERGY DEMAND

Without effective governance systems, the use of digital technologies is likely to increase energy demand and consumption of material goods (IPCC, 2022). At COP 26, Vietnam's government announced an ambitious national target to achieve zero net emissions by 2050. So far, domestic banks have invested around $3.6 billion between 2018 and 2020, representing the main source of financing for clean energy projects, especially solar and wind. Over the next ten years, the United Nations Development Programme (UNDP) estimates that expanding the infrastructure to accelerate clean energy projects will require another $33 billion by 2030 (Dao, 2022). Moreover, green tech startups often face limited access to specialised materials for technological manufacturing for green technologies due to tariffs and limited information on domestic providers (Weina et al., forthcoming; World Bank, 2022a).

The availability and sharing of data among public institutions and other relevant stakeholders (such as academic, private and social sectors) is still limited (Thu & When, 2016). This poses the risk that public information on environmental data (i.e. waste management) does not reflect the realities of the social and environmental impacts that the country faces and, therefore, that the actions taken may not be sufficient. A data ecosystem needs to be developed, including effective regulatory and governance frameworks for its use, to foster informed decision-making and innovation. Digital entrepreneurship in sectors such as energy, transportation, agriculture, and the circular economy would benefit from the provision of quality data from the public domain. To date, startups often have to allocate financial resources to receive access to data from private consulting and market research firms (World Bank, 2019).


CONCLUSION

This report identifies a number of economic, institutional, social and technological factors that inhibit digital entrepreneurship in Vietnam's green tech sector. It is not intended to be an exhaustive list of all the challenges that digital entrepreneurs face, but to inspire pathways to improve the conditions for green digital entrepreneurship in Vietnam. Policy makers should consider these factors individually and – due to possible interdependencies – collectively. There is no silver bullet or one-size-fit-all approach to promote digital entrepreneurship in general and in the green tech sector in specific. Nonetheless, accelerators and incubators could play a central role in empowering entrepreneurs to navigate a variety of challenges, whether these are economic, institutional, social or technological, especially if they offer customised support and funding at various stages of the entrepreneurial journey. In addition, the social challenges identified by the report indicate that policymakers should take a moment to reflect and think beyond the current cohort of entrepreneurs in order to create the conditions that favour green digital entrepreneurship in the long term, including but not limited to raising public awareness for environmental issues in general.

ACCELERATORS AND INCUBATORS COULD PLAY A CENTRAL ROLE IN EMPOWERING ENTREPRENEURS

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IMPRINT

PUBLISHED
March 2023

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PUBLISHER
Alexander von Humboldt Institute for Internet and Society
Französische Straße 9
10117 Berlin
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DESIGN
Max Falley, Larissa Wunderlich

KEYWORDS
Green technologies, Digital entrepreneurship, Climate change

CITATION
Akaki, P. P., Aleem, A., Burlinghaus, E., Carmona, A. S., Cervera, R., Cardozo, J. I., Vilchez, P., Pheakdey, D. V., von Richthofen, G. (2023). Digital Entrepreneurship in Vietnam's Green Tech Sector: An Analysis of Challenges and Implications. HIIG Impact Publication Series, 10.5281/zenodo.7681584.